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, 2019.

or

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

For the transition period from to .

Commission file no. 001-13831

Quanta Services, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**74-2851603**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

2800 Post Oak Boulevard, Suite 2600
Houston, Texas 77056
(Address of principal executive offices, including zip code)

(713) 629-7600
(Registrant's telephone number, including area code)

N/A
(Former name, former address and former fiscal year, if changed since last report)

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, $0.00001 par value	PWR	New York Stock Exchange

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

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

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

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

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new 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 30, 2019, the number of outstanding shares of Common Stock of the registrant was 142,182,053. As of the same date 36,183 exchangeable shares of a Canadian subsidiary of the Registrant were outstanding.

QUANTA SERVICES, INC. AND SUBSIDIARIES

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PART I - FINANCIAL INFORMATION

Item 1. ***Financial Statements.***

QUANTA SERVICES, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(In thousands, except share information)
(Unaudited)

	June 30, 2019	December 31, 2018
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 73,356	$ 78,687
Accounts receivable, net of allowances of $8,541 and $5,839	2,632,003	2,354,737
Contract assets	683,665	576,891
Inventories	68,400	107,732
Prepaid expenses and other current assets	294,508	208,057
Total current assets	3,751,932	3,326,104
Property and equipment, net of accumulated depreciation of $1,163,496 and $1,092,440	1,354,467	1,276,032
Operating lease right-of-use assets	284,962	—
Other assets, net	433,872	293,592
Other intangible assets, net of accumulated amortization of $400,358 and $372,081	264,284	280,180
Goodwill	1,932,300	1,899,879
Total assets	$ 8,021,817	$ 7,075,787
LIABILITIES AND EQUITY		
Current Liabilities:		
Current maturities of long-term debt and short-term debt	$ 52,861	$ 65,646
Current portion of operating lease liabilities	92,765	—
Accounts payable and accrued expenses	1,289,393	1,314,520
Contract liabilities	471,214	425,961
Total current liabilities	1,906,233	1,806,127
Long-term debt, net of current maturities	1,517,272	1,040,532
Operating lease liabilities, net of current portion	192,197	—
Deferred income taxes	276,574	219,115
Insurance and other non-current liabilities	353,282	404,560
Total liabilities	4,245,558	3,470,334
Commitments and Contingencies		
Equity:		
Common stock, $.00001 par value, 600,000,000 shares authorized, 159,222,385 and 157,333,046 shares issued, and 142,166,965 and 141,103,900 shares outstanding	2	2
Exchangeable shares, no par value, 36,183 and 486,112 shares issued and outstanding	—	—
Series G Preferred Stock, $.00001 par value, 0 and 1 share authorized, issued and outstanding	—	—
Additional paid-in capital	1,999,462	1,967,354
Retained earnings	2,612,994	2,477,291
Accumulated other comprehensive loss	(251,329)	(286,048)
Treasury stock, 17,055,420 and 16,229,146 common shares	(586,206)	(554,440)
Total stockholders' equity	3,774,923	3,604,159
Non-controlling interests	1,336	1,294
Total equity	3,776,259	3,605,453
Total liabilities and equity	$ 8,021,817	$ 7,075,787

The accompanying notes are an integral part of these condensed consolidated financial statements.

QUANTA SERVICES, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share information)
(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Revenues	$ 2,839,199	$ 2,656,348	$ 5,646,458	$ 5,073,924
Cost of services (including depreciation)	2,519,694	2,322,977	4,962,972	4,439,505
Gross profit	319,505	333,371	683,486	634,419
Selling, general and administrative expenses	223,944	206,104	455,852	421,526
Amortization of intangible assets	12,610	10,507	25,280	20,912
Change in fair value of contingent consideration liabilities	4,371	(6,279)	4,287	(6,279)
Operating income	78,580	123,039	198,067	198,260
Interest expense	(15,821)	(9,178)	(29,697)	(15,956)
Interest income	267	660	576	806
Other income (expense), net	6,521	(10,426)	65,480	(22,401)
Income before income taxes	69,547	104,095	234,426	160,709
Provision for income taxes	41,088	29,389	84,932	47,392
Net income	28,459	74,706	149,494	113,317
Less: Net income attributable to non-controlling interests	1,115	341	1,662	1,338
Net income attributable to common stock	$ 27,344	$ 74,365	$ 147,832	$ 111,979
Earnings per share attributable to common stock:				
Basic	$ 0.19	$ 0.49	$ 1.02	$ 0.72
Diluted	$ 0.19	$ 0.48	$ 1.01	$ 0.72
Shares used in computing earnings per share:				
Weighted average basic shares outstanding	145,935	153,325	145,525	154,906
Weighted average diluted shares outstanding	147,241	154,595	146,865	156,112
Cash dividends declared per common share	$ 0.04	$ —	$ 0.08	$ —

The accompanying notes are an integral part of these condensed consolidated financial statements.

QUANTA SERVICES, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)
(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Net income	$ 28,459	$ 74,706	$ 149,494	$ 113,317
Other comprehensive income (loss), net of tax provision:				
Foreign currency translation adjustment, net of tax of $0, $0, $0 and $0	15,891	(20,123)	34,754	(45,137)
Other, net of tax of $5, $0, $11 and $0	(19)	—	(35)	—
Other comprehensive income (loss)	15,872	(20,123)	34,719	(45,137)
Comprehensive income	44,331	54,583	184,213	68,180
Less: Comprehensive income attributable to non-controlling interests	1,115	341	1,662	1,338
Total comprehensive income attributable to common stock	$ 43,216	$ 54,242	$ 182,551	$ 66,842

The accompanying notes are an integral part of these condensed consolidated financial statements.

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

	Three Months Ended June 30, 2019	Three Months Ended June 30, 2018	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018
Cash Flows from Operating Activities:				
Net income	$ 28,459	$ 74,706	$ 149,494	$ 113,317
Adjustments to reconcile net income to net cash provided by (used in) operating activities—				
Depreciation	53,811	50,034	106,027	98,753
Amortization of intangible assets	12,610	10,507	25,280	20,912
Change in fair value of contingent consideration liabilities	4,371	(6,279)	4,287	(6,279)
Equity in (earnings) losses of unconsolidated affiliates	(1,757)	11,798	(62,147)	25,141
Amortization of debt issuance costs	408	288	816	576
(Gain) loss on sale of property and equipment	(2,411)	982	(2,470)	1,945
Foreign currency (gain) loss	3	582	1,220	(69)
Provision for doubtful accounts	416	139	3,239	984
Deferred income tax provision (benefit)	19,573	(2,872)	44,131	13,505
Non-cash stock-based compensation	14,484	13,485	27,496	28,172
Bargain purchase gain	(3,138)	—	(3,138)	—
Changes in operating assets and liabilities, net of non-cash transactions	(235,493)	3,150	(485,649)	(114,444)
Net cash provided by (used in) operating activities	(108,664)	156,520	(191,414)	182,513
Cash Flows from Investing Activities:				
Capital expenditures	(72,775)	(81,784)	(141,401)	(148,591)
Proceeds from sale of property and equipment	8,550	7,224	19,393	12,993
Proceeds from insurance settlements related to property and equipment	3	365	11	365
Cash paid for acquisitions, net of cash, cash equivalents and restricted cash acquired	(3,780)	(15,506)	(55,333)	(46,234)
Investments in unconsolidated affiliates and other entities	(127)	(731)	(37,930)	(1,569)
Cash received from investments in unconsolidated affiliates and other entities	—	78	—	784
Cash paid for intangible assets	(42)	(3,000)	(67)	(3,000)
Net cash used in investing activities	(68,171)	(93,354)	(215,327)	(185,252)
Cash Flows from Financing Activities:				
Borrowings under credit facility	1,068,439	1,062,445	2,715,513	2,037,393
Payments under credit facility	(901,396)	(1,101,561)	(2,248,838)	(1,861,930)
Payments on other long-term debt	(222)	(385)	(483)	(731)
Net repayments of short-term debt, net of borrowings	7,304	12,942	(15,916)	12,942
Distributions to non-controlling interests	(1,092)	(687)	(1,620)	(1,667)
Payments related to tax withholding for stock-based compensation	(1,666)	(1,583)	(15,344)	(14,204)
Payments of dividends	(5,830)	—	(11,582)	—
Repurchase of common stock	(159)	(15,993)	(20,092)	(189,906)
Net cash provided by (used in) financing activities	165,378	(44,822)	401,638	(18,103)
Effect of foreign exchange rate changes on cash, cash equivalents and restricted cash	82	1,113	(36)	1,804
Net increase (decrease) in cash, cash equivalents and restricted cash	(11,375)	19,457	(5,139)	(19,038)
Cash, cash equivalents and restricted cash, beginning of period	89,492	105,280	83,256	143,775
Cash, cash equivalents and restricted cash, end of period	$ 78,117	$ 124,737	$ 78,117	$ 124,737

The accompanying notes are an integral part of these condensed consolidated financial statements.

QUANTA SERVICES, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF EQUITY
(In thousands, except share data)
(Unaudited)

	Common Stock		Exchangeable Shares		Series G Preferred Stock		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Total Stockholders' Equity	Non-controlling Interests	Total Equity
	Shares	Amount	Shares	Amount	Shares	Amount							
Balance, December 31, 2018	141,103,900	$ 2	486,112	$ —	1	$ —	$ 1,967,354	$ 2,477,291	$ (286,048)	$ (554,440)	$ 3,604,159	$ 1,294	$ 3,605,453
Other comprehensive income	—	—	—	—	—	—	—	—	18,847	—	18,847	—	18,847
Stock-based compensation activity	903,082	—	—	—	—	—	17,151	—	—	(19,052)	(1,901)	—	(1,901)
Exchange of exchangeable shares	449,929	—	(449,929)	—	—	—	—	—	—	—	—	—	—
Retirement of preferred stock	—	—	—	—	(1)	—	—	—	—	—	—	—	—
Common stock repurchases	(375,536)	—	—	—	—	—	—	—	—	(11,953)	(11,953)	—	(11,953)
Dividends declared	—	—	—	—	—	—	—	(5,896)	—	—	(5,896)	—	(5,896)
Distributions to non-controlling interests	—	—	—	—	—	—	—	—	—	—	—	(528)	(528)
Net income	—	—	—	—	—	—	—	120,488	—	—	120,488	547	121,035
Balance, March 31, 2019	142,081,375	$ 2	36,183	$ —	—	$ —	$ 1,984,505	$ 2,591,883	$ (267,201)	$ (585,445)	$ 3,723,744	$ 1,313	$ 3,725,057
Other comprehensive income	—	—	—	—	—	—	—	—	15,872	—	15,872	—	15,872
Stock-based compensation activity	85,590	—	—	—	—	—	14,957	—	—	(761)	14,196	—	14,196
Dividends declared	—	—	—	—	—	—	—	(6,233)	—	—	(6,233)	—	(6,233)
Distributions to non-controlling interests	—	—	—	—	—	—	—	—	—	—	—	(1,092)	(1,092)
Net income	—	—	—	—	—	—	—	27,344	—	—	27,344	1,115	28,459
Balance, June 30, 2019	142,166,965	$ 2	36,183	$ —	—	$ —	$ 1,999,462	$ 2,612,994	$ (251,329)	$ (586,206)	$ 3,774,923	$ 1,336	$ 3,776,259

The accompanying notes are an integral part of these condensed consolidated financial statements.

QUANTA SERVICES, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF EQUITY
(In thousands, except share data)
(Unaudited)

	Common Stock		Exchangeable Shares		Series G Preferred Stock		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Total Stockholders' Equity	Non-controlling Interests	Total Equity
	Shares	Amount	Shares	Amount	Shares	Amount							
Balance, December 31, 2017	153,342,326	$ 2	486,112	$ —	1	$ —	$ 1,889,356	$ 2,191,059	$ (203,395)	$ (85,451)	$ 3,791,571	$ 4,058	$ 3,795,629
Cumulative effect of accounting change	—	—	—	—	—	—	—	(1,757)	—	—	(1,757)	—	(1,757)
Other comprehensive loss	—	—	—	—	—	—	—	—	(25,014)	—	(25,014)	—	(25,014)
Acquisitions	379,817	—	—	—	—	—	13,549	—	—	—	13,549	—	13,549
Stock-based compensation activity	847,455	—	—	—	—	—	17,992	—	—	(16,690)	1,302	—	1,302
Common stock repurchases	(4,969,261)	—	—	—	—	—	—	—	—	(173,913)	(173,913)	—	(173,913)
Distributions to non-controlling interests	—	—	—	—	—	—	—	—	—	—		(980)	(980)
Buyout of a non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	(462)	(462)
Net income	—	—	—	—	—	—	—	37,614	—	—	37,614	997	38,611
Balance, March 31, 2018	149,600,337	$ 2	486,112	$ —	1	$ —	$ 1,920,897	$ 2,226,916	$ (228,409)	$ (276,054)	$ 3,643,352	$ 3,613	$ 3,646,965
Other comprehensive income	—	—	—	—	—	—	—	—	(20,123)	—	(20,123)	—	(20,123)
Stock-based compensation activity	82,468	—	—	—	—	—	13,929	—	—	(870)	13,059	—	13,059
Common stock repurchases	(594,671)	—	—	—	—	—	—	—	—	(19,993)	(19,993)	—	(19,993)
Distributions to non-controlling interests	—	—	—	—	—	—	—	—	—	—	—	(687)	(687)
Buyout of a non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	(462)	(462)
Net income	—	—	—	—	—	—	—	74,365	—	—	74,365	341	74,706
Balance, June 30, 2018	149,088,134	$ 2	486,112	$ —	1	$ —	$ 1,934,826	$ 2,301,281	$ (248,532)	$ (296,917)	$ 3,690,660	$ 2,805	$ 3,693,465

The accompanying notes are an integral part of these condensed consolidated financial statements.

1. BUSINESS AND ORGANIZATION:

Quanta Services, Inc. (Quanta) is a leading provider of specialty contracting services, delivering comprehensive infrastructure solutions for the electric power, energy and communications industries in the United States, Canada, Australia, Latin America and select other international markets. Quanta reports its results under two reportable segments: (1) Electric Power Infrastructure Services and (2) Pipeline and Industrial Infrastructure Services.

Electric Power Infrastructure Services Segment

The Electric Power Infrastructure Services segment provides comprehensive network solutions to customers in the electric power industry. Services performed by the Electric Power Infrastructure Services segment generally include the design, installation, upgrade, repair and maintenance of electric power transmission and distribution infrastructure and substation facilities along with other engineering and technical services. This segment also provides emergency restoration services, including the repair of infrastructure damaged by inclement weather, the energized installation, maintenance and upgrade of electric power infrastructure utilizing unique bare hand and hot stick methods and Quanta's proprietary robotic arm technologies, and the installation of "smart grid" technologies on electric power networks. In addition, this segment provides services that support the development of renewable energy generation, including solar, wind and certain types of natural gas generation facilities, and related switchyards and transmission infrastructure. This segment also provides comprehensive communications infrastructure services to wireline and wireless telecommunications companies, cable multi-system operators and other customers within the communications industry; services in connection with the construction of electric power generation facilities; and the design, installation, maintenance and repair of commercial and industrial wiring. This segment also includes Quanta's postsecondary educational institution, which specializes in pre-apprenticeship training, apprenticeship training and specialized utility task training for electric workers, and includes curriculum for the gas distribution and communications industries.

Pipeline and Industrial Infrastructure Services Segment

The Pipeline and Industrial Infrastructure Services segment provides comprehensive infrastructure solutions to customers involved in the development, transportation, storage and processing of natural gas, oil and other products. Services performed by the Pipeline and Industrial Infrastructure Services segment generally include the design, installation, repair and maintenance of pipeline transmission and distribution systems, gathering systems, production systems, storage systems and compressor and pump stations, as well as related trenching, directional boring and mechanized welding services. In addition, this segment's services include pipeline protection, integrity testing, rehabilitation and replacement, and the fabrication of pipeline support systems and related structures and facilities for natural gas utilities and midstream companies. Quanta also provides high-pressure and critical-path turnaround services to the downstream and midstream energy markets and instrumentation and electrical services, piping, fabrication and storage tank services. To a lesser extent, this segment serves the offshore and inland water energy markets and designs, installs and maintains fueling systems and water and sewer infrastructure.

Acquisitions

During the first six months of 2019, Quanta acquired an electric power specialty contracting business located in the United States that provides aerial power line and construction support services and an electrical infrastructure services business located in Canada. The results of the acquired businesses have generally been included in Quanta's Electric Power Infrastructure Services segment and consolidated financial statements beginning on the acquisition dates.

During the year ended December 31, 2018, Quanta acquired an electrical infrastructure services business specializing in substation construction and relay services, a postsecondary educational institution that provides pre-apprenticeship training and programs for experienced linemen, and two communications infrastructure services businesses, all of which are located in the United States. The results of the acquired businesses have generally been included in Quanta's Electric Power Infrastructure Services segment and have been included in Quanta's consolidated financial statements beginning on the respective acquisition dates.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

Principles of Consolidation

The condensed consolidated financial statements of Quanta include the accounts of Quanta Services, Inc. and its wholly owned subsidiaries, which are also referred to as its operating units. The condensed consolidated financial statements also include the accounts of certain of Quanta's investments in joint ventures, which are either consolidated or proportionately consolidated, as discussed in the following summary of significant accounting policies. Investments in affiliated entities in which Quanta does not have a controlling financial interest, but over which Quanta has significant influence, usually because Quanta holds a voting interest of between 20% and 50%, are accounted for using the equity method. All significant intercompany accounts and transactions have been eliminated in consolidation. Unless the context requires otherwise, references to Quanta include Quanta Services, Inc. and its consolidated subsidiaries.

Interim Condensed Consolidated Financial Information

These unaudited condensed consolidated financial statements have been prepared pursuant to the rules of the U.S. Securities and Exchange Commission (SEC). Certain information and footnote disclosures, normally included in annual financial statements prepared in accordance with generally accepted accounting principles in the United States (GAAP), have been condensed or omitted pursuant to those rules and regulations. Quanta believes that the disclosures made are adequate to make the information presented not misleading. In the opinion of management, all adjustments, consisting only of normal recurring adjustments, necessary to fairly state the financial position, results of operations, comprehensive income and cash flows with respect to the interim condensed consolidated financial statements have been included. The results of operations and comprehensive income for the interim periods are not necessarily indicative of the results for the entire fiscal year. The results of Quanta have historically been subject to significant seasonal fluctuations.

Quanta recommends that these unaudited condensed consolidated financial statements be read in conjunction with the audited consolidated financial statements and notes thereto of Quanta and its consolidated subsidiaries included in Quanta's Annual Report on Form 10-K for the year ended December 31, 2018 (2018 Annual Report), which was filed with the SEC on February 28, 2019.

Use of Estimates and Assumptions

The preparation of financial statements in conformity with GAAP requires the use of estimates and assumptions by management in determining the reported amounts of assets and liabilities, disclosures of contingent assets and liabilities known to exist as of the date the financial statements are published, and the reported amounts of revenues and expenses recognized during the periods presented. Quanta reviews all significant estimates affecting its consolidated financial statements on a recurring basis and records the effect of any necessary adjustments prior to their publication. Judgments and estimates are based on Quanta's beliefs and assumptions derived from information available at the time such judgments and estimates are made. Uncertainties with respect to such estimates and assumptions are inherent in the preparation of financial statements. Estimates are primarily used in Quanta's assessment of the allowance for doubtful accounts, valuation of inventory, useful lives of assets, fair value assumptions in analyzing goodwill, other intangibles and long-lived asset impairments, equity and other investments, purchase price allocations, acquisition-related contingent consideration liabilities, multiemployer pension plan withdrawal liabilities, contingent liabilities associated with, among other things, legal proceedings and claims, parent guarantees and indemnity obligations, revenue recognition for construction contracts inclusive of contractual change orders and claims, estimated insurance claim recoveries, stock-based compensation, operating results of reportable segments, the provision for income taxes, and the calculation of uncertain tax positions.

Revenue Recognition

Contracts

Quanta designs, installs, upgrades, repairs and maintains infrastructure for customers in the electric power, energy and communications industries. These services may be provided pursuant to master service agreements (MSAs), repair and maintenance contracts and fixed price and non-fixed price installation contracts. These contracts are classified into three categories based on how transaction prices are determined and revenue is recognized: unit-price contracts, cost-plus contracts and fixed price contracts. Transaction prices for unit-price contracts are determined on a per unit basis, transaction prices for cost-plus contracts are determined by applying a profit margin to costs incurred on the contracts and transaction prices for fixed price contracts are determined on a lump-sum basis. All of Quanta's revenues are recognized from contracts with its customers. In addition to the considerations described below, revenue is not recognized unless collectability under the contract is considered probable, the contract has commercial substance and the contract has been approved. Additionally, the contract must contain payment terms, as well as the rights and commitments of both parties.

Performance Obligations

A performance obligation is a promise in a contract with a customer to transfer a distinct good or service. Most of Quanta's contracts are considered to have a single performance obligation whereby Quanta is required to integrate complex activities and equipment into a deliverable for the customer. For contracts with multiple performance obligations, Quanta allocates a portion of the total transaction price to each performance obligation using its best estimate of the standalone selling price of the distinct good or service associated with each performance obligation. The standalone selling price is estimated using the expected costs plus a margin approach for each performance obligation.

At June 30, 2019, the aggregate transaction price allocated to unsatisfied or partially satisfied performance obligations was approximately $4.65 billion, of which 76.8% was expected to be recognized in the subsequent twelve months. This amount represents management's estimate of the consolidated revenues that are expected to be realized from the remaining portion of firm orders under fixed price contracts not yet completed or for which work has not yet begun. For purposes of calculating remaining performance obligations, Quanta includes all estimated revenues attributable to consolidated joint ventures and variable interest entities, revenues from funded and unfunded portions of government contracts to the extent they are reasonably expected to be realized and revenues from change orders and claims to the extent management believes additional contract revenues will be earned and are deemed probable of collection. Excluded from remaining performance obligations are potential orders under MSAs and non-fixed price contracts expected to be completed within one year.

Recognition of Revenue Upon Satisfaction of Performance Obligations

A transaction price is determined for each contract, and that amount is allocated to each performance obligation within the contract and recognized as revenue when, or as, the performance obligation is satisfied. Quanta generally recognizes revenue over time as it performs its obligations because there is a continuous transfer of control of the deliverable to the customer. Under unit-price contracts with an insignificant amount of partially completed units, Quanta recognizes revenue as units are completed based on contractual pricing amounts. Under unit-price contracts with more than an insignificant amount of partially completed units and fixed price contracts, Quanta recognizes revenues as performance obligations are satisfied over time, with the percentage completion generally measured as the percentage of costs incurred to total estimated costs for such performance obligation. Under cost-plus contracts, Quanta recognizes revenue on an input basis, as labor hours are incurred, materials are utilized and services are performed.

Under contracts where Quanta has a right to consideration in an amount that directly corresponds to the value of completed performance, Quanta recognizes revenue in such amount and does not include such performance as a remaining performance obligation. Also, contract consideration is not adjusted for a significant financing component if payment is expected to be collected less than one year from when the services are performed.

Contract costs include all direct materials, labor and subcontract costs and indirect costs related to contract performance, such as indirect labor, supplies, tools, repairs and depreciation costs. The majority of the materials associated with Quanta's work are owner-furnished, and therefore not included in contract revenues and costs. Additionally, Quanta may incur incremental costs to obtain certain contracts, such as selling and marketing costs, bid and proposal costs, sales commissions, and legal fees or initial set-up or mobilization costs, certain of which can be capitalized. Such costs were not material during the three and six months ended June 30, 2019 and 2018.

Contract Estimates

Actual revenues and project costs can vary, sometimes substantially, from previous estimates due to changes in a variety of factors, including unforeseen or changed circumstances not included in Quanta's cost estimates or covered by its contracts. The estimating process is based on the professional knowledge and experience of Quanta's engineers, project managers and financial professionals. Some of the factors that may lead to changes in estimates include concealed or unknown environmental conditions; changes in the cost of equipment, commodities, materials or labor; unanticipated costs or claims due to delays caused by customers or third parties; customer failure to provide required materials or equipment; errors in engineering, specifications or designs; project modifications or contract termination; weather conditions; changes in estimates related to the length of time to complete a performance obligation; and performance and quality issues requiring rework or replacement. These factors, along with other risks inherent in performing services under fixed price contracts, are routinely evaluated by management. Any changes in estimates could result in changes to profitability or losses associated with the related performance obligations. For example, estimated costs for a performance obligation may increase from an original estimate and contractual provisions may not allow for adequate compensation or reimbursement for such additional costs. Changes in estimated revenues, costs and profit are recorded in the period they are determined to be probable and can be reasonably estimated. Contract losses are recognized in full when losses are determined to be probable and can be reasonably estimated.

Changes in cost estimates on certain contracts may result in the issuance of change orders, which may be approved or unapproved by the customer, or the assertion of contract claims. Quanta determines the probability that costs associated with change orders and claims will be recovered based on, among other things, contractual entitlement, past practices with the customer, specific discussions or preliminary negotiations with the customer or verbal approvals by the customer. Quanta recognizes amounts associated with change orders and claims as revenue if it is probable that the contract price will be adjusted and the amount of any such adjustment can be reliably estimated. Most of Quanta's change orders are for services that are not distinct from an existing contract and are accounted for as part of an existing contract on a cumulative catch-up basis. Quanta accounts for a change order as a separate contract if the additional goods or services are distinct from and increase the scope of the contract, and the price of the contract increases by an amount commensurate to Quanta's standalone selling price for the additional goods or services.

As of June 30, 2019 and December 31, 2018, Quanta had recognized revenues of $131.7 million and $121.8 million related to change orders and claims included as contract price adjustments and that were in the process of being negotiated in the normal course of business. These aggregate amounts, which are included in "Contract assets" in the accompanying condensed consolidated balance sheets, represent management's estimates of additional contract revenues that have been earned and are probable of collection. However, Quanta's estimates could be incorrect, and the amount ultimately realized could be significantly higher or lower than the estimated amount.

Variable consideration amounts, including performance incentives, early pay discounts and penalties, may also cause changes in contract estimates. The amount of variable consideration is estimated based on the most likely amount that is deemed probable of realization. Contract consideration is adjusted for variable consideration when it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur once the uncertainty related to the variable consideration is resolved.

Changes in contract estimates are recognized on a cumulative catch-up basis in the period in which the revisions to the estimates are made. Such changes in estimates can result in the recognition of revenue in a current period for performance obligations that were satisfied or partially satisfied in prior periods or the reversal of previously recognized revenue if the current estimate differs from the previous estimate. The impact of a change in estimate is measured as the difference between the revenue or gross profit recognized in the prior period as compared to the revenue or gross profit which would have been recognized had the revised estimate been used as the basis of recognition in the prior period.

Quanta's operating results for the three months ended June 30, 2019 were negatively impacted by 6.4% as a result of aggregate changes in contract estimates related to projects that were in progress at March 31, 2019. These changes in contract estimates include the correction of $14.5 million of prior period errors related to the determination of total estimated project costs and the resulting revenue recognized on a large telecommunications project in Peru that was terminated. The prior period errors were determined to be immaterial individually and in the aggregate to the prior period financial statements. See additional discussion in *Legal Proceedings* in Note 11. Also negatively impacting gross profit during the three months ended June 30, 2019 related to work performed in prior periods was $13.9 million associated with continued rework and start-up delays on a processing facility project in Texas, which had a contract value of $141 million and was approximately 96% complete as of June 30, 2019. These unfavorable changes were partially offset by an aggregate positive change in estimates on other ongoing projects.

Quanta's operating results for the six months ended June 30, 2019 were negatively impacted by 2.7% as a result of aggregate changes in contract estimates related to projects that were in progress at December 31, 2018. Contributing to these negative impacts to gross profit were an $9.6 million correction of prior period errors referenced above and a $22.3 million increase in estimated costs associated with the processing facility construction project in Texas described above. Partially offsetting these changes was the positive impact on gross profit during the six months ended June 30, 2019 associated with work performed in prior periods of $28.2 million related to an electrical transmission project in Canada that was completed ahead of schedule during the three months ended March 31, 2019, which resulted in lower costs than previously estimated.

Quanta's operating results for the three and six months ended June 30, 2018 were impacted by less than 5% as a result of aggregate changes in contract estimates related to projects that were in progress at March 31, 2018 and December 31, 2017, respectively. Quanta successfully executed through project procurement, winter schedule challenges and productivity risks on the electrical transmission project in Canada referenced above, resulting in reductions to the estimated total costs necessary to complete the project. These changes positively impacted gross profit related to work performed in prior periods by $16.6 million and $26.3 million during the three and six months ended June 30, 2018. These positive changes were partially offset by an aggregate negative change in estimates on other ongoing projects.

Revenues by Category

The following tables present Quanta's revenue disaggregated by geographic location and contract type for the three and six months ended June 30, 2019 and 2018 (in thousands):

	Three Months Ended June 30,				Six Months Ended June 30,			
	2019		2018		2019		2018	
By primary geographic location:								
United States	$ 2,561,924	90.3%	$ 2,193,437	82.5%	$ 4,762,539	84.3%	$ 3,905,864	77.0%
Canada	202,221	7.1%	315,173	11.9%	687,651	12.2%	853,531	16.8%
Australia	36,886	1.3%	113,880	4.3%	78,210	1.4%	233,337	4.6%
Latin America and Other	38,168	1.3%	33,858	1.3%	118,058	2.1%	81,192	1.6%
Total revenues	$ 2,839,199	100.0%	$ 2,656,348	100.0%	$ 5,646,458	100.0%	$ 5,073,924	100.0%

	Three Months Ended June 30,				Six Months Ended June 30,			
	2019		2018		2019		2018	
By contract type:								
Unit-price contracts	$ 1,020,650	35.9%	$ 1,018,145	38.3%	$ 1,915,694	33.9%	$ 1,631,583	32.2%
Cost-plus contracts	1,103,135	38.9%	$ 605,212	22.8%	$ 2,061,490	36.5%	$ 1,184,261	23.3%
Fixed price contracts	715,414	25.2%	1,032,991	38.9%	1,669,274	29.6%	2,258,080	44.5%
Total revenues	$ 2,839,199	100.0%	$ 2,656,348	100.0%	$ 5,646,458	100.0%	$ 5,073,924	100.0%

As described above, under unit-price contracts with more than an insignificant amount of partially completed units and fixed price contracts, revenue is recognized as performance obligations are satisfied over time, with the percentage completion generally measured as the percentage of costs incurred to total estimated costs for such performance obligation. Approximately 49.1% and 54.9% of Quanta's revenues recognized during the three months ended June 30, 2019 and 2018 were associated with this revenue recognition method, and 50.5% and 54.4% of Quanta's revenues recognized during the six months ended June 30, 2019 and 2018 were associated with this revenue recognition method.

Contract Assets and Liabilities

With respect to Quanta's contracts, interim payments are typically received as work progresses in accordance with agreed-upon contractual terms, either at periodic intervals or upon achievement of contractual milestones. As a result, under fixed price contracts, the timing of revenue recognition and contract billings results in contract assets and contract liabilities. Contract assets represent revenues recognized in excess of amounts billed for fixed price contracts and are current assets that are transferred to accounts receivable when billed or the billing rights become unconditional. Contract assets are not considered a significant financing component as they are intended to protect the customer in the event Quanta does not perform on its obligations under the contract.

Conversely, contract liabilities represent billings in excess of revenues recognized for fixed price contracts. These arise under certain contracts that allow for upfront payments from the customer or contain contractual billing milestones, which result in billings that exceed the amount of revenues recognized for certain periods. Contract liabilities are current liabilities and are not considered a significant financing component, as they are used to meet working capital requirements that are generally higher in the early stages of a contract and are intended to protect Quanta from the other party failing to meet its obligations under the contract. Contract assets and liabilities are recorded on a performance obligation basis at the end of each reporting period.

Contract assets and liabilities consisted of the following (in thousands):

	June 30, 2019	December 31, 2018
Contract assets	$ 683,665	$ 576,891
Contract liabilities	$ 471,214	$ 425,961

As referenced previously, contract assets and liabilities fluctuate period to period based on various factors, including, among others, changes in the number and size of projects in progress at period end and variability in billing and payment terms, such as up-front or advance billings, interim or milestone billings, or deferred billings. The increase in contract assets from December 31, 2018 to June 30, 2019 was partially due to billing process changes for certain customers that impacted Quanta's ability to timely invoice and collect for services performed. Additionally, a contract asset impairment of $29.4 million was recognized during the six months ended June 30, 2019 in connection with the charge to earnings recognized on the large telecommunications project in Peru.

Revenues were positively impacted by $10.3 million during the six months ended June 30, 2019 as a result of changes in estimates associated with performance obligations on fixed price contracts partially satisfied prior to December 31, 2018. During the six months ended June 30, 2019, Quanta recognized revenue of approximately $329 million related to contract liabilities outstanding at December 31, 2018.

Current and Long-Term Accounts Receivable, Notes Receivable and Allowance for Doubtful Accounts

Quanta provides an allowance for doubtful accounts when collection of an account or note receivable is considered doubtful, and receivables are written off against the allowance when deemed uncollectible. Inherent in the assessment of the allowance for doubtful accounts are certain judgments and estimates regarding, among other factors, the customer's access to capital, the customer's willingness or ability to pay, general economic and market conditions, the ongoing relationship with the customer and uncertainties related to the resolution of disputed matters. Quanta considers accounts receivable delinquent after 30 days but does not generally include delinquent accounts in its analysis of the allowance for doubtful accounts unless the accounts receivable have been outstanding for at least 90 days. Quanta also includes accounts receivable balances that relate to customers in bankruptcy or with other known difficulties in its analysis of the allowance for doubtful accounts. Material changes to a customer's business, cash flows or financial condition, which may be impacted by negative economic and market conditions, could affect Quanta's ability to collect amounts due. Should anticipated recoveries relating to receivables fail to materialize, including anticipated recoveries relating to existing bankruptcies or other workout situations, Quanta could experience reduced cash flows and losses in excess of current allowances provided. As of June 30, 2019 and December 31, 2018, Quanta had allowances for doubtful accounts on current receivables of $8.5 million and $5.8 million. See Note 11 for additional information related to the bankruptcy matter involving PG&E Corporation and its primary operating subsidiary, Pacific Gas and Electric Company (collectively PG&E), a significant customer of Quanta, which was filed in January 2019.

Long-term accounts receivable are included within "Other assets, net" in the accompanying condensed consolidated balance sheets. As of June 30, 2019 and December 31, 2018, long-term accounts receivable were $53.3 million and $25.9 million. Included in the June 30, 2019 balance was $41.2 million of pre-petition receivables due from PG&E, which were reclassified from current accounts receivable during the three months ended March 31, 2019, as further described in Note 11.

Certain contracts allow customers to withhold a small percentage of billings pursuant to retainage provisions, and such amounts are generally due upon completion of the contract and acceptance by the customer. Based on Quanta's experience with similar contracts in recent years, the majority of the retainage balances at each balance sheet date are expected to be collected within twelve months of such date. Current retainage balances as of June 30, 2019 and December 31, 2018 were $468.1 million and $337.1 million and are included in "Accounts receivable." Retainage balances with settlement dates beyond the next twelve months are included in "Other assets, net," and as of June 30, 2019 and December 31, 2018 were $34.3 million and $99.6 million.

Quanta recognizes unbilled receivables for non-fixed price contracts within "Accounts receivable" in certain circumstances, such as when revenues have been earned and recorded but the amount cannot be billed under the terms of the contract until a later date or amounts arise from routine lags in billing (for example, work completed one month but not billed until the next month). These balances do not include revenues recognized for work performed under fixed-price contracts, as these amounts are recorded as "Contract assets." At June 30, 2019 and December 31, 2018, unbilled receivables included in "Accounts receivable" were $605.5 million and $434.9 million. Quanta also recognizes unearned revenues for non-fixed price contracts when cash is received prior to recognizing revenues for the related performance obligation. Unearned revenues, which are included in "Accounts payable and accrued expenses," were $29.1 million and $40.1 million at June 30, 2019 and December 31, 2018.

Cash and Cash Equivalents

Amounts related to Quanta's cash and cash equivalents based on geographic location of the bank accounts were as follows (in thousands):

	June 30, 2019	December 31, 2018
Cash and cash equivalents held in domestic bank accounts	$ 52,432	$ 62,495
Cash and cash equivalents held in foreign bank accounts	20,924	16,192
Total cash and cash equivalents	$ 73,356	$ 78,687

Cash consisting of interest-bearing demand deposits is carried at cost, which approximates fair value. Quanta considers all highly liquid investments with an original maturity of three months or less at the time of purchase to be cash equivalents, which are carried at fair value. At June 30, 2019 and December 31, 2018, cash equivalents were $37.5 million and $37.2 million and consisted primarily of money market investments and money market mutual funds and are discussed further in *Fair Value Measurements* below.

Cash and cash equivalents held by joint ventures, which are either consolidated or proportionately consolidated, are available to support joint venture operations, but Quanta cannot utilize those assets to support its other operations. Quanta generally has no right to cash and cash equivalents held by a joint venture other than participating in distributions and in the event of dissolution. Amounts related to cash and cash equivalents held by joint ventures, which are included in Quanta's total cash and cash equivalents balances, were as follows (in thousands):

	June 30, 2019	December 31, 2018
Cash and cash equivalents held by domestic joint ventures	$ 7,927	$ 8,544
Cash and cash equivalents held by foreign joint ventures	15	441
Total cash and cash equivalents held by joint ventures	7,942	8,985
Cash and cash equivalents not held by joint ventures	65,414	69,702
Total cash and cash equivalents	$ 73,356	$ 78,687

Goodwill

Goodwill, net of accumulated impairment losses, represents the excess of cost over the fair market value of net tangible and identifiable intangible assets of acquired businesses and is stated at cost. Goodwill is not amortized but is tested for impairment annually, or more frequently if events or circumstances indicate that the carrying amount of goodwill may be impaired. Quanta has recorded goodwill in connection with its historical acquisitions of businesses. Upon acquisition, these businesses were either combined into one of Quanta's existing operating units or managed on a stand-alone basis as an individual operating unit. Quanta's operating units are organized into two divisions: the Electric Power Infrastructure Services Division and the Pipeline and Industrial Infrastructure Services Division. As most of the companies acquired by Quanta provide multiple types of services for multiple types of customers, these divisional designations are based on the predominant type of work performed by an operating unit at the point in time the divisional designation is made. Goodwill is required to be measured for impairment at the reporting unit level, which represents the operating segment level or one level below the operating segment level for which discrete financial information is available. Quanta has determined that its individual operating units represent its reporting units for the purpose of assessing goodwill impairment.

An annual assessment for impairment is performed for each reporting unit that carries a balance of goodwill in the fourth quarter of the fiscal year, or more frequently if events or circumstances arise which indicate that goodwill may be impaired. The assessment can be performed by first completing a qualitative assessment on none, some or all of Quanta's reporting units. Quanta can also bypass the qualitative assessment for any reporting unit in any period and proceed directly to a quantitative impairment test, and then resume the qualitative assessment in any subsequent period. Qualitative indicators that may trigger the need for annual or interim quantitative impairment testing include, among other things, deterioration in macroeconomic conditions, declining financial performance, deterioration in the operational environment, or an expectation of selling or disposing of a portion of a reporting unit. Additionally, a significant change in business climate, a loss of a significant customer, increased competition, a sustained decrease in share price, or a decrease in Quanta's market capitalization below book value may trigger the need for interim impairment testing of goodwill associated with one or more of Quanta's reporting units.

If Quanta believes that, as a result of its qualitative assessment, it is more likely than not that the fair value of a reporting unit is less than its carrying amount, the quantitative impairment test is required. The quantitative test involves comparing the fair value of each of Quanta's reporting units with its carrying amount, including goodwill. If the carrying amount of a reporting unit exceeds its fair value, an impairment loss is recorded as a reduction to goodwill with a corresponding charge to "Asset impairment charges" in the condensed consolidated statements of operations. The income tax effect associated with an impairment of tax deductible goodwill is also considered in the measurement of the goodwill impairment. A goodwill impairment for any reporting unit is limited to the total amount of goodwill allocated to such reporting unit.

Quanta determines the fair value of its reporting units using a weighted combination of the income approach (discounted cash flow method) and market multiples valuation techniques (market guideline transaction method and market guideline public company method), with greater weight placed on the discounted cash flow method because management believes this method results in the most appropriate calculation of fair value and reflects an expectation of market value as determined by a "held and used" model.

Under the discounted cash flow method, Quanta determines fair value based on the estimated future cash flows for each reporting unit, discounted to present value using a risk-adjusted industry weighted average cost of capital, which reflects the overall level of inherent risk for each reporting unit and the rate of return an outside investor would expect to earn. Cash flow projections are derived from budgeted amounts (typically a one-year model) and subsequent period cash flows are developed for each reporting unit using growth rates that management believes are reasonably likely to occur. A terminal value is derived from a multiple of the reporting unit's earnings before interest, taxes, depreciation and amortization (EBITDA). The EBITDA multiples for each reporting unit are based on observed purchase transactions for similar businesses adjusted for size, volatility and risk.

Under the market guideline transaction and market guideline public company methods, Quanta determines the estimated fair value for each of its reporting units by applying transaction multiples and public company multiples, respectively, to each reporting unit's projected EBITDA and then averaging that estimate with similar historical calculations using either a one, two or three year average. The transaction multiples are based on observed purchase transactions for similar businesses adjusted for size, volatility and risk. The public company multiples are based on peer group multiples adjusted for size, volatility and risk. For the market guideline public company method, Quanta adds a reasonable control premium, which is estimated as the premium that would be appropriate to convert the reporting unit value to a controlling interest basis.

For Quanta's annual goodwill impairment assessment performed during the fourth quarter of 2018, Quanta assessed qualitative factors to determine whether it was necessary to perform a quantitative fair value impairment analysis and identified certain reporting units for which a quantitative goodwill impairment assessment was deemed appropriate based on either changes in market conditions or specific performance indicators. The subsequent quantitative analyses indicated that the fair value of each of the selected reporting units was in excess of its carrying amount. Accordingly, Quanta did not record any impairment charges related to goodwill during the fourth quarter of 2018.

Although no goodwill impairment charges were recorded during the year ended December 31, 2018, the determination of a reporting unit's fair value requires judgment and the use of significant estimates and assumptions. Quanta believes the estimates and assumptions used in its impairment assessments are reasonable and based on available market information obtained from relevant industry sources; however, variations in any of the assumptions could result in materially different calculations of fair value and impairment determinations. Accordingly, management considered the sensitivity of its fair value estimates to changes in certain valuation assumptions. After taking into account a 10% decrease in the fair value of the reporting units for which a quantitative impairment test was performed, two reporting units within Quanta's Pipeline and Industrial Infrastructure Services Division would have fair values below their carrying amounts. One of the reporting units is a material handling services business, and the other reporting unit operates within the midstream and smaller-scale pipeline market. Goodwill and intangible assets associated with these two reporting units were $49.0 million and $9.7 million at June 30, 2019.

If an operating unit experiences prolonged periods of declining revenues, operating margins or both, it may be at risk of failing the quantitative goodwill impairment test. The reporting units referenced above have experienced declines over the short-term due to challenging macroeconomic conditions in certain geographic areas and low oil and natural gas prices, which have negatively impacted customer spending and resulted in project cancellations and delays. Additionally, customer capital spending has been constrained as a result of an increasingly complex regulatory and permitting environment. Quanta monitors these conditions and others to determine if it is necessary to perform the quantitative fair value impairment test for one or more operating units prior to the annual impairment assessment.

Due to the cyclical nature of Quanta's business, and the other factors described above, the profitability of its individual reporting units may suffer from decreases in customer demand and other factors. These factors may have a disproportionate impact on the individual reporting units as compared to Quanta as a whole and might adversely affect the fair value of individual reporting units. If material adverse conditions occur that impact Quanta's reporting units, its future estimates of fair value may not support the carrying amount of one or more of Quanta's reporting units, and the related goodwill would need to be written down to an amount considered recoverable.

Other Intangible Assets

Quanta's intangible assets include customer relationships, backlog, trade names, non-compete agreements, patented rights and developed technology and curriculum, all of which are subject to amortization, as well as an engineering license, which is not subject to amortization. The value of customer relationships is estimated as of the date a business is acquired based on the value-in-use concept utilizing the income approach, specifically the multi-period excess earnings method. This analysis discounts to present value the projected cash flows attributable to the customer relationships, with consideration given to customer contract renewals and estimated customer attrition rates.

The following table presents the significant estimates used by management in determining the fair values of customer relationships associated with acquisitions in the six months ended June 30, 2019 and year ended December 31, 2018:

	2019	2018
Discount rates	21%	20% to 27%
Customer attrition rates	27%	20% to 33%

Quanta values backlog for acquired businesses as of the acquisition date based upon the contractual nature of the backlog within each service line, discounted to present value. The values of trade names and curriculum are estimated using the relief-from-royalty method of the income approach, which is based on the assumption that in lieu of ownership, a company would be willing to pay a royalty for use of the trade name and curriculum. The value of a non-compete agreement is estimated based on the difference between the present value of the prospective cash flows with the agreement in place and the present value of the prospective cash flows without the agreement in place. The value of the engineering license is based on cash paid to acquire the asset.

Quanta amortizes the intangible assets that are subject to amortization based upon the estimated consumption of their economic benefits, or on a straight-line basis if the pattern of economic benefit cannot otherwise be reliably estimated. Intangible assets are reviewed for impairment and tested for recoverability whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. For instance, a significant change in business climate or a loss of a significant customer, among other things, may trigger the need for interim impairment testing of intangible assets. An impairment loss is recognized if the carrying amount of an intangible asset is not recoverable and its carrying amount exceeds its fair value. Intangible asset impairments are included within "Asset impairment charges" in the condensed consolidated statements of operations, when applicable.

Leases

As described further in Note 3, effective January 1, 2019, Quanta adopted the new lease accounting standard utilizing the transition method that allows entities to apply the new standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption, if applicable. Quanta's financial results for reporting periods after January 1, 2019 are presented under the new standard, while financial results for prior periods continue to be reported in accordance with the prior standard and Quanta's historical accounting policy. The adoption of the new standard resulted in the recording of operating lease right-of-use assets and operating lease liabilities of $301.1 million as of January 1, 2019. Lease liabilities are recognized as the present value of the future minimum lease payments over the lease term as of the commencement date. Lease assets are recognized as the present value of future minimum lease payments over the lease term as of the commencement date, plus any initial direct costs incurred and lease payments made, less any lease incentives received. Although the adoption of the new standard had a material impact on Quanta's consolidated balance sheet, there was not a material impact on its consolidated statements of operations, comprehensive income, cash flows or equity.

Quanta determines if an arrangement contains a lease at inception. If an arrangement is considered a lease, Quanta determines whether the lease is an operating or finance lease at the commencement of the lease. In accordance with the new standard, finance leases are leases that meet any of the following criteria: the lease transfers ownership of the underlying asset at the end of the lease term; the lessee is reasonably certain to exercise an option to purchase the underlying asset; the lease term is for the major part of the remaining economic life of the underlying asset (except when the commencement date falls at or near the end of such economic life); the present value of the sum of the lease payments and any additional residual value guarantee by the lessee equals or exceeds substantially all of the fair value of the underlying asset; or the underlying asset is of such a specialized nature that it is expected to have no alternative use to the lessor at the end of the lease term. A lease that does not meet any of these criteria is considered an operating lease. After the commencement date, lease cost for an operating lease is recognized over the remaining lease term on a straight-line basis, while lease cost for a finance lease is based on the depreciation of the lease asset and interest on the lease liability.

The terms of Quanta's lease arrangements vary, and certain leases include one or more of the following: renewal option(s), a cancellation option, a residual value guarantee, a purchase option or an escalation clause. An option to extend or terminate a lease is accounted for when assessing a lease term when it is reasonably certain that Quanta will exercise such option. Quanta has made a policy election to classify leases with an initial lease term of 12 months or less as short-term leases, and these leases are not recorded in the accompanying condensed consolidated balance sheets unless the lease contains a purchase option that is reasonably certain to be exercised. Lease cost related to short-term leases is recognized on a straight-line basis over the lease term.

Determinations with respect to lease term (including any extension thereof), discount rate, variable lease cost and future minimum lease payments require the use of judgment based on the facts and circumstances related to each lease. Quanta considers various factors, including economic incentives, intent, past history and business need, to determine the likelihood that a renewal option will be exercised. Unless a renewal option is reasonably certain to be exercised, which is typically at Quanta's sole discretion, the initial non-cancelable lease term is used. Quanta generally uses its incremental borrowing rates to determine the present value of future minimum lease payments.

Investments in Affiliates and Other Entities

In the normal course of business, Quanta enters into various types of investment arrangements, each having unique terms and conditions. These investments may include equity interests held by Quanta in business entities, including general or limited partnerships, contractual joint ventures, or other forms of equity or profit participation. These investments may also include Quanta's participation in different financing structures, such as the extension of loans to project-specific entities, the acquisition of convertible notes issued by project specific entities, or other strategic financing arrangements. Quanta also enters into strategic partnerships with customers and infrastructure investors to provide fully integrated infrastructure services on certain projects, including planning and feasibility analyses, engineering, design, procurement, construction and project operation and maintenance. These projects include public-private partnerships and concessions, along with private infrastructure projects such as build, own, operate (and in some cases transfer) and build-to-suit arrangements.

Quanta determines whether investments involve a variable interest entity (VIE) based on the characteristics of the subject entity. If the entity is determined to be a VIE, then management determines if Quanta is the primary beneficiary of the entity and whether or not consolidation of the VIE is required. The primary beneficiary consolidating the VIE must normally have both (i) the power to direct the activities that most significantly affect the VIE's economic performance and (ii) the obligation to absorb significant losses of or the right to receive significant benefits from the VIE. When Quanta is deemed to be the primary beneficiary, the VIE is consolidated and the other party's equity interest in the VIE is accounted for as a non-controlling interest. In cases where Quanta determines that it has an undivided interest in the assets, liabilities, revenues and profits of an unincorporated VIE (e.g., a general partnership interest), such amounts are consolidated on a basis proportional to Quanta's ownership interest in the unincorporated entity.

Investments in entities of which Quanta is not the primary beneficiary, but over which Quanta has the ability to exercise significant influence, are accounted for using the equity method of accounting. Quanta's share of net income or losses from unconsolidated equity investments is reported as equity in earnings (losses) of unconsolidated affiliates, which is included in "Other income (expense), net" in the accompanying condensed consolidated statements of operations. Equity investments are reviewed for impairment by assessing whether there has been a decline in the fair value of the investment below the carrying amount and the decline is other-than-temporary. In making this determination, factors such as the ability to recover the carrying amount of the investment and the inability of the investee to sustain its earnings capacity are evaluated in determining whether a loss in value should be recognized. Any impairment losses related to investments would be recognized in equity in earnings (losses) of unconsolidated affiliates. Equity method investments are carried at original cost adjusted for Quanta's proportionate share of the investees' income, losses and distributions and are included in "Other assets, net" in the accompanying condensed consolidated balance sheets.

Investments in entities which Quanta is not the primary beneficiary, and over which Quanta does not have the ability to exercise significant influence, are accounted for using the cost method of accounting. These investments are required to be measured at fair value, with changes in fair value recognized in net income, unless the investments do not have readily determinable fair values, in which case the investments are measured at cost minus impairment, if any, plus or minus observable price changes in orderly transactions for an identical or similar investment in the same company.

As part of Quanta's investment strategy, Quanta formed a partnership with select investors that provides up to $1.0 billion of capital, including approximately $80.0 million from Quanta, available to invest in certain of these infrastructure projects through

August 2024. Wholly owned subsidiaries of Quanta serve as the general partner of this partnership and as a separately operated registered investment adviser that manages the invested capital. As of June 30, 2019, Quanta had contributed $15.1 million to this partnership in connection with certain investments and the payment of management fees.

Quanta has a minority ownership interest in a limited partnership that was selected during 2014 to build, own and operate a new 500 kilometer electric transmission line and two 500 kV substations in Alberta, Canada and has accounted for this interest as an equity-method investment. The limited partnership contracted with a Quanta subsidiary to perform the engineering, procurement and construction (EPC) services for the project, and the Quanta subsidiary recognized revenue and related cost of services as performance progressed on the project. However, due to Quanta's ownership interest, a proportional amount of the EPC profit was deferred until the electric transmission line and related substations were constructed and ownership of the assets were deemed to be transferred to the third party customer, which occurred in the three months ended March 31, 2019. The deferral of earnings and recognition of such earnings deferral were recorded as components of equity in earnings (losses) of unconsolidated affiliates, which is included in "Other income (expense), net" in the accompanying condensed consolidated statements of operations. During the three months ended March 31, 2019, deferred earnings of $60.3 million were recognized, the majority of which was attributable to profit earned and deferred in the years ended December 31, 2018 and 2017. During the three months ended June 30, 2019, Quanta entered into a definitive agreement to sell its interest in the limited partnership. The sale is expected to close in the fourth quarter of 2019 or early 2020, subject to receipt of regulatory approvals and satisfaction of customary closing conditions.

During 2018, Quanta acquired a 30% equity interest in a water and gas pipeline infrastructure contractor located in Australia for $22.2 million. This investment includes an option to acquire the remaining equity of the company through 2020 and provides for certain additional earnings and distribution participation rights during a designated 25-month post-investment period, as well as preferential liquidation rights. Quanta's equity interest has been recorded at cost and will be adjusted for impairment, if any, plus or minus observable changes in the value of the company's equity. Earnings on this investment are recognized as dividends are received and are reported in "Other income (expense), net" in the accompanying condensed consolidated statements of operations. Quanta received and recognized $3.9 million in cash dividends from this investment during 2018. During 2018, Quanta also acquired a 49% equity interest in an electric power infrastructure services company, together with certain related customer relationship and other intangible assets, for $12.3 million. See Notes 9 and 11 for additional information related to investments.

Income Taxes

Quanta follows the liability method of accounting for income taxes. Under this method, deferred tax assets and liabilities are recorded based on future tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that are expected to be in effect when the underlying assets or liabilities are recovered or settled.

Quanta regularly evaluates valuation allowances established for deferred tax assets for which future realization is uncertain, including in connection with changes in tax laws. The estimation of required valuation allowances includes estimates of future taxable income. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Quanta considers projected future taxable income and tax planning strategies in making this assessment. If actual future taxable income differs from these estimates, Quanta may not realize deferred tax assets to the extent estimated.

Quanta records reserves for income taxes related to certain tax positions when management considers it more likely than not that additional taxes may be due in excess of amounts reflected on income tax returns filed. When recording these reserves, Quanta assumes that taxing authorities have full knowledge of the position and all relevant facts. Quanta continually reviews exposure to additional tax obligations, and as further information is known or events occur, changes in tax reserves may be recorded. To the extent interest and penalties may be assessed by taxing authorities on any underpayment of income tax, such amounts have been accrued and included in the provision for income taxes.

As of June 30, 2019, the total amount of unrecognized tax benefits relating to uncertain tax positions was $40.6 million, a $0.5 million decrease from December 31, 2018. This decrease resulted primarily from a favorable settlement of $3.6 million related to certain non-U.S. income tax obligations of an acquired business and the expiration of U.S. state income tax statutes, partially offset by a $3.1 million increase in reserves for uncertain tax positions expected to be taken in 2019. Quanta and certain subsidiaries remain under examination by various U.S. state and Canadian and other foreign tax authorities for multiple periods. Quanta believes it is reasonably possible that within the next 12 months unrecognized tax benefits may decrease by up to $5.9 million as a result of settlement of these examinations or as a result of the expiration of certain statute of limitations periods.

U.S. federal and state and foreign income tax laws and regulations are voluminous and often ambiguous. As such, Quanta is required to make many subjective assumptions and judgments regarding its tax positions that could materially affect amounts recognized in future consolidated balance sheets, statements of operations and statements of comprehensive income. For example, the Tax Cuts and Jobs Act of 2017 significantly revised the U.S. corporate tax regime which, among other things, resulted in a reduction of Quanta's current and estimated future effective tax rate and a remeasurement of its deferred tax assets and liabilities.

Earnings Per Share

Basic and diluted earnings per share attributable to common stock are computed using the weighted average number of shares of common stock outstanding during the applicable period. Exchangeable shares that were issued pursuant to certain of Quanta's historical acquisitions (as further discussed in Note 9), which are exchangeable on a one-for-one basis with shares of Quanta common stock, have been included in the calculation of weighted average shares outstanding for basic and diluted earnings per share attributable to common stock for the portion of the periods that they were outstanding. Additionally, unvested stock-based awards that contain non-forfeitable rights to dividends or dividend equivalents (participating securities) have been included in the calculation of basic and diluted earnings per share attributable to common stock for the portion of the periods that the awards were outstanding. Diluted earnings per share attributable to common stock is computed using the weighted average number of shares of common stock outstanding during the period adjusted for all potentially dilutive common stock equivalents, except in cases where the effect of the common stock equivalents would be antidilutive.

Insurance

Quanta is insured for employer's liability, workers' compensation, auto liability and general liability claims. Under its third-party insurance programs, the deductible for employer's liability is $1.0 million per occurrence, the deductible for workers' compensation is $5.0 million per occurrence, and the deductibles for auto liability and general liability are $10.0 million per occurrence. Quanta manages and maintains a portion of its casualty risk through its wholly-owned captive insurance company, including claims up to the deductibles under its third-party insurance programs. Quanta also has employee health care benefit plans for most employees not subject to collective bargaining agreements, of which the primary plan is subject to a deductible of $0.5 million per claimant per year.

Losses under all of these insurance programs are accrued based upon Quanta's estimate of the ultimate liability for claims reported and an estimate of claims incurred but not reported, with assistance from third-party actuaries. These insurance liabilities are difficult to assess and estimate due to unknown factors, including the severity of an injury, the extent of damage, the determination of Quanta's liability in proportion to other parties and the number of incidents not reported. The accruals are based upon known facts and historical trends, and management believes such accruals are adequate.

Collective Bargaining Agreements

Certain of Quanta's operating units are parties to collective bargaining agreements with unions that represent certain of their employees. The collective bargaining agreements expire at various times and have typically been renegotiated and renewed on terms similar to those in the expiring agreements. The agreements require the operating units to pay specified wages, provide certain benefits to union employees and contribute certain amounts to multiemployer pension plans and employee benefit trusts pursuant to specified rates. Quanta's multiemployer pension plan contribution rates generally are made to the plans on a "pay-as-you-go" basis based on its union employee payrolls. The location and number of union employees that Quanta employs at any given time and the plans in which they may participate vary depending on Quanta's need for union resources in connection with its ongoing projects. Therefore, Quanta is unable to accurately predict its union employee payroll and the resulting multiemployer pension plan contribution obligations for future periods.

Stock-Based Compensation

Quanta recognizes compensation expense for restricted stock units (RSUs) and performance stock units (PSUs) to be settled in common stock based on the fair value of the awards, net of estimated forfeitures. The fair value of these awards is generally determined based on the number of shares or units granted and the closing price of Quanta's common stock on the date of grant. However, for PSUs with market-based performance metrics, the fair value is determined using a Monte Carlo simulation valuation methodology. An estimate of future forfeitures, based on historical data, is also utilized to determine compensation expense for the period, and these forfeiture estimates are subject to change and may impact the value that will ultimately be recognized as compensation expense. The resulting compensation expense for PSU and time-based RSU awards is recognized on a straight-line basis over the requisite service period, which is generally the vesting period, and the resulting compensation expense for performance-based RSU awards is recognized using the graded vesting method over the requisite service period. The compensation expense related to outstanding PSUs can also vary from period to period based on changes in forecasted achievement of established performance goals and the total number of shares of common stock that Quanta anticipates will be issued upon vesting of such PSUs. Payments made by Quanta to satisfy employee tax withholding obligations associated with awards settled in common stock are classified as financing cash flows.

Compensation expense associated with liability-based awards, such as RSUs that are expected to or may settle in cash, is recognized based on a remeasurement of the fair value of the award at the end of each reporting period. Upon settlement, the holders receive for each RSU an amount in cash equal to the fair market value of one share of Quanta common stock on the settlement date, as specified in the applicable award agreement. For additional information on Quanta's RSU and PSU awards, see Note 10.

Functional Currency and Translation of Financial Statements

The U.S. dollar is the functional currency for the majority of Quanta's operations, which are primarily located within the United States. The functional currency for Quanta's foreign operations, which are primarily located in Canada, Australia and Latin America, is typically the currency of the country where the foreign operating unit is located and transacts the majority of its activities, including billings, financing, payroll and other expenditures. When preparing its consolidated financial statements, Quanta translates the financial statements of its foreign operating units from their functional currency into U.S. dollars. Statements of operations, comprehensive income and cash flows are translated at average monthly rates, while balance sheets are translated at month-end exchange rates. The translation of the balance sheet results in translation gains or losses, which are included as a separate component of equity under "Accumulated other comprehensive income (loss)." Gains and losses arising from transactions not denominated in functional currencies are included within "Other income (expense), net" in the accompanying condensed consolidated statements of operations.

Comprehensive Income

Components of comprehensive income include all changes in equity during a period except those resulting from changes in Quanta's capital-related accounts. Quanta records other comprehensive income (loss) for foreign currency translation adjustments related to its foreign operations and for other revenues, expenses, gains and losses that are included in comprehensive income but excluded from net income.

Litigation Costs and Reserves

Quanta records reserves when the likelihood of incurring a loss is probable and the amount of loss can be reasonably estimated. Costs incurred for litigation are expensed as incurred. See Note 11 for additional information related to legal proceedings and other contingencies.

Fair Value Measurements

For disclosure purposes, qualifying assets and liabilities are categorized into three broad levels based on the priority of the inputs used to determine their fair values. The fair value hierarchy gives the highest priority to quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). Certain assumptions and other information as they relate to these qualifying assets and liabilities are described below.

Contingent Consideration Liabilities. As of June 30, 2019 and December 31, 2018, financial instruments required to be measured at fair value on a recurring basis consisted primarily of Quanta's liabilities related to contingent consideration associated with certain acquisitions, the payment of which is contingent upon the achievement of certain performance objectives by the acquired businesses during post-acquisition periods and, if earned, would be payable to the former owners of the acquired businesses. The liabilities recorded represent the estimated fair values of future amounts payable to the former owners of the acquired businesses and are estimated by management based on entity-specific assumptions that are evaluated on an ongoing basis. As of June 30, 2019 and December 31, 2018, the aggregate fair value of these outstanding and unearned contingent consideration liabilities totaled $75.0 million and $70.8 million, all of which was included in "Insurance and other non-current liabilities" in the accompanying condensed consolidated balance sheets. Quanta expects a significant portion of these liabilities to be settled by late 2020 or early 2021. The fair values of these liabilities were primarily determined using a Monte Carlo simulation valuation methodology based on probability-weighted performance projections and other inputs, including a discount rate and an expected volatility factor for each acquisition. The expected volatility factors ranged from 22.2% to 30.0% based on historical asset volatility of selected guideline public companies. Depending on contingent consideration payment terms, the present values of the estimated payments are discounted based on a risk-free rate and/or Quanta's cost of debt, ranging from 2.1% to 3.9%. The fair value determinations incorporate significant inputs not observable in the market. Accordingly, the level of inputs used for these fair value measurements is the lowest level (Level 3). Significant changes in any of these assumptions could result in a significantly higher or lower potential liability.

The majority of Quanta's contingent consideration liabilities are subject to a maximum payment amount, which aggregated to $153.0 million as of June 30, 2019. One contingent consideration liability is not subject to a maximum payout amount, and that liability had a fair value of $1.0 million as of June 30, 2019.

Quanta's aggregate contingent consideration liabilities can change due to additional business acquisitions, settlement of outstanding liabilities, changes in the fair value of amounts owed based on forecasted performance in post-acquisition periods and accretion in present value. During the three and six months ended June 30, 2019, Quanta recognized net increases in the fair value of its aggregate contingent consideration liabilities of $4.4 million and $4.3 million. During the three and six months ended June 30, 2018, Quanta recognized net decreases in the fair value of its aggregate contingent consideration liabilities of $6.3 million. These changes are reflected in "Change in fair value of contingent consideration liabilities" in the accompanying condensed consolidated statements of operations.

Goodwill and Other Intangible Assets. As discussed in the *Goodwill* and *Other Intangible Assets* sections within this Note 2 above, Quanta has recorded goodwill and identifiable intangible assets in connection with certain of its historical business acquisitions. Quanta utilizes the fair value premise as the primary basis for its impairment valuation procedures. The *Goodwill* and *Other Intangible Assets* sections provide information regarding valuation methods, including the income approach, market approach and cost approach, and assumptions used to determine the fair value of these assets based on the appropriateness of each method in relation to the type of asset being valued. Quanta believes that these valuation methods appropriately represent the methods that would be used by other market participants in determining fair value, and periodically engages the services of an independent valuation firm when a new business is acquired to assist management with the valuation process, including assistance with the selection of appropriate valuation methodologies and the development of market-based valuation assumptions. The level of inputs used for these fair value measurements is the lowest level (Level 3).

Investments and Financial Instruments. Quanta also uses fair value measurements in connection with the valuation of its investments in private company equity interests and financial instruments. These valuations require significant management judgment due to the absence of quoted market prices, the inherent lack of liquidity and their long-term nature. Typically, the initial costs of these investments are considered to represent fair market value, as such amounts are negotiated between willing market participants. On a quarterly basis, Quanta performs an evaluation of its investments to determine if an other-than-temporary decline in the value of each investment has occurred and whether the recorded amount of each investment will be recoverable. If an other-than-temporary decline in the value of an investment occurs, a fair value analysis is performed to determine the degree to which the investment is impaired and a corresponding charge to earnings is recorded during the period. These types of fair market value assessments are similar to other nonrecurring fair value measures used by Quanta, which include the use of significant judgments and available relevant market data. Such market data may include observations of the valuation of comparable companies, risk-adjusted discount rates and an evaluation of the expected performance of the underlying portfolio asset, including historical and projected levels of profitability or cash flows. In addition, a variety of additional factors may be reviewed by management, including, but not limited to, contemporaneous financing and sales transactions with third parties, changes in market outlook and the third-party financing environment. The level of inputs used for these fair value measurements is the lowest level (Level 3).

Other. The carrying amounts of cash equivalents, accounts receivable and accounts payable and accrued expenses approximate fair value due to the short-term nature of these instruments. All of Quanta's cash equivalents were categorized as Level 1 assets at June 30, 2019 and December 31, 2018, as all values were based on unadjusted quoted prices for identical assets in an active market that Quanta has the ability to access. The carrying amount of variable rate debt also approximates fair value.

3. NEW ACCOUNTING PRONOUNCEMENTS:

Adoption of New Accounting Pronouncements

In February 2016, the Financial Accounting Standards Board (FASB) issued an update that requires the recognition of operating lease right-of-use assets and corresponding lease liabilities on an entity's balance sheet. Effective January 1, 2019, Quanta adopted the new lease accounting standard utilizing the transition method that allows entities to apply the new standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption, if applicable. Quanta's financial results for reporting periods after January 1, 2019 are presented under the new standard, while financial results for prior periods continue to be reported in accordance with the prior standard and Quanta's historical accounting policy. The adoption of the new standard resulted in the recording of operating lease right-of-use assets and operating lease liabilities of $301.1 million as of January 1, 2019. Although the adoption of the new standard had a material impact on Quanta's consolidated balance sheet, there was not a material impact on its consolidated statements of operations, comprehensive income, cash flows or equity. Additionally, the adoption of this standard did not have a material impact on Quanta's debt covenant compliance under its senior secured credit facility.

Quanta elected certain practical expedients that, among other things, permit the identification and classification of leases in accordance with the previous guidance. Additionally, certain of Quanta's real estate and equipment arrangements contain both lease and non-lease components (e.g., maintenance services). Quanta elected the practical expedient that allows an entity to not separate lease components from their associated non-lease components for such arrangements and accounted for both lease and non-lease components under the new standard. Quanta also made an accounting policy election allowed under the new standard whereby leases with terms of twelve months or less are not recorded on the balance sheet unless they contain a purchase option that is reasonably certain to be exercised. The new lease standard requires new disclosures that are designed to enable users of financial statements to assess the amount, timing, and uncertainty of cash flows arising from leases, which are included in Notes 2, 8 and 13. Quanta implemented new internal controls related to the preparation of financial information necessary for adoption of the new standard.

In August 2017, the FASB issued an update that amends and simplifies existing guidance for presenting the economic effects of risk management activities in an entity's financial statements. The update is effective for interim and annual periods beginning after December 15, 2018. The amended presentation and disclosure guidance is required only prospectively, but certain amendments, if applicable, could require a cumulative-effect adjustment. Quanta adopted the new standard effective January 1, 2019; however, as of June 30, 2019, Quanta had no outstanding hedging relationships or other activities covered by the update.

Accounting Standards Not Yet Adopted

In June 2016, the FASB issued an update for measuring credit losses on most financial assets and certain other instruments that are not measured at fair value through net income. The update amends the impairment model to utilize an expected loss methodology in place of the incurred loss methodology for financial instruments, including trade receivables, and off-balance sheet credit exposures. The amendment requires entities to consider a broader range of information to estimate expected credit losses, which may result in earlier recognition of losses. The update will also require disclosure of information regarding how a company developed its allowance, including changes in the factors that influenced management's estimate of expected credit losses and the reasons for those changes. Companies will apply this standard's provisions as a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. The new standard is effective for interim and annual reporting periods beginning after December 15, 2019. Quanta is evaluating the potential impact of this guidance on its consolidated financial statements and will adopt the guidance effective January 1, 2020.

In August 2018, the FASB issued an update that amends the disclosure requirements related to fair value measurements. Pursuant to this update, certain disclosure requirements will be removed, such as the valuation processes for Level 3 fair value measurements, and other disclosure requirements will be modified or added, including a new requirement to disclose the range and weighted average (or a more reasonable and rational method to reflect the distribution) of significant unobservable inputs used to develop Level 3 fair value measurements. This update is effective for interim and annual periods beginning after December 15, 2019, and certain amendments should be applied prospectively, while other amendments should be applied retrospectively. Quanta is evaluating the potential impact of this guidance on its consolidated financial statements and will adopt the guidance effective January 1, 2020.

4. ACQUISITIONS:

During the six months ended June 30, 2019, Quanta acquired an electric power specialty contracting business located in the United States that provides aerial power line and construction support services and an electrical infrastructure services business located in Canada. The aggregate consideration for these acquisitions was $53.3 million paid or payable in cash. The results of the acquired businesses have generally been included in Quanta's Electric Power Infrastructure Services segment and consolidated financial statements beginning on the acquisition dates.

During the year ended December 31, 2018, Quanta acquired an electrical infrastructure services business specializing in substation construction and relay services, a postsecondary educational institution that provides training and programs for workers in the industries Quanta serves, and two communications infrastructure services businesses, all of which are located in the United States. The aggregate consideration for these acquisitions was $108.3 million paid or payable in cash, subject to certain adjustments, and 679,668 shares of Quanta common stock, which had a fair value of approximately $22.9 million as of the respective acquisition dates. Additionally, the acquisitions of the postsecondary educational institution and one of the communications infrastructure services businesses include the potential payment of up to $18.0 million of contingent consideration, payable if the acquired businesses achieve certain performance objectives over five- and three-year post-acquisition periods. Based on the estimated fair value of the contingent consideration, Quanta recorded $16.5 million of liabilities as of the respective acquisition dates. The results of the acquired businesses have generally been included in Quanta's Electric Power Infrastructure Services segment and have been included in Quanta's consolidated financial statements beginning on the respective acquisition dates.

Quanta is finalizing its fair value assessments for the acquired assets and assumed liabilities related to businesses acquired subsequent to June 30, 2018, and further adjustments to the purchase price allocations may occur. As of June 30, 2019, the estimated fair values of the net assets acquired were preliminary, with possible updates primarily related to certain tax estimates. The aggregate consideration paid for businesses acquired between June 30, 2018 and June 30, 2019 was allocated to acquired assets and assumed liabilities, which resulted in an allocation of $49.1 million to net tangible assets, $39.9 million to identifiable intangible assets and $35.8 million to goodwill.

The following table summarizes the aggregate consideration paid or payable as of June 30, 2019 for the acquisitions completed in 2019 and 2018 and presents the allocation of these amounts to net tangible and identifiable intangible assets based on their estimated fair values as of the respective acquisition dates, inclusive of any purchase price adjustments. These allocations require significant use of estimates and are based on information that was available to management at the time these consolidated financial statements were prepared. Quanta uses a variety of information to estimate fair values, including quoted market prices, carrying amounts and valuation techniques such as discounted cash flows. When deemed appropriate, third-party appraisal firms are engaged to assist in fair value determination of fixed assets, intangible assets and certain other assets and liabilities (in thousands).

	2019	2018
Consideration:		
Cash paid or payable	$ 53,345	$ 108,307
Value of Quanta common stock issued	—	22,882
Contingent consideration	—	16,471
Fair value of total consideration transferred or estimated to be transferred	$ 53,345	$ 147,660
Accounts receivable	$ 12,006	$ 18,405
Contract assets	2,223	1,905
Other current assets	6,177	8,484
Property and equipment	24,042	23,674
Other assets	5	576
Identifiable intangible assets	7,337	52,364
Contract liabilities	—	(175)
Other current liabilities	(10,213)	(11,205)
Deferred tax liabilities, net	(7,002)	(4,208)
Total identifiable net assets	34,575	89,820
Goodwill	21,909	57,840
Fair value of net assets acquired	56,484	147,660
Bargain purchase gain	(3,139)	—
Fair value of total consideration transferred or estimated to be transferred	$ 53,345	$ 147,660

Goodwill represents the amount by which the purchase price for an acquired business exceeds the net fair value of the assets acquired and liabilities assumed, while bargain purchase gains result when the amount of the net fair value of the assets acquired and liabilities assumed exceeds the purchase price for an acquired business.

The acquisition of the electrical infrastructure services business in Canada that occurred during the three months ended June 30, 2019 included the recognition of a bargain purchase gain, net of taxes, of $3.1 million. The $3.1 million gain was recorded in "Other income (expense), net" in the accompanying condensed consolidated statements of operations.

The acquisitions completed in 2019 and 2018 strategically expanded Quanta's domestic electric power and communications service offerings, which Quanta believes contributes to the recognition of the goodwill. No goodwill is expected to be deductible for income tax purposes related to acquisitions completed in 2019, and $21.6 million is expected to be deductible for income tax purposes related to acquisitions completed in 2018.

The following table summarizes the estimated fair values of identifiable intangible assets for the acquisitions completed in 2019 as of the acquisition dates and the related weighted average amortization periods by type (in thousands, except for weighted average amortization periods, which are in years).

	Estimated Fair Value	Weighted Average Amortization Period in Years
Customer relationships	$ 3,996	5.0
Backlog	1,058	1.0
Trade names	908	15.0
Non-compete agreements	1,375	3.0
Total intangible assets subject to amortization related to the 2019 acquisitions	$ 7,337	5.3

The following unaudited supplemental pro forma results of operations for Quanta, which incorporates the acquisitions completed in 2019 and 2018, have been provided for illustrative purposes only and do not purport to be indicative of the actual results that would have been achieved by the combined companies for the periods presented or that may be achieved by the combined companies in the future. Future results may vary significantly from the results reflected in the following pro forma financial information because of future events and transactions, as well as other factors (in thousands, except per share amounts):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Revenues	$ 2,848,012	$ 2,698,755	$ 5,667,910	$ 5,162,994
Gross profit	$ 320,092	$ 344,753	$ 685,452	$ 659,007
Selling, general and administrative expenses	$ 225,287	$ 211,288	$ 458,981	$ 432,934
Amortization of intangible assets	$ 12,610	$ 12,828	$ 25,478	$ 25,810
Net income	$ 27,951	$ 76,951	$ 148,471	$ 118,142
Net income attributable to common stock	$ 26,836	$ 76,610	$ 146,809	$ 116,804
Earnings per share:				
Basic	$ 0.18	$ 0.50	$ 1.01	$ 0.75
Diluted	$ 0.18	$ 0.49	$ 1.00	$ 0.75

The pro forma combined results of operations for the three and six months ended June 30, 2019 and 2018 were prepared by adjusting the historical results of Quanta to include the historical results of the acquisitions completed in 2019 as if they occurred January 1, 2018. The pro forma combined results of operations for the three and six months ended June 30, 2018 were prepared by also adjusting the historical results of Quanta to include the historical results of the acquisitions completed in 2018 as if they occurred January 1, 2017. These pro forma combined historical results were adjusted for the following: a reduction of interest expense as a result of the repayment of outstanding indebtedness of the acquired businesses; an increase in interest expense as a result of the cash consideration paid; an increase in amortization expense due to the incremental intangible assets recorded; changes in depreciation expense to adjust acquired property and equipment to the acquisition date fair value and to conform with Quanta's accounting policies; an increase in the number of outstanding shares of Quanta common stock; and reclassifications to conform the acquired businesses' presentation to Quanta's accounting policies. The pro forma combined results of operations do not include any adjustments to eliminate the impact of acquisition-related costs or any cost savings or other synergies that resulted or may result from the acquisitions. As noted above, the pro forma results of operations do not purport to be indicative of the actual results that would have been achieved by the combined company for the periods presented or that may be achieved by the combined company in the future.

Revenues of approximately $14.3 million and income before income taxes of approximately $5.1 million, which included no acquisition-related costs, are included in Quanta's consolidated results of operations for the three months ended June 30, 2019 related to the acquisitions completed in 2019. Revenues of approximately $21.7 million and income before income taxes of approximately $4.1 million, which included $2.4 million of acquisition-related costs, are included in Quanta's consolidated results of operations for the six months ended June 30, 2019 related to the acquisitions completed in 2019. Revenues of approximately $11.2 million and a loss before income taxes of approximately $1.3 million, which included $0.4 million of acquisition-related costs, are included in Quanta's consolidated results of operations for the three months ended June 30, 2018 related to the acquisitions completed in 2018. Revenues of approximately $19.3 million and a loss before income taxes of approximately $6.6 million, which included $6.0 million of acquisition-related costs, are included in Quanta's consolidated results of operations for the six months ended June 30, 2018 related to the acquisitions completed in 2018.

5. GOODWILL AND OTHER INTANGIBLE ASSETS:

As described in Note 2, Quanta's operating units are organized into one of Quanta's two internal divisions, and accordingly the goodwill associated with the operating units has been aggregated on a divisional basis in the table below. These divisions are closely aligned with Quanta's reportable segments, and operating units are assigned to a division based on the predominant type of work performed. From time to time, an operating unit may be reorganized between divisions if warranted due to changes in its predominant business.

A summary of changes in Quanta's goodwill is as follows (in thousands):

	Electric Power Infrastructure Services Division	Pipeline and Industrial Infrastructure Services Division	Total
Balance at December 31, 2017:			
Goodwill	$ 1,272,527	$ 693,905	$ 1,966,432
Accumulated impairment	—	(97,832)	(97,832)
	1,272,527	596,073	1,868,600
Goodwill related to acquisitions completed in 2018	56,337	—	56,337
Purchase price allocation adjustments	51	—	51
Foreign currency translation adjustments	(15,837)	(9,272)	(25,109)
Balance at December 31, 2018:			
Goodwill	1,313,078	683,284	1,996,362
Accumulated impairment	—	(96,483)	(96,483)
	1,313,078	586,801	1,899,879
Goodwill related to acquisitions completed in 2019	21,909	—	21,909
Purchase price allocation adjustments	1,503	—	1,503
Foreign currency translation adjustments	6,116	2,893	9,009
Balance at June 30, 2019:			
Goodwill	1,342,606	686,123	2,028,729
Accumulated impairment	—	(96,429)	(96,429)
	$ 1,342,606	$ 589,694	$ 1,932,300

Quanta's intangible assets and the remaining weighted average amortization periods related to its intangible assets subject to amortization were as follows (in thousands except for weighted average amortization periods, which are in years):

	As of June 30, 2019			As of December 31, 2018			As of June 30, 2019
	Intangible Assets	Accumulated Amortization	Intangible Assets, Net	Intangible Assets	Accumulated Amortization	Intangible Assets, Net	Remaining Weighted Average Amortization Period in Years
Customer relationships	$ 369,050	$ (187,450)	$ 181,600	$ 359,967	$ (165,715)	$ 194,252	5.7
Backlog	137,256	(136,433)	823	135,578	(134,592)	986	0.6
Trade names	82,454	(24,286)	58,168	81,058	(21,559)	59,499	15.0
Non-compete agreements	40,902	(30,902)	10,000	40,728	(30,168)	10,560	3.1
Patented rights and developed technology	22,532	(19,939)	2,593	22,482	(19,175)	3,307	2.4
Curriculum	9,448	(1,348)	8,100	9,448	(872)	8,576	8.6
Total intangible assets subject to amortization	661,642	(400,358)	261,284	649,261	(372,081)	277,180	7.7
Engineering license	3,000	—	3,000	3,000	—	3,000	
Total intangible assets	$ 664,642	$ (400,358)	$ 264,284	$ 652,261	$ (372,081)	$ 280,180	

Amortization expense for intangible assets was $12.6 million and $10.5 million for the three months ended June 30, 2019 and 2018 and $25.3 million and $20.9 million for the six months ended June 30, 2019 and 2018.

The estimated future aggregate amortization expense of intangible assets subject to amortization as of June 30, 2019 is set forth below (in thousands):

Year Ending December 31:	
Remainder of 2019	$ 24,410
2020	46,770
2021	44,247
2022	40,474
2023	32,358
Thereafter	73,025
Total	$ 261,284

6. PER SHARE INFORMATION:

The amounts used to compute basic and diluted earnings per share attributable to common stock for the three and six months ended June 30, 2019 and 2018 consisted of the following (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Amounts attributable to common stock:				
Net income attributable to common stock	$ 27,344	$ 74,365	$ 147,832	$ 111,979
Weighted average shares:				
Weighted average shares outstanding for basic earnings per share attributable to common stock	145,935	153,325	145,525	154,906
Effect of dilutive unvested non-participating stock-based awards	1,306	1,270	1,340	1,206
Weighted average shares outstanding for diluted earnings per share attributable to common stock	147,241	154,595	146,865	156,112

Basic and diluted earnings per share attributable to common stock are computed using the weighted average number of shares of common stock outstanding during the applicable period. Exchangeable shares that were issued pursuant to certain of Quanta's historical acquisitions (as further discussed in Note 9), which are exchangeable on a one-for-one basis with shares of Quanta common stock, have been included in the calculation of weighted average shares outstanding for basic and diluted earnings per share attributable to common stock for the portion of the periods that they were outstanding. Additionally, unvested stock-based awards that contain non-forfeitable rights to dividends or dividend equivalents (participating securities) have been included in the calculation of basic and diluted earnings per share attributable to common stock for the portion of the periods that the awards were outstanding. Weighted average shares outstanding for basic and diluted earnings per share attributable to common stock for each of the three and six months ended June 30, 2019 included 3.0 million and 2.9 million weighted average participating securities. Weighted average shares outstanding for basic and diluted earnings per share attributable to common stock for each of the three and six months ended June 30, 2018 included 2.6 million weighted average participating securities.

For purposes of calculating diluted earnings per share attributable to common stock, there were no adjustments required to derive Quanta's net income attributable to common stock. Diluted earnings per share attributable to common stock is computed using the weighted average number of shares of common stock outstanding during the period adjusted for all potentially dilutive common stock equivalents, except in cases where the effect of the common stock equivalents would be antidilutive.

7. DEBT OBLIGATIONS:

Quanta's long-term debt obligations consisted of the following (in thousands):

	June 30, 2019	December 31, 2018
Borrowings under senior secured credit facility	$ 1,540,384	$ 1,070,299
Other long-term debt	8,761	1,523
Finance leases	2,174	934
Total long-term debt obligations	1,551,319	1,072,756
Less — Current maturities of long-term debt	34,047	32,224
Total long-term debt obligations, net of current maturities	$ 1,517,272	$ 1,040,532

Quanta's current maturities of long-term debt and short-term debt consisted of the following (in thousands):

	June 30, 2019	December 31, 2018
Short-term debt	$ 18,814	$ 33,422
Current maturities of long-term debt	34,047	32,224
Current maturities of long-term debt and short-term debt	$ 52,861	$ 65,646

Senior Secured Credit Facility

Quanta has a credit agreement with various lenders that provides for (i) a $1.99 billion revolving credit facility and (ii) a term loan facility with total term loan commitments of $600.0 million. In addition, subject to the conditions specified in the credit agreement, Quanta has the option to increase the capacity of the credit facility, in the form of an increase in the revolving credit facility, incremental term loans or a combination thereof, by up to an additional $400.0 million, from time to time, upon receipt of additional commitments from new or existing lenders. Borrowings under the credit agreement are to be used to refinance existing indebtedness and for working capital, capital expenditures and other general corporate purposes. The maturity date for both the revolving credit facility and the term loan facility is October 31, 2022, and Quanta is required to make quarterly payments on the term loan facility as described below.

With respect to the revolving credit facility, the entire amount available may be used by Quanta for revolving loans and letters of credit in U.S. dollars and certain alternative currencies. Up to $600.0 million may be used by certain subsidiaries of Quanta for revolving loans and letters of credit in certain alternative currencies, up to $100.0 million may be used for swing line loans in U.S. dollars, up to $50.0 million may be used for swing line loans in Canadian dollars and up to $50.0 million may be used for swing line loans in Australian dollars.

In October 2018, Quanta borrowed the full amount of the term loan facility and used all of such proceeds to repay outstanding revolving loans. As of June 30, 2019, Quanta had $1.54 billion of borrowings outstanding under the credit agreement, which included $577.5 million borrowed under the term loan facility and $962.9 million of outstanding revolving loans. Of the total outstanding borrowings, $1.39 billion were denominated in U.S. dollars, $106.9 million were denominated in Canadian dollars and $40.0 million were denominated in Australian dollars. Quanta also had $345.0 million of letters of credit and bank guarantees issued under the revolving credit facility, of which $234.2 million were denominated in U.S. dollars and $110.8 million were denominated in currencies other than the U.S. dollar, primarily Canadian and Australian dollars. The remaining $677.1 million of available commitments under the credit facility was available for loans or issuing new letters of credit and bank guarantees.

Borrowings under the credit facility and the applicable interest rates were as follows (dollars in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Maximum amount outstanding under the credit facility during the period	$ 1,637,602	$ 1,053,598	$ 1,637,602	$ 1,053,598
Average daily amount outstanding under the credit facility	$ 1,524,763	$ 922,719	$ 1,395,349	$ 804,490
Weighted-average interest rate	3.88%	3.62%	3.90%	3.50%

Revolving loans borrowed in U.S. dollars bear interest, at Quanta's option, at a rate equal to either (i) the Eurocurrency Rate (as defined in the credit agreement) plus 1.125% to 2.000%, as determined based on Quanta's Consolidated Leverage Ratio (as described below), or (ii) the Base Rate (as described below) plus 0.125% to 1.000%, as determined based on Quanta's Consolidated Leverage Ratio. Revolving loans borrowed in any currency other than U.S. dollars bear interest at a rate equal to the Eurocurrency Rate plus 1.125% to 2.000%, as determined based on Quanta's Consolidated Leverage Ratio. Additionally, standby or commercial letters of credit issued under the credit agreement are subject to a letter of credit fee of 1.125% to 2.000%, based on Quanta's Consolidated Leverage Ratio, and Performance Letters of Credit (as defined in the credit agreement) issued under the credit agreement in support of certain contractual obligations are subject to a letter of credit fee of 0.675% to 1.150%, based on Quanta's Consolidated Leverage Ratio.

Term loans bear interest at rates generally consistent with the revolving loans borrowed in U.S. dollars, except that the additional amount over the Eurocurrency Rate is 1.125% to 1.875%, as determined based on Quanta's Consolidated Leverage Ratio. Quanta is also required to make quarterly principal payments of $7.5 million on the term loans on the last business day of each March, June, September and December. The aggregate outstanding principal amount of all outstanding term loans must be paid on the maturity date; however, Quanta may voluntarily prepay that amount from time to time, in whole or in part, without premium or penalty.

Quanta is also subject to a commitment fee of 0.20% to 0.40%, based on its Consolidated Leverage Ratio, on any unused availability under the revolving credit facility.

Consolidated Leverage Ratio is the ratio of Quanta's Consolidated Funded Indebtedness to Consolidated EBITDA (as those terms are defined in the credit agreement). For purposes of calculating Quanta's Consolidated Leverage Ratio, Consolidated Funded Indebtedness is reduced by available cash and cash equivalents (as defined in the credit agreement) in excess of $25.0 million. The Base Rate equals the highest of (i) the Federal Funds Rate (as defined in the credit agreement) plus 0.5%, (ii) the prime rate publicly announced by Bank of America, N.A. and (iii) the Eurocurrency Rate plus 1.00%. Consolidated Interest Coverage Ratio is the ratio of (i) Consolidated EBIT (as defined in the credit agreement) for the four fiscal quarters most recently ended to (ii) Consolidated Interest Expense (as defined in the credit agreement) for such period (excluding all interest expense attributable to capitalized loan costs and the amount of fees paid in connection with the issuance of letters of credit on behalf of Quanta during such period).

The credit agreement contains certain covenants, including (i) a maximum Consolidated Leverage Ratio of 3.0 to 1.0 (except that in connection with certain permitted acquisitions in excess of $200.0 million, such ratio is 3.5 to 1.0 for the fiscal quarter in which the acquisition is completed and the two subsequent fiscal quarters) and (ii) a minimum Consolidated Interest Coverage Ratio of 3.0 to 1.0. As of June 30, 2019, Quanta was in compliance with all of the covenants under the credit agreement.

Subject to certain exceptions, (i) all borrowings under the credit agreement are secured by substantially all the assets of Quanta and Quanta's wholly owned U.S. subsidiaries and by a pledge of all of the capital stock of Quanta's wholly owned U.S. subsidiaries and 65% of the capital stock of direct foreign subsidiaries of Quanta's wholly owned U.S. subsidiaries and (ii) Quanta's wholly owned U.S. subsidiaries guarantee the repayment of all amounts due under the credit agreement. Subject to certain conditions, all collateral will automatically be released from the liens at any time Quanta maintains an Investment Grade Rating (defined in the credit agreement as two of the following three conditions being met: (i) a corporate credit rating that is BBB- or higher by Standard & Poor's Rating Services, (ii) a corporate family rating that is Baa3 or higher by Moody's Investors Services, Inc. or (iii) a corporate credit rating that is BBB- or higher by Fitch Ratings, Inc.).

The credit agreement also limits certain acquisitions, mergers and consolidations, indebtedness, asset sales and prepayments of indebtedness and, subject to certain exceptions, prohibits liens on Quanta's assets. The credit agreement allows cash payments for dividends and stock repurchases subject to compliance with the following requirements (after giving effect to the dividend or stock repurchase): (i) no default or event of default under the credit agreement; (ii) continued compliance with the financial covenants in the credit agreement; and (iii) at least $100.0 million of availability under the revolving credit facility and/or cash and cash equivalents on hand.

The credit agreement provides for customary events of default and contains cross-default provisions with Quanta's underwriting, continuing indemnity and security agreement with its sureties and certain other debt instruments exceeding $150.0 million in borrowings or availability. If an Event of Default (as defined in the credit agreement) occurs and is continuing, on the terms and subject to the conditions set forth in the credit agreement, the lenders may declare all amounts outstanding and accrued and unpaid interest immediately due and payable, require that Quanta provide cash collateral for all outstanding letter of credit obligations, terminate the commitments under the credit agreement, and foreclose on the collateral.

8. LEASES:

Effective January 1, 2019, Quanta adopted the new lease accounting standard utilizing the transition method that allows entities to initially apply the new standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption, if applicable. Quanta's financial results for reporting periods after January 1, 2019 are presented under the new standard, while financial results for prior periods continue to be reported in accordance with the prior standard and Quanta's historical accounting policy.

Quanta's leases primarily include leases of land, buildings, vehicles, construction equipment and office equipment. As ofJune 30, 2019, Quanta's leases had remaining lease terms of up to ten years. Certain leases include options to extend their terms in increments of up tofive years and/or options to terminate. The components of lease costs in the accompanying condensed consolidated statement of operations are as follows (in thousands):

		Three Months Ended June 30, 2019	Six Months Ended June 30, 2019
Lease cost	**Classification**		
Finance lease cost:			
Amortization of lease assets	Depreciation (1)	$ 283	$ 656
Interest on lease liabilities	Interest expense	18	39
Operating lease cost	Costs of services and Selling, general and administrative expenses	30,377	60,735
Short-term lease cost (2)	Costs of services and Selling, general and administrative expenses	188,360	383,525
Variable lease cost (3)	Costs of services and Selling, general and administrative expenses	6,270	11,403
Total lease cost		$ 225,308	$ 456,358

(1) Depreciation is included within "Cost of services" and "Selling, general and administrative expenses" in the accompanying condensed consolidated statements of operations.

(2) Short-term lease cost includes both leases and rentals with initial terms of one year or less.

(3) Variable lease cost primarily relates to real estate leases and consists of common area maintenance charges, real estate taxes, insurance and other variable costs.

For the three and six months ended June 30, 2018, rent expense related to operating leases was$75.8 million and $151.8 million; however, this amount did not include rent expense related to certain equipment under month-to-month rental periods, which is included in short-term lease cost for the three and six months ended June 30, 2019 in the table above.

Additionally, Quanta has entered into lease arrangements for real property and facilities with related parties, typically employees or former employees of Quanta who are the former owners of acquired businesses that utilize the leased premises. These lease agreements generally have lease terms of up to five years and may include renewal options. Related party lease expense was $4.0 million and $3.4 million for the three months ended June 30, 2019 and 2018 and $8.1 million and $6.6 million for the six months ended June 30, 2019 and 2018.

The components of leases in the accompanying condensed consolidated balance sheet were as follows (in thousands):

Lease type	Classification	June 30, 2019
Assets:		
Operating lease right-of-use assets	Operating lease right-of-use assets	$ 284,962
Finance lease assets	Property and equipment, net of accumulated depreciation	2,109
Total lease assets		$ 287,071
Liabilities:		
Current:		
Operating	Current portion of operating lease liabilities	$ 92,765
Finance	Current maturities of long-term debt and short-term debt	1,491
Non-current:		
Operating	Operating lease liabilities, net of current portion	192,197
Finance	Long-term debt, net of current maturities	683
Total lease liabilities		$ 287,136

Certain of Quanta's equipment rental agreements contain purchase options pursuant to which the purchase price is offset by a portion of the rental payments. For rental purchase options exercised through a third-party lessor and for which a substantive benefit is deemed to be transferred to the lessor, such benefit is recorded in "Property, plant and equipment, net of accumulated depreciation," with a corresponding increase in "Current maturities of long-term debt and short-term debt" and "Long-term debt, net of current maturities." As of June 30, 2019, the benefit recorded was $7.2 million.

Future minimum lease payments for operating and finance leases were as follows (in thousands):

	As of June 30, 2019		
	Operating Leases	Finance Leases	Total
Remainder of 2019	$ 54,850	$ 1,012	$ 55,862
2020	89,084	707	89,791
2021	62,724	342	63,066
2022	40,366	117	40,483
2023	25,394	48	25,442
Thereafter	40,329	25	40,354
Total future minimum lease payments	$ 312,747	$ 2,251	$ 314,998
Less imputed interest	(27,785)	(77)	(27,862)
Total lease liabilities	$ 284,962	$ 2,174	$ 287,136

Future minimum lease payments for operating leases under the prior standard and Quanta's historical accounting policy were as follows (in thousands):

	As of December 31, 2018
	Operating Leases
2019	$ 124,530
2020	81,189
2021	55,827
2022	34,337
2023	21,450
Thereafter	37,217
Total minimum lease payments	$ 354,550

The weighted average remaining lease terms and discount rates were as follows:

	As of June 30, 2019
Weighted average remaining lease term (in years):	
Operating leases	4.32
Finance leases	2.16
Weighted average discount rate:	
Operating leases	4.3%
Finance leases	4.2%

Quanta has also guaranteed the residual value on certain of its equipment operating leases, agreeing to pay any difference between this residual value and the fair market value of the underlying asset at the date of lease termination. At June 30, 2019, the maximum guaranteed residual value of this equipment was$718.7 million. While Quanta believes that no significant payments will be made as a result of these residual value guarantees, there can be no assurance that significant payments will not be required in the future.

As of June 30, 2019, Quanta had additional operating lease obligations that had not yet commenced of$7.1 million. These operating leases will commence in 2019 and 2020 with lease terms of two to 10 years.

9. EQUITY:

Exchangeable Shares and Preferred Stock

In connection with certain prior acquisitions of Canadian businesses, the former owners of the acquired businesses received exchangeable shares of certain Canadian subsidiaries of Quanta, which may be exchanged at the option of the holders for Quanta common stock on a one-for-one basis. The holders of exchangeable shares can make an exchange only once in any calendar quarter and must exchange a minimum of either 50,000 shares or, if less, the total number of remaining exchangeable shares registered in the name of the holder making the request. Additionally, in connection with two of such acquisitions, Quanta issued one share of Quanta Series F preferred stock and one share of Quanta Series G preferred stock to voting trusts on behalf of the respective holders of the exchangeable shares issued in such acquisitions, which provided such holders with voting rights in Quanta common stock equivalent to the number of exchangeable shares outstanding. The share of Quanta Series F preferred stock was redeemed and retired effective October 6, 2017. All holders of exchangeable shares have rights equivalent to Quanta common stockholders with respect to dividends and other economic rights.

During the three months ended March 31, 2019,0.4 million exchangeable shares were exchanged for Quanta common stock, and as ofJune 30, 2019, 36,183 exchangeable shares remained outstanding. After completion of the exchange during the three months ended March 31, 2019, no exchangeable shares associated with the share of Quanta Series G preferred stock remained outstanding. Accordingly, that share was redeemed, deemed retired and canceled and may not be reissued.

Treasury Stock

General

Treasury stock is recorded at cost. Under Delaware corporate law, treasury stock is not counted for quorum purposes or entitled to vote.

Shares withheld for tax withholding obligations

The tax withholding obligations of employees upon vesting of RSUs and PSUs settled in common stock are typically satisfied by Quanta making tax payments and withholding the number of vested shares having a value on the date of vesting equal to the tax withholding obligation. For the settlement of these liabilities, Quanta withheld a nominal amount of Quanta common stock during the three months ended June 30, 2019 and 2018, which each had a total market value of $0.8 million, and withheld 0.5 million and 0.4 million shares of Quanta common stock during the six months ended June 30, 2019 and 2018, which had a total market value of $16.1 million and $14.2 million. These shares and the related costs to acquire them were accounted for as adjustments to the balance of treasury stock.

Notional amounts recorded related to deferred compensation plans

For RSUs and PSUs that vest but the settlement of which is deferred under a deferred compensation plan, Quanta records a notional amount to “Treasury stock” and an offsetting amount to “Additional paid-in capital” (APIC). At vesting, only shares withheld for tax liabilities other than income taxes are added to outstanding treasury shares, as the shares of Quanta common stock associated with deferred equity awards are not issued until settlement of the award. Upon settlement of the deferred equity awards and issuance of the associated Quanta common stock, the original accounting entry is reversed. The net amounts recorded to treasury stock related to the deferred compensation plans were nominal amounts during the three months ended June 30, 2019 and 2018 and $3.7 million and $3.3 million during the six months ended June 30, 2019 and 2018.

Stock repurchases

During the second quarter of 2017, Quanta’s Board of Directors approved a stock repurchase program that authorized Quanta to purchase, from time to time through June 30, 2020, up to $300.0 million of its outstanding common stock (the 2017 Repurchase Program). During the third quarter of 2018, Quanta’s Board of Directors approved an additional stock repurchase program that authorizes Quanta to purchase, from time to time through June 30, 2021, up to $500.0 million of its outstanding common stock (the 2018 Repurchase Program).

Quanta repurchased the following shares of common stock in the open market under the stock repurchase programs (in thousands):

Quarter ended:	**Shares**	**Amount**
June 30, 2019	—	$ —
March 31, 2019	376	$ 11,953
December 31, 2018	7,652	$ 233,633
September 30, 2018	701	$ 23,751
June 30, 2018	595	$ 19,993
March 31, 2018	4,969	$ 173,913

Quanta’s policy is to record a stock repurchase as of the trade date; however, the payment of cash related to the repurchase is made on the settlement date of the trade. During the three months ended June 30, 2019 and 2018, cash payments related to stock repurchases were $0.2 million and $16.0 million, and during the six months ended June 30, 2019 and 2018, cash payments related to stock repurchases were $20.1 million and $189.9 million.

As of June 30, 2019, $286.8 million remained authorized under the 2018 Repurchase Program. Repurchases under the 2018 Repurchase Program may be implemented through open market repurchases or privately negotiated transactions, at management’s discretion, based on market and business conditions, applicable contractual and legal requirements, including restrictions under Quanta’s senior secured credit facility, and other factors. Quanta is not obligated to acquire any specific amount of common stock, and the 2018 Repurchase Program may be modified or terminated by Quanta’s Board of Directors at any time at its sole discretion and without notice.

Non-controlling Interests

Quanta holds interests in various entities through both joint venture entities that provide infrastructure services under specific customer contracts, either directly or through subcontracting relationships, and other equity investments in partially owned entities that own and operate certain infrastructure assets, including investments that may be entered into through the partnership structure Quanta has formed with certain infrastructure investors. Quanta has determined that certain of these joint ventures where Quanta provides the majority of the infrastructure services, which management believes most significantly influences the economic performance of such joint ventures, are VIEs. Management has concluded that Quanta is the primary beneficiary of these joint ventures and has accounted for each on a consolidated basis. The other parties' equity interests in these joint ventures have been accounted for as "Non-controlling interests" in Quanta's condensed consolidated balance sheets. Net income attributable to the other participants in the amounts of $1.1 million and $0.3 million for the three months ended June 30, 2019 and 2018 and $1.7 million and $1.3 million for the six months ended June 30, 2019 and 2018 has been accounted for as a reduction of net income in deriving "Net income attributable to common stock" in Quanta's condensed consolidated statements of operations.

The carrying amount of the investments in VIEs held by Quanta was$9.7 million and $9.6 million at June 30, 2019 and December 31, 2018. The carrying amount of investments held by the non-controlling interests in these VIEs at each June 30, 2019 and December 31, 2018 was $1.3 million. During the three months ended June 30, 2019 and 2018, net distributions to non-controlling interests were$1.1 million and $0.7 million. During the six months ended June 30, 2019 and 2018, net distributions to non-controlling interests were $1.6 million and $1.7 million. During the three and six months ended June 30, 2018, notes receivable of$0.5 million and $0.9 million were discharged by a joint venture partner, which were accounted for as a "Buyout of a non-controlling interest" in the accompanying condensed consolidated statements of equity. There were no other changes in equity as a result of transfers to/from the non-controlling interests during the three months ended June 30, 2019 or 2018. See Note 11 for further disclosures related to Quanta's joint venture arrangements.

Dividends

Quanta declared and paid the following cash dividends and cash dividend equivalents during 2018 and the firstsix months of 2019 (in thousands, except per share amounts):

Declaration Date	Record Date	Payment Date	Dividend Per Share	Dividends Declared
May 24, 2019	July 1, 2019	July 15, 2019	$ 0.04	$ 6,233
March 21, 2019	April 5, 2019	April 19, 2019	$ 0.04	$ 5,896
December 6, 2018	January 2, 2019	January 16, 2019	$ 0.04	$ 5,838

A significant majority of the dividends declared were paid on the corresponding payment dates. Holders of RSUs awarded under the Quanta Services, Inc. 2011 Omnibus Equity Incentive Plan (the 2011 Plan) generally received cash dividend equivalent payments on the payment dates. Holders of exchangeable shares of certain Canadian subsidiaries of Quanta were paid a cash dividend of $0.04 per exchangeable share on the payment dates. However, holders of RSUs awarded under the Quanta Services, Inc. 2019 Omnibus Equity Incentive Plan (the 2019 Plan) and holders of unearned and unvested PSUs receive cash dividend equivalent payments only to the extent such RSUs and PSUs become earned and/or vest. Additionally, cash dividend equivalents related to certain equity awards that have been deferred pursuant to the terms of a deferred compensation plan maintained by Quanta are recorded as liabilities in such plans until the deferred awards are settled.

The declaration, payment and amount of future cash dividends will be at the discretion of Quanta's Board of Directors after taking into account various factors, including Quanta's financial condition, results of operations, cash flows from operations, current and anticipated capital requirements and expansion plans, income tax laws then in effect and the requirements of Delaware law. In addition, as discussed in Note 7, Quanta's credit agreement restricts the payment of cash dividends unless certain conditions are met.

10. EQUITY-BASED COMPENSATION:

Stock Incentive Plans

On May 23, 2019, Quanta's stockholders approved the 2019 Plan. The 2019 Plan provides for the award of non-qualified stock options, incentive (qualified) stock options, stock appreciation rights, restricted stock awards, RSUs, stock bonus awards, performance compensation awards (including cash bonus awards) or any combination of the foregoing. Current and prospective employees, directors, officers, advisors or consultants of Quanta or its affiliates are eligible to participate in the 2019 Plan. Pursuant to the 2019 Plan, subject to certain adjustments, 7,466,592 shares of Quanta common stock are available for issuance in connection with awards under the 2019 Plan, which includes shares of Quanta common stock that remained available for issuance under the 2011 Plan as of the date stockholders approved the 2019 Plan. In addition, any shares subject to awards pursuant to the 2011 Plan that are forfeited, canceled, expired or settled in cash after May 23, 2019 will be added to the maximum number of shares available for issuance under the 2019 Plan. All awards subsequent to stockholder approval of the 2019 Plan have been and will be made pursuant to the 2019 Plan and applicable award agreements, and no further awards have been or will be made under the 2011 Plan after such date. Awards made under the 2011 Plan prior to approval of the 2019 Plan remain subject to the terms of the 2011 Plan and the applicable award agreements.

RSUs to be Settled in Common Stock

During the three months ended June 30, 2019 and 2018, Quanta granted 0.1 million and a nominal number of RSUs to be settled in common stock under the 2011 Plan and the 2019 Plan with weighted average grant date fair values of $36.50 and $36.38. During the six months ended June 30, 2019 and 2018, Quanta granted 1.6 million and 1.3 million RSUs to be settled in common stock under the 2011 Plan and the 2019 Plan with weighted average grant date fair values of $35.86 and $34.52. The grant date fair value for RSUs to be settled in common stock is based on the market value of Quanta common stock on the date of grant. RSU awards to be settled in common stock are subject to forfeiture, restrictions on transfer and certain other conditions until vesting, which generally occurs in three equal annual installments following the date of grant. Holders of RSUs to be settled in common stock awarded under the 2011 Plan generally are entitled to receive a cash dividend equivalent payment equal to any cash dividend payable on account of the underlying Quanta common stock on the payment date of any such dividend. Holders of RSUs to be settled in common stock awarded under the 2019 Plan are also entitled to cash dividend equivalents in an amount equal to any cash dividend payable on account of the underlying Quanta common stock; however, payment of such amounts are not made until the RSUs vest, such that the dividend equivalent payments are subject to forfeiture.

During the three months ended June 30, 2019 and 2018, vesting activity consisted of a nominal number and 0.1 million RSUs settled in common stock with an approximate fair value at the time of vesting of $3.1 million and $3.8 million. During the six months ended June 30, 2019 and 2018, vesting activity consisted of 1.2 million and 1.3 million RSUs settled in common stock with an approximate fair value at the time of vesting of $44.6 million and $46.2 million.

During the three months ended June 30, 2019 and 2018, Quanta recognized $12.6 million and $10.8 million of non-cash stock compensation expense related to RSUs to be settled in common stock. During the six months ended June 30, 2019 and 2018, Quanta recognized $23.9 million and $22.0 million of non-cash stock compensation expense related to RSUs to be settled in common stock. Such expense is recorded in selling, general and administrative expenses. As of June 30, 2019, there was $70.8 million of total unrecognized compensation expense related to unvested RSUs to be settled in common stock granted to both employees and non-employees. This cost is expected to be recognized over a weighted average period of 2.31 years.

PSUs to be Settled in Common Stock

PSUs provide for the issuance of shares of common stock upon vesting, which occurs at the end of a three-year performance period based on achievement of certain performance metrics established by Quanta’s compensation committee, including company performance goals and, with respect to certain awards, Quanta’s total shareholder return as compared to a predetermined group of peer companies. The final number of shares of common stock issuable upon vesting of PSUs can range from 0% to 200% of the number of PSUs initially granted, depending on the level of achievement, as determined by Quanta’s compensation committee. Holders of PSUs are entitled to cash dividend equivalents in an amount equal to any cash dividend payable on account of the underlying Quanta common stock; however, payments of such amounts are not made until the PSUs vest, such that the dividend equivalent payments are subject to forfeiture.

During the three months ended June 30, 2019 and 2018, Quanta granted a nominal amount and no PSUs to be settled in common stock. During each of the six months ended June 30, 2019 and 2018, Quanta granted 0.3 million PSUs to be settled in common stock under the 2011 Plan with a weighted average grant date fair value of $15.49 and $12.24 per unit. The grant date fair values for awards of PSUs granted in the six months ended June 30, 2019 and 2018, which included market-based metrics, were determined using a Monte Carlo simulation valuation methodology using the following key inputs:

	2019	2018
Valuation date stock price based on the March 8, 2019 and February 28, 2018	$35.19	$34.44
Expected volatility	25%	34%
Risk-free interest rate	2.43%	2.39%
Term in years	2.81	2.84

Quanta recognizes expense, net of estimated forfeitures, related to PSUs with market-based metrics based on the probability of achievement of the underlying performance metrics, multiplied by the portion of the three-year period that has expired and the fair value of the total number of shares of common stock that Quanta anticipates will be issued based on such achievement. Quanta recognizes expense, net of estimated forfeitures, related to PSUs without market-based metrics based on the portion of the three-year period that has expired multiplied by the fair value of the total number of shares of common stock that Quanta anticipates will be issued. During the three months ended June 30, 2019 and 2018, Quanta recognized $1.9 million and $2.7 million in compensation expense associated with PSUs. During the six months ended June 30, 2019 and 2018, Quanta recognized $3.6 million and $6.2 million in compensation expense associated with PSUs. Such expense is recorded in "Selling, general and administrative expenses." During each of the three months ended June 30, 2019 and 2018, no PSUs vested, and no shares of common stock were issued in connection with PSUs. During the six months ended June 30, 2019, 0.2 million PSUs vested, and 0.4 million shares of common stock were earned and either issued or deferred for future issuance in connection with PSUs. During the six months ended June 30, 2018, 0.1 million PSUs vested, and 0.1 million shares of common stock were earned and either issued or deferred for future issuance in connection with PSUs.

RSUs to be Settled in Cash

Certain RSUs granted by Quanta are settled solely in cash. These cash-settled RSUs are intended to provide plan participants with cash performance incentives that are substantially equivalent to the risks and rewards of equity ownership in Quanta, typically vest in three equal annual installments following the date of grant, and are subject to forfeiture under certain conditions, primarily termination of service. Additionally, subject to certain restrictions, Quanta's non-employee directors may elect to settle a portion of their RSU awards in cash. For RSUs settled in cash, the holders receive for each vested RSU an amount in cash equal to the fair market value of one share of Quanta common stock on the settlement date, as specified in the applicable award agreement.

Compensation expense related to RSUs to be settled in cash was $1.1 million and $1.5 million for the three months ended June 30, 2019 and 2018 and $3.7 million and $2.8 million for the six months ended June 30, 2019 and 2018. Such expense is recorded in "Selling, general and administrative expenses." RSUs that are anticipated to be settled in cash are not included in the calculation of weighted average shares outstanding for earnings per share, and the estimated earned value of such RSUs is classified as a liability. Quanta paid $2.1 million and $3.8 million to settle liabilities related to cash-settled RSUs in the three months ended June 30, 2019 and 2018 and $5.0 million and $6.0 million to settle liabilities related to cash-settled RSUs in the six months ended June 30, 2019 and 2018. Accrued liabilities for the estimated earned value of outstanding RSUs to be settled in cash were $1.7 million and $3.4 million at June 30, 2019 and December 31, 2018.

11. COMMITMENTS AND CONTINGENCIES:

Investments in Affiliates and Other Entities

As described in Note 9, Quanta holds investments in various entities, including joint venture entities that provide infrastructure services under specific customer contracts and partially owned entities that own and operate certain infrastructure assets constructed by Quanta. Losses incurred by these entities are generally shared ratably based on the percentage ownership of the participants in these structures. However, in Quanta's joint venture structures that provide infrastructure services, each participant is typically jointly and severally liable for all of the obligations of the joint venture entity pursuant to the contract with the customer, as a general partner or through a parent guarantee and, therefore, can be liable for full performance of the contract with the customer. In circumstances where Quanta's participation in a joint venture qualifies as a general partnership, the joint venture partners are jointly and severally liable for all obligations of the joint venture, including obligations owed to the customer or any other person or entity. Quanta is not aware of circumstances that would lead to future claims against it for material amounts in connection with these joint and several liabilities. Additionally, typically each joint venture participant agrees to indemnify the other participant for any liabilities incurred in excess of what the other participant is obligated to bear under the respective joint venture agreement or in accordance with the scope of work subcontracted to each participant. It is possible, however, that Quanta could be required to pay or perform obligations in excess of its share if another participant is unable or refuses to pay or perform its share of the obligations. Quanta is not aware of circumstances that would lead to future claims against it for material amounts that would not be indemnified. However, to the extent any such claims arise, they could be material and could adversely affect Quanta's consolidated business, financial condition, results of operations or cash flows.

As described in Note 2, Quanta has also formed a partnership with select infrastructure investors that provides up to $1.0 billion of capital, including approximately $80.0 million from Quanta, available to invest in certain specified infrastructure projects through August 2024. As of June 30, 2019, Quanta had contributed $15.1 million to this partnership in connection with certain investments and the payment of management fees.

Additionally, as of June 30, 2019, Quanta had outstanding capital commitments associated with investments in unconsolidated affiliates related to planned oil and gas infrastructure projects of $16.6 million, of which $1.7 million is expected to be paid in 2019. The remaining $14.9 million of these capital commitments is anticipated to be paid by May 31, 2022.

During 2014, a limited partnership in which Quanta is a partner was selected for an electric transmission project in Canada to construct approximately 500 kilometers of transmission line and two 500 kV substations. As of June 30, 2019, Quanta had no outstanding additional capital commitments associated with this project. During the three months ended June 30, 2019, Quanta entered into a definitive agreement to sell its investment in this limited partnership. The sale is expected to close in the fourth quarter of 2019 or early 2020, subject to receipt of regulatory approvals and satisfaction of customary closing conditions.

Contingent Consideration Liabilities

As discussed in further detail in Note 2, Quanta is obligated to pay contingent consideration amounts to the former owners of certain acquired businesses in the event that such acquired businesses achieve specified performance objectives. As of June 30, 2019 and December 31, 2018, the estimated fair value of Quanta's contingent consideration liabilities totaled $75.0 million and $70.8 million.

Committed Expenditures

Quanta has capital commitments for the expansion of its vehicle fleet in order to accommodate manufacturer lead times on certain types of vehicles. As of June 30, 2019, Quanta had $29.5 million of production orders with expected delivery dates in 2019. Although Quanta has committed to purchase these vehicles at the time of their delivery, Quanta anticipates that the majority of these orders will be assigned to third party leasing companies and made available under certain master equipment lease agreements, thereby releasing Quanta from its capital commitments.

Legal Proceedings

Quanta is from time to time party to various lawsuits, claims and other legal proceedings that arise in the ordinary course of business. These actions typically seek, among other things, compensation for alleged personal injury, breach of contract and/or property damages, employment-related damages, punitive damages, civil penalties or other losses, or injunctive or declaratory relief. With respect to all such lawsuits, claims and proceedings, Quanta records a reserve when it is probable that a liability has been incurred and the amount of loss can be reasonably estimated. In addition, Quanta discloses matters for which management believes a material loss is at least reasonably possible. Except as otherwise stated below, none of these proceedings are expected to have a material adverse effect on Quanta's consolidated financial position, results of operations or cash flows. In all instances, management has assessed the matter based on current information and made a judgment concerning its potential outcome, giving due consideration to the nature of the claim, the amount and nature of damages sought and the probability of success. Management's judgment may prove materially inaccurate, and such judgment is made subject to the known uncertainties of litigation.

Peru Project Dispute. In 2015, Redes Andinas de Comunicaciones S.R.L. (Redes), a majority-owned subsidiary of Quanta, entered into two separate contracts with an agency of the Peruvian Ministry of Transportation and Communications (MTC), currently Programa Nacional de Telecomunicaciones (PRONATEL), as successor to Fondo de Inversion en Telecomunicaciones (FITEL), pursuant to which Redes would design, construct and operate certain telecommunication networks in rural regions of Peru. The aggregate consideration provided for in the contracts was approximately $248 million, consisting of approximately $151 million to be paid during the construction period and approximately $97 million to be paid during a 10-year post-construction operation and maintenance period. At the beginning of the project, FITEL made advance payments totaling approximately $87 million to Redes, which were secured by two on-demand advance payment bonds posted by Redes to guarantee proper use of the payments in the execution of the project. Redes also provided two on-demand performance bonds in the aggregate amount of $25 million to secure performance of its obligations under the contracts.

During the construction phase, the project experienced numerous challenges and delays, primarily related to issues which Quanta believes were outside of the control of and not attributable to Redes, including, among others, weather-related issues, local opposition to the project, permitting delays, the inability to acquire clear title to certain required parcels of land and other land acquisition issues, and delays which Quanta believes were attributable to FITEL/PRONATEL. In response to various of these challenges and delays, Redes had requested and received multiple extensions to certain contractual deadlines and relief from related liquidated damages. However, in April 2019, PRONATEL provided notice to Redes claiming that Redes was in default under the contracts due to the delays and that PRONATEL would terminate the contracts if the alleged defaults were not cured. Redes responded by claiming that it was not in default, as the delays were due to events not attributable to Redes, and therefore PRONATEL was not entitled to terminate the contracts. PRONATEL subsequently terminated the contracts for alleged cause prior to completion of Redes' scope of work, exercised the on-demand performance bonds and advance payment bonds against Redes, and indicated that it intends to claim damages, including a verbal allegation of approximately $45 million of liquidated damages under the contracts, although it has not formally submitted the amount of its claim. Additionally, upon contract terminations, Redes is required to transfer the networks (as completed to date) to PRONATEL.

In May 2019, Redes filed for arbitration before the Court of International Arbitration of the International Chamber of Commerce against PRONATEL and the MTC. In the arbitration, Redes claims that PRONATEL wrongfully terminated the contracts, that PRONATEL wrongfully executed the advance payment bonds and the performance bonds, and that PRONATEL is not entitled to the alleged amount of liquidated damages. In addition, Redes is seeking compensation for all damages arising from PRONATEL's actions, including repayment of the amounts collected by PRONATEL under the advance payment bonds and the performance bonds, payment of amounts owed for work completed by Redes under the contracts, lost income in connection with Redes' future operation and maintenance of the networks, and other related costs and damages to Redes as a result of the improper termination of the contracts.

As of the date of the contract terminations, Redes had incurred approximately $157 million in construction of the project and had received approximately $100 million of payments (inclusive of the approximately $87 million advance payments). Furthermore, upon transfer of the networks to PRONATEL, which is expected to occur prior to December 31, 2019, PRONATEL and the MTC will possess the networks, for which PRONATEL has paid approximately $100 million while collecting approximately $112 million of bond proceeds. Quanta believes that PRONATEL's actions represent an abuse of power and unfair and inequitable treatment and that PRONATEL and the MTC have been unjustly enriched. Specifically, under the terms of the contracts, the advance payment bonds were to be exercised only if it is determined that Redes did not use the advance payments for their intended purpose, in which case Redes would be obligated to return the portion of the advance payments not properly used. Redes was not afforded the opportunity to provide evidence of its proper use of the advance payments for project expenditures prior to PRONATEL exercising the bonds in their full amount. As stated above, Redes has incurred substantially more than the advance payment amounts in the execution of the project, and Quanta believes Redes has used the advance payment amounts for their intended purpose.

Quanta also reserves the right to seek full compensation for the loss of its investment under other applicable legal regimes, including investment treaties and customary international law, as well as to seek resolution through direct discussions with PRONATEL or the MTC.

Quanta believes Redes is entitled to all amounts described in the claims above and intends to vigorously pursue those claims in the pending arbitration proceeding and/or additional arbitration proceedings. However, as a result of the contract terminations and the inherent uncertainty involved in arbitration proceedings and recovery of amounts owed, there can be no assurance that Redes will prevail on those claims or in defense of liquidated damages claims or any other claims that may be asserted by PRONATEL. As a result, during the three months ended June 30, 2019, Quanta recorded a charge to earnings of $79.2 million, which included a reduction of previously recognized earnings on the project, a reserve against a portion of the project costs incurred through the project termination date, an accrual for a portion of the alleged liquidated damages, and the estimated costs to complete the project turnover and close out the project. The reduction of previously recognized earnings on the project included $14.5 million related to the correction of prior period errors associated with the determination of total estimated project costs and the resulting revenue recognized. Quanta assessed the materiality of the prior period errors and determined that the errors were immaterial individually and in the aggregate to its previously issued financial statements.

As of June 30, 2019, after taking into account the above charge, Quanta had a net receivable position related to the project of approximately $120 million, which includes the approximately $87 million PRONATEL collected through exercise of the advance payment bonds.

If Quanta is not successful in the pending or future arbitration proceedings, this matter could result in an additional significant loss that could have a material adverse effect on Quanta's consolidated results of operations and cash flows. However, based on the information currently available and the preliminary status of the pending arbitration proceeding, Quanta is not able to determine a range of reasonably possible additional loss, if any, with respect to this matter.

Maurepas Project Dispute. During the third quarter of 2017, Maurepas Pipeline, LLC (Maurepas) notified QPS Engineering, LLC (QPS), a subsidiary of Quanta, of its claim for liquidated damages allegedly arising from delay in mechanical completion of a project in Louisiana. Quanta disputes the claim and believes that QPS is not responsible for liquidated damages under the contract terms, and in June 2019 QPS filed suit against SemGroup Corporation, the parent company of Maurepas, under the parent guarantee issued to secure payment from Maurepas on the project. QPS is seeking to recover $22.0 million that it believes has been wrongfully withheld pursuant to the liquidated damages allegation. In July and August 2018, QPS also received notice from Maurepas claiming certain warranty defects on the project. In July 2019, Maurepas filed suit against QPS and Quanta, pursuant to a parent guarantee, for unspecified damages related to the warranty defects and for a declaratory judgment related to the liquidated damages claim. Quanta is continuing to evaluate the claimed warranty defects and, if they exist, the appropriate remedy. At this time, Quanta disputes the alleged defects or has not been able to substantiate them.

As of June 30, 2019, Quanta had recorded an accrual with respect to this matter based on the current estimated amount of probable loss. Quanta believes that the range of additional reasonably possible loss for the liquidated damages claim would be the difference between the amount accrued for such claim and $22.0 million, which is the maximum liability for liquidated damages pursuant to the contract terms. Based on the information currently available, Quanta is not able to determine an estimate of additional reasonably possible loss related to the warranty defect claim. If, upon final resolution of this matter, Quanta is unsuccessful, any liquidated damages or warranty defect damages would be recorded as additional costs on the project.

Lorenzo Benton v. Telecom Network Specialists, Inc., et al. In June 2006, plaintiff Lorenzo Benton filed a class action complaint in the Superior Court of California, County of Los Angeles, alleging various wage and hour violations against Telecom Network Specialists (TNS), a former subsidiary of Quanta. Quanta retained liability associated with this matter pursuant to the terms of Quanta's sale of TNS in December 2012. Benton represents a class of workers that includes all persons who worked on certain TNS projects, including individuals that TNS retained through numerous staffing agencies. The plaintiff class in this matter is seeking damages for unpaid wages, penalties associated with the failure to provide meal and rest periods and overtime wages, interest and attorneys' fees. In January 2017, the trial court granted a summary judgment motion filed by the plaintiff class and found that TNS was a joint employer of the class members and that it failed to provide adequate meal and rest breaks and failed to pay overtime wages. In February 2019, the court granted, in part, the plaintiff class's final motion for summary judgment on damages awarding the class approximately $7.5 million for its meal/rest break and overtime claims, and denied the motion as to penalties. Quanta believes the court's decisions on liability and damages are not supported by controlling law and continues to contest its liability and the damage calculation asserted by the plaintiff class in this matter. In July 2019, TNS prevailed, in part, on its own motion for summary judgment on the remaining wage statement and penalty claims, with the court dismissing the claims for penalties based on alleged meal and rest break violations.

Additionally, in November 2007, TNS filed cross complaints for indemnity and breach of contract against the staffing agencies, which employed many of the individuals in question. In December 2012, the trial court heard cross-motions for summary judgment filed by TNS and the staffing agencies pertaining to TNS's demand for indemnity. The court denied TNS's motion and granted the motions filed by the staffing agencies; however, the California Appellate Court reversed the trial court's decision in part and instructed the trial court to reconsider its ruling. In February 2017, the court denied a new motion for summary judgment filed by the staffing companies and has since stated that the staffing companies would be liable to TNS for any damages owed to the class members that the staffing companies employed.

The final amount of liability, if any, payable in connection with this matter remains the subject of pending litigation and will ultimately depend on various factors, including the outcome of Quanta's appeal of the trial court's rulings on liability and damages, the final determination with respect to any additional damages owed by Quanta, and the solvency of the staffing agencies. Based on review and analysis of the trial court's rulings on liability, Quanta does not believe, at this time, that it is probable this matter will result in a material loss. However, if Quanta is unsuccessful in this litigation and the staffing agencies are unable to fund damages owed to class members, Quanta believes the range of reasonably possible loss to Quanta upon final resolution of this matter could be up to approximately $9.1 million, plus attorneys' fees and expenses of the plaintiff class.

Concentrations of Credit Risk

Quanta is subject to concentrations of credit risk related primarily to its cash and cash equivalents and its net receivable position with customers, which includes amounts related to billed and unbilled accounts receivable and contract assets net of advanced billings with the same customer. Substantially all of Quanta's cash and cash equivalents are managed by what it believes to be high credit quality financial institutions. In accordance with Quanta's investment policies, these institutions are authorized to invest cash and cash equivalents in a diversified portfolio of what Quanta believes to be high quality cash and cash equivalent investments, which consist primarily of interest-bearing demand deposits, money market investments and money market mutual funds. Although Quanta does not currently believe the principal amount of these cash and cash equivalents is subject to any material risk of loss, changes in economic conditions could impact the interest income Quanta receives from these investments. In addition, Quanta grants credit under normal payment terms, generally without collateral, to its customers, which include electric power and energy companies, governmental entities, general contractors, and builders, owners and managers of commercial and industrial properties located primarily in the United States, Canada, Australia and Latin America. Consequently, Quanta is subject to potential credit risk related to changes in business and economic factors throughout these locations, which may be heightened as a result of uncertain economic and financial market conditions that have existed in recent years. However, Quanta generally has certain statutory lien rights with respect to services provided. Some of Quanta's customers have experienced significant financial difficulties (including bankruptcy), and customers may experience financial difficulties in the future. These difficulties expose Quanta to increased risk related to collectability of billed and unbilled receivables and contract assets for services Quanta has performed.

On January 29, 2019, PG&E, one of Quanta's largest customers, filed for bankruptcy protection under Chapter 11 of the U.S. Bankruptcy Code, as amended. Quanta is monitoring the bankruptcy proceeding and evaluating the treatment of, and potential claims related to, its pre-petition receivables. As of the bankruptcy filing date, Quanta had approximately $157 million of billed and unbilled receivables, $48 million of which remained unpaid as of June 30, 2019. During the three months ended June 30, 2019, the bankruptcy court approved the assumption by PG&E of two substantial contracts with a subsidiary of Quanta, which authorized PG&E to pay approximately $116 million of pre-petition receivables due under those contracts, $109 million of which was received during the three months ended June 30, 2019. Quanta believes it will ultimately collect the approximately $41 million of pre-petition receivables that were not assumed by PG&E, which amount has been classified as non-current within "Other assets, net" in the accompanying condensed consolidated balance sheet as of June 30, 2019. However, the ultimate outcome of the bankruptcy proceeding is uncertain, and Quanta's belief regarding collection of the remaining receivables is based on a number of assumptions that are potentially subject to change as the proceeding progresses. Should any of those assumptions change, the amount collected could be materially less than the amount of the remaining receivables. Additionally, Quanta is continuing to perform services for PG&E while the bankruptcy case is ongoing and believes that amounts billed for post-petition services will continue to be collected in the ordinary course of business.

One customer within Quanta's Electric Power Infrastructure Services segment represented 13.3% and 11.5% of Quanta's consolidated revenues for the three and six months ended June 30, 2019. No customer represented 10% or more of Quanta's consolidated revenues for the three and six months ended June 30, 2018, and no customer represented 10% or more of Quanta's consolidated net receivable position at June 30, 2019 and December 31, 2018.

Insurance

As discussed in Note 2, Quanta is insured for employer's liability, workers' compensation, auto liability, general liability and group health claims. As of June 30, 2019 and December 31, 2018, the gross amount accrued for insurance claims totaled $264.6 million and $272.9 million, with $198.5 million and $210.1 million considered to be long-term and included in "Insurance and other non-current liabilities." Related insurance recoveries/receivables as of June 30, 2019 and December 31, 2018 were $34.9 million and $56.5 million, of which $0.4 million and $0.3 million are included in "Prepaid expenses and other current assets" and $34.5 million and $56.2 million are included in "Other assets, net."

Project Insurance Claim. In June 2018, while performing a horizontal directional drill and installing an underground gas pipeline, one of Quanta's subsidiaries experienced a partial collapse of a borehole. Subsequent to the incident, Quanta has been working with its customer to mitigate the impact of the incident and to complete the project; however, Quanta has encountered additional challenges due to the collapsed borehole. As required by the contract, the customer procured certain insurance coverage for the project, with the Quanta subsidiary as an additional insured. Quanta is working collaboratively with the customer to pursue insurance claims with the customer's insurance carriers. During the three months ended June 30, 2019, the insurers preliminarily acknowledged coverage for the incident; however, the amount of coverage is to be determined. To the extent Quanta is not successful in recovering the full amount of the insurance claims it is pursuing, Quanta plans to pursue contractual relief from the customer.

As of June 30, 2019, Quanta had recorded an insurance receivable of $71.9 million in accordance with GAAP related to accounting for insurance claims and potential recoveries. The amount represents a portion of insurance claims being pursued by Quanta, which amounts to approximately $120 million as of such date. Quanta expects the insurance claims and the amount of the insurance receivable to increase in future periods as mitigation activities continue. The mitigation plan remains subject to inherent risks associated with underground pipeline installation, which could cause the costs to mitigate the incident to increase materially. The project is ongoing, and the final amount of the insurance claims is not currently known. However, Quanta's claims associated with the project, including both insurance claims and potential contractual claims, will be substantially in excess of the currently recognized receivable. To the extent Quanta is unsuccessful in realizing insurance or contractual recoveries, additional charges to operating results, which could be material, would be required.

Letters of Credit

Certain of Quanta's vendors require letters of credit to ensure reimbursement for amounts they are disbursing on Quanta's behalf, such as to beneficiaries under its insurance programs. In addition, from time to time, certain customers require Quanta to post letters of credit to ensure payment of subcontractors and vendors and guarantee performance under contracts. Such letters of credit are generally issued by a bank or similar financial institution, typically pursuant to Quanta's senior secured credit facility. Each letter of credit commits the issuer to pay specified amounts to the holder of the letter of credit if the holder claims that Quanta has failed to perform specified actions. If this were to occur, Quanta would be required to reimburse the issuer of the letter of credit. Depending on the circumstances of such a reimbursement, Quanta may also be required to record a charge to earnings for the reimbursement.

As of June 30, 2019, Quanta had $345.0 million in outstanding letters of credit and bank guarantees under its senior secured credit facility securing its casualty insurance program and various contractual commitments. These are irrevocable stand-by letters of credit with maturities generally expiring at various times throughout 2019 and 2020. Quanta expects to renew the majority of the letters of credit related to the casualty insurance program for subsequent one-year periods upon maturity. Quanta is not aware of any claims currently asserted or threatened under any of these letters of credit that are material, individually or in the aggregate. However, to the extent payment is required for any such claims, the amount paid could be material and could adversely affect Quanta's consolidated business, financial condition, results of operations or cash flows.

Performance Bonds and Parent Guarantees

Many customers, particularly in connection with new construction, require Quanta to post performance and payment bonds issued by a financial institution known as a surety. These bonds provide a guarantee to the customer that Quanta will perform under the terms of a contract and pay its subcontractors and vendors. If Quanta fails to perform, the customer may demand that the surety make payments or provide services under the bond. Quanta must reimburse the surety for any expenses or outlays it incurs. Under Quanta's underwriting, continuing indemnity and security agreement with its sureties and with the consent of the lenders that are party to Quanta's credit agreement, Quanta has granted security interests in certain of its assets as collateral for its obligations to the sureties. Subject to certain conditions and consistent with terms of the credit agreement for Quanta's senior secured credit facility, these security interests will be automatically released if Quanta maintains a credit rating that meets two of the following three conditions: (i) a corporate credit rating that is BBB- or higher by Standard & Poor's Rating Services, (ii) a corporate family rating that is Baa3 or higher by Moody's Investors Services, Inc. or (iii) a corporate credit rating that is BBB- or higher by Fitch Ratings, Inc. Quanta may be required to post letters of credit or other collateral in favor of the sureties or Quanta's customers in the future, which would reduce the borrowing availability under its senior secured credit facility. Quanta has not been required to make any material reimbursements to its sureties for bond-related costs except as set forth in *Legal Proceedings* in this Note 11 related to the exercise of certain advance payment and performance bonds in connection with a project located in Peru. However, to the extent further reimbursements are required, the amounts could be material and could adversely affect Quanta's consolidated business, financial condition, results of operations or cash flows.

Performance bonds expire at various times ranging from mechanical completion of the related projects to a period extending beyond contract completion in certain circumstances, and as such a determination of maximum potential amounts outstanding requires the use of certain estimates and assumptions. Such amounts can also fluctuate from period to period based upon the mix and level of Quanta's bonded operating activity. As of June 30, 2019, the total amount of the outstanding performance bonds was estimated to be approximately $2.6 billion. Quanta's estimated maximum exposure as it relates to the value of the performance bonds outstanding is lowered on each bonded project as the cost to complete is reduced, and each commitment under a performance bond generally extinguishes concurrently with the expiration of its related contractual obligation. The estimated cost to complete these bonded projects was approximately $759 million as of June 30, 2019.

Additionally, from time to time, Quanta guarantees certain obligations and liabilities of its subsidiaries that may arise in connection with, among other things, contracts with customers, equipment lease obligations, joint venture arrangements and contractors' licenses. These guarantees may cover all of the subsidiary's unperformed, undischarged and unreleased obligations and liabilities under or in connection with the relevant agreement. For example, with respect to customer contracts, a guarantee may cover a variety of obligations and liabilities arising during the ordinary course of the subsidiary's business or operations, including, among other things, warranty and breach of contract claims, third party and environmental liabilities arising from the subsidiary's work and for which it is responsible, liquidated damages amounts, or indemnity claims. Quanta is not aware of any obligations or liabilities currently asserted under any of these guarantees that are material, individually or in the aggregate. However, to the extent a subsidiary incurs a material obligation or liability and Quanta has guaranteed the performance or payment of such liability, the recovery by a customer or other counterparty or a third party will not be limited to the assets of the subsidiary. As a result, responsibility under the guarantee could exceed the amount recoverable from the subsidiary alone and could materially and adversely affect Quanta's consolidated business, financial condition, results of operations and cash flows.

Employment Agreements

Quanta has various employment agreements with certain executives and other employees, which provide for compensation, other benefits and, under certain circumstances, severance payments and post-termination equity-related benefits. Certain employment agreements also contain clauses that require the payment of certain amounts to such employees upon the occurrence of a defined change in control event.

Collective Bargaining Agreements

Certain of Quanta's operating units are parties to collective bargaining agreements with unions that represent certain of their employees. The collective bargaining agreements expire at various times and have typically been renegotiated and renewed on terms similar to those in the expiring agreements. From time to time, Quanta is a party to grievance actions based on claims arising out of the collective bargaining agreements. The agreements require the operating units to pay specified wages, provide certain benefits to union employees and contribute certain amounts to multiemployer pension plans and employee benefit trusts. Quanta's multiemployer pension plan contribution rates generally are made to the plans on a "pay-as-you-go" basis based on its union employee payrolls. The location and number of union employees that Quanta employs at any given time and the plans in which they may participate vary depending on Quanta's need for union resources in connection with its ongoing projects. Therefore, Quanta is unable to accurately predict its union employee payroll and the resulting multiemployer pension plan contribution obligations for future periods.

The Pension Protection Act of 2006 also added special funding and operational rules generally applicable to plan years beginning after 2007 for multiemployer plans that are classified as "endangered," "seriously endangered" or "critical" status based on multiple factors (including, for example, the plan's funded percentage, the plan's cash flow position and whether the plan is projected to experience a minimum funding deficiency). Plans in these classifications must adopt measures to improve their funded status through a funding improvement or rehabilitation plan, as applicable, which may require additional contributions from employers (e.g., a surcharge on benefit contributions) and/or modifications to retiree benefits. Certain plans to which Quanta contributes or may contribute in the future are in "endangered," "seriously endangered" or "critical" status. The amount of additional funds, if any, that Quanta may be obligated to contribute to these plans in the future cannot be reasonably estimated due to uncertainty regarding the future levels of work that require union employees covered by these plans, as well as the future contribution levels and possible surcharges on contributions applicable to these plans.

Quanta may be subject to additional liabilities imposed by law as a result of its participation in multiemployer defined benefit pension plans. For example, the Employee Retirement Income Security Act of 1974, as amended by the Multiemployer Pension Plan Amendments Act of 1980, imposes certain liabilities upon an employer who is a contributor to a multiemployer pension plan if the employer withdraws from the plan or the plan is terminated or experiences a mass withdrawal. These liabilities include an allocable share of the unfunded vested benefits in the plan for all plan participants, not merely the benefits payable to a contributing employer's own retirees. As a result, participating employers may bear a higher proportion of liability for unfunded vested benefits if other participating employers cease to contribute or withdraw, with the reallocation of liability being more acute in cases when a withdrawn employer is insolvent or otherwise fails to pay its withdrawal liability. Quanta is not aware of any material withdrawal liabilities that have been incurred or asserted and that remain outstanding as a result of a withdrawal by Quanta from a multiemployer defined benefit pension plan. However, to the extent any such liabilities arise, they could be material and could adversely affect Quanta's consolidated business, financial condition, results of operations or cash flows.

Indemnities

Quanta generally indemnifies its customers for the services it provides under its contracts and other specified liabilities, which may subject Quanta to indemnity claims and liabilities and related litigation. Additionally, in connection with certain acquisitions and dispositions, Quanta has indemnified various parties against specified liabilities that those parties might incur in the future. The indemnities under acquisition or disposition agreements are usually contingent upon the other party incurring liabilities that reach specified thresholds. Quanta is not aware of any indemnity claims currently asserted in connection with its indemnity obligations that are material. However, to the extent indemnification is required, the amount could adversely affect Quanta's consolidated business, financial condition, results of operations or cash flows.

In the normal course of Quanta's acquisition transactions, Quanta obtains rights to indemnification from the sellers or former owners of acquired businesses for certain risks, liabilities and obligations arising from their prior operations, such as performance, operational, safety, workforce or tax issues, some of which Quanta may not have discovered during due diligence. However, the indemnities may not cover all of Quanta's exposure for such pre-acquisition matters, or the indemnitors may be unwilling or unable to pay amounts owed to Quanta. Accordingly, Quanta may incur expenses for which it is not reimbursed, and such amounts could be material and could have a material adverse effect on Quanta's consolidated business, financial condition, results of operations and cash flows. Quanta is currently in the process of negotiating certain pre-acquisition obligations associated with non-U.S. payroll taxes that may be due from a business acquired by Quanta in 2013. As of June 30, 2019, Quanta had recorded $7.4 million as its estimate of the pre-acquisition tax obligations and a corresponding indemnification asset, as management expects to recover from the indemnity counterparties any amounts that Quanta may be required to pay in connection with any such obligations.

12. SEGMENT INFORMATION:

Quanta presents its operations under two reportable segments: (1) Electric Power Infrastructure Services and (2) Pipeline and Industrial Infrastructure Services. This structure is generally based on the broad end-user markets for Quanta's services. See Note 1 for additional information regarding Quanta's reportable segments.

Quanta's segment results are derived from the types of services provided across its operating units in each of its end user markets. Quanta's entrepreneurial business model allows multiple operating units to serve the same or similar customers and to provide a range of services across end user markets. Quanta's operating units are organized into one of two internal divisions: the Electric Power Infrastructure Services Division and the Pipeline and Industrial Infrastructure Services Division. These internal divisions are closely aligned with the reportable segments, and operating units are assigned to divisions based on the predominant type of work performed.

Reportable segment information, including revenues and operating income by type of work, is gathered from each operating unit for the purpose of evaluating segment performance in support of Quanta's market strategies. Classification of operating unit revenues by type of work for segment reporting purposes can require judgment on the part of management. Quanta's operating units may perform joint projects for customers in multiple industries, deliver multiple types of services under a single customer contract or provide service offerings to various industries. For example, Quanta performs joint trenching projects to install distribution lines for electric power and natural gas customers.

In addition, Quanta's integrated operations and common administrative support for its operating units require that certain allocations be made to determine segment profitability, including allocations of shared and indirect costs (e.g., facility costs), indirect operating expenses (e.g., depreciation), and general and administrative costs. Certain corporate costs are not allocated and include payroll and benefits, employee travel expenses, facility costs, professional fees, acquisition costs and amortization related to intangible assets.

Summarized financial information for Quanta's reportable segments is presented in the following table (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Revenues:				
Electric Power Infrastructure Services	$ 1,734,336	$ 1,570,173	$ 3,398,359	$ 3,138,680
Pipeline and Industrial Infrastructure Services	1,104,863	1,086,175	2,248,099	1,935,244
Consolidated revenues	$ 2,839,199	$ 2,656,348	$ 5,646,458	$ 5,073,924
Operating income (loss):				
Electric Power Infrastructure Services	$ 92,935	$ 146,011	$ 254,552	$ 286,906
Pipeline and Industrial Infrastructure Services	69,943	43,829	110,642	53,886
Corporate and non-allocated costs	(84,298)	(66,801)	(167,127)	(142,532)
Consolidated operating income	$ 78,580	$ 123,039	$ 198,067	$ 198,260
Depreciation:				
Electric Power Infrastructure Services	$ 26,714	$ 23,258	$ 51,965	$ 47,528
Pipeline and Industrial Infrastructure Services	22,734	22,480	45,289	43,175
Corporate and non-allocated costs	4,363	4,296	8,773	8,050
Consolidated depreciation	$ 53,811	$ 50,034	$ 106,027	$ 98,753

Separate measures of Quanta's assets and cash flows by reportable segment, including capital expenditures, are not produced or utilized by management to evaluate segment performance. Quanta's fixed assets, which are held at the operating unit level, include operating machinery, equipment and vehicles, office equipment, buildings and leasehold improvements, and are used on an interchangeable basis across its reportable segments. As such, for reporting purposes, total depreciation expense is allocated each quarter among Quanta's reportable segments based on the ratio of each reportable segment's revenue contribution to consolidated revenues.

Foreign Operations

During the three months ended June 30, 2019 and 2018, Quanta derived $277.3 million and $462.9 million of its revenues from foreign operations. During the six months ended June 30, 2019 and 2018, Quanta derived $883.9 million and $1.17 billion of its revenues from foreign operations. Of Quanta's foreign revenues, 73% and 68% were earned in Canada during the three months ended June 30, 2019 and 2018 and 78% and 73% were earned in Canada during the six months ended June 30, 2019 and 2018. In addition, Quanta held property and equipment of $315.7 million and $304.0 million in foreign countries, primarily Canada, as of June 30, 2019 and December 31, 2018.

13. SUPPLEMENTAL CASH FLOW INFORMATION:

The net effects of changes in operating assets and liabilities, net of non-cash transactions, on cash flows from operating activities are as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Accounts and notes receivable	$ (56,322)	$ (45,089)	$ (215,791)	$ (176,801)
Contract assets	(107,165)	(56,934)	(101,898)	(63,118)
Inventories	13,091	8,277	42,087	(5,405)
Prepaid expenses and other current assets	(73,235)	(39,251)	(102,574)	(57,993)
Accounts payable and accrued expenses and other non-current liabilities	44,543	151,001	(22,135)	123,790
Contract liabilities	67,390	(6,212)	44,010	71,062
Other, net [(1)]	(123,795)	(8,642)	(129,348)	(5,979)
Net change in operating assets and liabilities, net of non-cash transactions	$ (235,493)	$ 3,150	$ (485,649)	$ (114,444)

[(1)] The amounts for the three and six months ended June 30, 2019 include the payment of $87 million of on-demand advance payment bonds and $25 million of on-demand performance bonds exercised in connection with the termination of a large telecommunications project in Peru. See *Legal Proceedings* in Note 11 for additional information on this matter.

A reconciliation of cash, cash equivalents, and restricted cash reported within the condensed consolidated balance sheets that sum to the total of such amounts shown in the statements of cash flows is as follows (in thousands):

	June 30,	
	2019	2018
Cash and cash equivalents	$ 73,356	$ 120,357
Restricted cash included in “Prepaid expenses and other current assets”	3,733	2,926
Restricted cash included in “Other assets, net”	1,028	1,454
Total cash, cash equivalents, and restricted cash reported in the statements of cash flows	$ 78,117	$ 124,737

	March 31,	
	2019	2018
Cash and cash equivalents	$ 85,423	$ 101,736
Restricted cash included in “Prepaid expenses and other current assets”	3,038	3,160
Restricted cash included in “Other assets, net”	1,031	384
Total cash, cash equivalents, and restricted cash reported in the statements of cash flows	$ 89,492	$ 105,280

	December 31,	
	2018	2017
Cash and cash equivalents	$ 78,687	$ 138,285
Restricted cash included in “Prepaid expenses and other current assets”	3,286	5,106
Restricted cash included in “Other assets, net”	1,283	384
Total cash, cash equivalents, and restricted cash reported in the statements of cash flows	$ 83,256	$ 143,775

Restricted cash includes any cash that is legally restricted as to withdrawal or usage.

Supplemental cash flow information related to leases is as follows (in thousands):

	Three Months Ended June 30, 2019	Six Months Ended June 30, 2019
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	$ (29,820)	$ (59,267)
Operating cash flows from finance leases	$ (17)	$ (38)
Financing cash flows from finance leases	$ (482)	$ (1,112)
Lease assets obtained in exchange for lease liabilities:		
Operating leases	$ 27,467	$ 43,406
Finance leases	$ 220	$ 621

Additional supplemental cash flow information is as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Cash (paid) received during the period for —				
Interest paid	$ (15,725)	$ (8,772)	$ (29,157)	$ (14,732)
Income taxes paid	$ (60,333)	$ (34,598)	$ (68,526)	$ (52,555)
Income tax refunds	$ 50	$ 1,345	$ 1,328	$ 2,363

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our condensed consolidated financial statements and related notes included elsewhere in this Quarterly Report on Form 10-Q (Quarterly Report) and with our Annual Report on Form 10-K for the year ended December 31, 2018 (2018 Annual Report), which was filed with the Securities and Exchange Commission (SEC) onFebruary 28, 2019 and is available on the SEC's website at www.sec.gov and on our website, which is www.quantaservices.com. The discussion below contains forward-looking statements that are based upon our current expectations and are subject to uncertainty and changes in circumstances. Actual results may differ materially from these expectations due to inaccurate assumptions and known or unknown risks and uncertainties, including those identified in *Uncertainty of Forward-Looking Statements and Information* below, Item 1A. *Risk Factors* of Part II of this Quarterly Report and Item 1A. *Risk Factors* of Part I of our 2018 Annual Report.

Introduction

We are a leading provider of specialty contracting services, delivering comprehensive infrastructure solutions for the electric power, energy and communications industries in the United States, Canada, Australia, Latin America and select other international markets. The services we provide include the design, installation, upgrade, repair and maintenance of infrastructure within each of the industries we serve, such as electric power transmission and distribution networks; substation facilities; pipeline transmission and distribution systems and facilities; refinery, petrochemical and industrial facilities; and telecommunications and cable multi-system operator networks.

Our customers include many of the leading companies in the industries we serve. We have developed strong strategic alliances with numerous customers and strive to develop and maintain our status as a preferred service provider to our customers. Our services are typically provided pursuant to master service agreements, repair and maintenance contracts and fixed price and non-fixed price installation contracts.

We report our results under two reportable segments: (1) Electric Power Infrastructure Services and (2) Pipeline and Industrial Infrastructure Services. This structure is generally focused on broad end-user markets for our services. Our consolidated revenues for the six months ended June 30, 2019 were $5.65 billion, of which 60.2% was attributable to the Electric Power Infrastructure Services segment and 39.8% was attributable to the Pipeline and Industrial Infrastructure Services segment.

The Electric Power Infrastructure Services segment provides comprehensive network solutions to customers in the electric power industry. Services performed by the Electric Power Infrastructure Services segment generally include the design, installation, upgrade, repair and maintenance of electric power transmission and distribution infrastructure and substation facilities along with other engineering and technical services. This segment also provides emergency restoration services, including the repair of infrastructure damaged by inclement weather, the energized installation, maintenance and upgrade of electric power infrastructure utilizing unique bare hand and hot stick methods and our proprietary robotic arm technologies, and the installation of "smart grid" technologies on electric power networks. In addition, this segment provides services that support the development of renewable energy generation, including solar, wind and certain types of natural gas generation facilities, and related switchyards and transmission infrastructure. This segment also provides comprehensive communications infrastructure services to wireline and wireless telecommunications companies, cable multi-system operators and other customers within the communications industry; services in connection with the construction of electric power generation facilities; and the design, installation, maintenance and repair of commercial and industrial wiring. This segment also includes our postsecondary educational institution, which specializes in pre-apprenticeship training, apprenticeship training and specialized utility task training for electric workers, and includes curriculum for the gas distribution and communications industries.

The Pipeline and Industrial Infrastructure Services segment provides comprehensive infrastructure solutions to customers involved in the development, transportation, storage and processing of natural gas, oil and other products. Services performed by the Pipeline and Industrial Infrastructure Services segment generally include the design, installation, repair and maintenance of pipeline transmission and distribution systems, gathering systems, production systems, storage systems and compressor and pump stations, as well as related trenching, directional boring and mechanized welding services. In addition, this segment's services include pipeline protection, integrity testing, rehabilitation and replacement, and the fabrication of pipeline support systems and related structures and facilities for natural gas utilities and midstream companies. We also provide high-pressure and critical-path turnaround services to the downstream and midstream energy markets and instrumentation and electrical services, piping, fabrication and storage tank services. To a lesser extent, this segment serves the offshore and inland water energy markets and designs, installs and maintains fueling systems and water and sewer infrastructure.

For internal management purposes, we are also organized into two internal divisions: the Electric Power Infrastructure Services Division and the Pipeline and Industrial Infrastructure Services Division. These internal divisions are closely aligned with the reportable segments, and operating units are assigned to a division based on the predominant type of work performed.

Reportable segment information, including revenues and operating income by type of work, is gathered from each operating unit for the purpose of evaluating segment performance in support of our market strategies. Classification of our operating unit revenues by type of work for segment reporting purposes can at times require judgment on the part of management. Our operating units may perform joint projects for customers in multiple industries, deliver multiple types of services under a single customer contract or provide service offerings to various industries. For example, we perform joint trenching projects to install distribution lines for electric power and natural gas customers. Our integrated operations and common administrative support for operating units require that certain allocations be made to determine segment profitability, including allocations of shared and indirect costs (e.g., facility costs), indirect operating expenses (e.g., depreciation), and general and administrative costs. Certain corporate costs are not allocated, including payroll and benefits, employee travel expenses, facility costs, professional fees, acquisition costs, non-cash stock-based compensation and amortization related to intangible assets.

We operate primarily in the United States; however, we derived $277.3 million and $462.9 million of our revenues from foreign operations during the three months ended June 30, 2019 and 2018 and $883.9 million and $1.17 billion of our revenues from foreign operations during the six months ended June 30, 2019 and 2018. Of our foreign revenues, 73% and 68% were earned in Canada during the three months ended June 30, 2019 and 2018 and 78% and 73% were earned in Canada during the six months ended June 30, 2019 and 2018. In addition, we held property and equipment of $315.7 million and $304.0 million in foreign countries, primarily Canada, as of June 30, 2019 and December 31, 2018. See Note 2 of the Notes to Consolidated Financial Statements in Item 1. *Financial Statements* for a further disaggregation of revenues by geographic location.

Recent Acquisitions, Investments and Divestitures

Acquisitions

During the six months ended June 30, 2019, we acquired an electric power specialty contracting business located in the United States that provides aerial power line and construction support services and an electrical infrastructure services business located in Canada. The aggregate consideration for these acquisitions was $53.3 million paid or payable in cash. The results of the acquired businesses have generally been included in our Electric Power Infrastructure Services segment and consolidated financial statements beginning on the acquisition dates.

During the year ended December 31, 2018, we acquired an electrical infrastructure services business specializing in substation construction and relay services, a postsecondary educational institution that provides training and programs for workers in the industries we serve, and two communications infrastructure services businesses, all of which are located in the United States. The aggregate consideration for these acquisitions was $108.3 million paid or payable in cash, subject to certain adjustments, and 679,668 shares of Quanta common stock, which had a fair value of approximately $22.9 million as of the respective acquisition dates. Additionally, the acquisitions of the postsecondary educational institution and one of the communications infrastructure services businesses include the potential payment of up to $18.0 million of contingent consideration, payable if the acquired businesses achieve certain performance objectives over five- and three-year post-acquisition periods. Based on the estimated fair value of this contingent consideration, we recorded $16.5 million of liabilities as of the respective acquisition dates. The results of the acquired businesses have generally been included in our Electric Power Infrastructure Services segment and have been included in our consolidated financial statements beginning on the respective acquisition dates.

Investments

During 2018, we acquired a 30% equity interest in a water and gas pipeline infrastructure contractor located in Australia for $22.2 million. This investment includes an option to acquire the remaining equity of the company through 2020 and provides for certain additional earnings and distribution participation rights during a designated 25-month post-investment period, as well as preferential liquidation rights. This investment has been recorded at cost and will be adjusted for impairment, if any, plus or minus observable changes in the value of the company's equity. Earnings on this investment are recognized as dividends, and we received and recognized $3.9 million of cash dividends from this investment during 2018. During 2018, we also acquired a 49% equity interest in an electric power infrastructure services company, together with certain related customer relationship and other intangible assets, for $12.3 million.

We also enter into strategic partnerships and investment arrangements with customers and infrastructure investors to provide fully integrated infrastructure services on certain projects, including planning and feasibility analyses, engineering, design, procurement, construction and project operation and maintenance. These projects include public-private partnerships and concessions, along with private infrastructure projects such as build, own, operate (and in some cases transfer) and build-to-suit arrangements. As part of this strategy, we formed a partnership with select investors that provides up to $1.0 billion of capital, including approximately $80.0 million from us, available to invest in certain of these infrastructure projects through August 2024. Wholly owned subsidiaries of Quanta serve as the general partner of this partnership and as a separately operated registered investment adviser that manages the invested capital. As of June 30, 2019, we had contributed $15.1 million to this partnership in connection with certain investments and the payment of management fees.

During the three months ended June 30, 2019, we entered into a definitive agreement to sell our interest in a limited partnership that was selected during 2014 to build, own and operate a new 500 kilometer electric transmission line and two 500 kV substations in Alberta, Canada. The sale is expected to close in the fourth quarter of 2019 or early 2020, subject to receipt of regulatory approvals and satisfaction of customary closing conditions.

Remaining Performance Obligations and Backlog

A performance obligation is a promise in a contract with a customer to transfer a distinct good or service. As of June 30, 2019, our remaining performance obligations were $4.65 billion, 76.8% of which was expected to be recognized in the subsequent twelve months. Our remaining performance obligations represent management's estimate of consolidated revenues that are expected to be realized from the remaining portion of firm orders under fixed price contracts not yet completed or for which work has not yet begun. For purposes of calculating remaining performance obligations, we include all estimated revenues attributable to consolidated joint ventures and variable interest entities, revenues from funded and unfunded portions of government contracts to the extent they are reasonably expected to be realized, and revenues from change orders and claims to the extent management believes additional contract revenues will be earned and are deemed probable of collection.

We have also historically disclosed our backlog, and while backlog is not a term recognized under GAAP, it is a common measurement used in our industry. We also believe this non-GAAP measure enables us to more effectively forecast our future results and better identify future operating trends that may not otherwise be apparent. Our remaining performance obligations, as described above, are a component of our backlog calculation, which also includes estimated orders under master service agreements (MSAs), including estimated renewals, and non-fixed price contracts expected to be completed within one year. Our methodology for determining backlog may not be comparable to the methodologies used by other companies.

Generally, our customers are not contractually committed to specific volumes of services under our MSAs, and most of our contracts may be terminated, typically upon 30 to 90 days' notice, even if we are not in default under the contract. We determine the estimated amount of backlog for work under MSAs by using recurring historical trends for current MSAs, factoring in seasonal demand and projected customer needs based upon ongoing communications with the customer. In addition, many of our MSAs are subject to renewal, and these potential renewals are considered in determining the estimated amount of backlog. As of June 30, 2019 and December 31, 2018, MSAs accounted for 49% and 53% of our estimated 12-month backlog and 62% and 60% of total backlog. There can be no assurance as to our customers' actual requirements or that our estimates are accurate.

Revenue estimates included in our remaining performance obligations and backlog can be subject to change as a result of, among other things, project accelerations; project cancellations or delays due to various factors, including but not limited to commercial issues, regulatory requirements and adverse weather conditions; and final acceptance of change orders by our customers. These factors can also cause revenue amounts to be realized in periods and at levels different than originally projected.

The following table reconciles total remaining performance obligations to our backlog (a non-GAAP measure) by reportable segment along with estimates of amounts expected to be realized within 12 months (in thousands):

	June 30, 2019		December 31, 2018	
	12 Month	Total	12 Month	Total
Electric Power Infrastructure Services				
Remaining performance obligations	$ 2,243,327	$ 2,853,309	$ 2,093,461	$ 3,045,553
Estimated orders under MSAs and short-term, non-fixed price contracts	2,713,272	5,831,908	2,467,654	5,499,887
Backlog	4,956,599	8,685,217	4,561,115	8,545,440
Pipeline and Industrial Infrastructure Services				
Remaining performance obligations	1,329,172	1,798,081	1,003,543	1,635,918
Estimated orders under MSAs and short-term, non-fixed price contracts	1,195,755	2,287,327	1,411,329	2,161,275
Backlog	2,524,927	4,085,408	2,414,872	3,797,193
Total				
Remaining performance obligations	3,572,499	4,651,390	3,097,004	4,681,471
Estimated orders under MSAs and short-term, non-fixed price contracts	3,909,027	8,119,235	3,878,983	7,661,162
Backlog	$ 7,481,526	$ 12,770,625	$ 6,975,987	$ 12,342,633

Seasonality; Fluctuations of Results; Economic Conditions

Our revenues and results of operations can be subject to seasonal and other variations. These variations are influenced by weather, customer spending patterns, bidding seasons, receipt of required regulatory approvals, permits and rights of way, project timing and schedules, and holidays. Typically, our revenues are lowest in the first quarter of the year because cold, snowy or wet conditions can create challenging working conditions that are more costly for our customers or cause delays on projects. In addition, many of our customers develop their annual capital budgets during the first quarter and do not begin infrastructure projects in a meaningful way until those budgets are finalized. Second quarter revenues are typically higher than those in the first quarter, as some projects begin, but continued cold and wet weather can often impact second quarter productivity. Third quarter revenues are typically the highest of the year, as a greater number of projects are underway, and weather is normally more accommodating. Generally, revenues during the fourth quarter of the year are lower than the third quarter but higher than the second quarter. Many projects are completed in the fourth quarter, and revenues are often impacted positively by customers seeking to spend their capital budgets before the end of the year. However, the holiday season and inclement weather can sometimes cause delays during the fourth quarter, reducing revenues and increasing costs. Productivity and operating activity in any quarter may be positively or negatively affected by atypical weather patterns in the areas we serve, such as severe weather, excessive rainfall or unusual winter weather, as well as the timing of project awards, unanticipated changes in project schedules as a result of delays or accelerations and project cancellations and project terminations.

These seasonal impacts are typical for our U.S. operations, but as our foreign operations grow, this pattern may have a lesser impact on our quarterly revenues. For example, revenues in Canada are typically higher in the first quarter because projects are often accelerated in order to complete work while the ground is frozen and prior to the break up, or seasonal thaw, as productivity is adversely affected by wet ground conditions during the warmer spring and summer months. Also, although revenues from Australia and other international operations have not been significant relative to our overall revenues to date, their seasonal patterns may differ from those in North America and may impact our seasonality more in the future.

Additionally, our industry can be highly cyclical. Our volume of business may be adversely affected by declines or delays in new projects due to cyclicality, which may vary by geographic region. Project schedules, particularly in connection with larger, longer-term projects, can also create fluctuations in the amount of work performed in a given period. For example, in connection with larger and more complicated projects, the timing of obtaining permits and other approvals may be delayed, and we may need to maintain a portion of our workforce and equipment in an underutilized capacity to ensure we are strategically positioned to deliver on such projects when they move forward. Examples of other items that may cause our results or demand for our services to fluctuate materially from quarter to quarter include: the financial condition of our customers and their access to capital; margins for ongoing projects; economic and political conditions on a regional, national or global scale, including changes in U.S. trade relationships with other countries; our customers' capital spending, including on larger pipeline and electrical infrastructure projects; oil, natural gas and natural gas liquids prices; liabilities and costs that are not covered by or that are in excess of, third party insurance coverage; reimbursements associated with letters of credit and performance or payment bonds; the timing of and costs associated with acquisitions; changes in the fair value of acquisition-related contingent consideration liabilities; project payment disputes; project cancellations; dispositions; equity in earnings (losses) of unconsolidated affiliates; impairments of goodwill, intangible assets, long-lived assets or investments; effective tax rates; and interest rates. Accordingly, our operating results in any particular period may not be indicative of the results that can be expected for any other period. Please read *Outlook* and *Understanding Margins* for additional discussion of trends and challenges that may affect our financial condition, results of operations and cash flows.

Understanding Margins

Our gross margin is gross profit expressed as a percentage of revenues, and our operating margin is operating income expressed as a percentage of revenues. Cost of services, which is subtracted from revenues to obtain gross profit, consists primarily of salaries, wages and benefits to employees; depreciation; fuel and other equipment expenses; equipment rental expense; and costs related to subcontracted services, insurance, facilities, materials, parts and supplies. Selling, general and administrative expenses, amortization of intangible assets and change in fair value of contingent consideration liabilities are then subtracted from gross profit to obtain operating income. Various factors, only some of which are within our control, can impact our margins on a quarterly or annual basis.

Seasonal and geographical. Seasonal weather patterns can have a significant impact on margins. Generally, business is slower in the colder months versus the warmer months of the year, resulting in lower productivity and consequently reducing our ability to cover fixed costs. This can be offset somewhat by increased demand for electrical service and repair work due to severe weather during colder months, as well as increased demand in Canada and certain other northern climates during the winter months due to the adverse operating conditions during the spring seasonal thaw. Additionally, project schedules, including when projects begin and are completed, may impact margins. The mix of business conducted in the areas we serve also affects margins, as some areas offer the opportunity for higher margins due to their geographic characteristics. For example, margins may be negatively impacted by unexpected difficulties that can arise in challenging operating conditions, such as urban settings or mountainous and other difficult terrain. Site conditions, including unforeseen underground conditions, can also impact margins.

Weather. Adverse or favorable weather conditions can impact gross margins in a given period. For example, snowfall, rainfall or other severe weather may negatively impact our revenues and margins due to reduced productivity, as projects may be terminated, deferred or delayed until weather conditions improve or an affected area recovers from a severe weather event. Conversely, in periods when weather remains dry and temperatures are accommodating, more work can be done, sometimes at a lower cost. In some cases, severe weather, such as hurricanes, ice storms and wildfires, can provide us with emergency restoration service work, which typically yields higher margins due in part to better equipment utilization rates and absorption of fixed costs.

Revenue mix. The mix of revenues derived from the industries we serve and the types of services we provide within an industry will impact margins, as certain industries and services provide higher-margin opportunities. Additionally, changes in our customers' spending patterns can cause an imbalance in supply and demand, which can affect margins and the mix of revenues.

Service and maintenance versus installation. Installation work is often performed on a fixed price basis, while maintenance work is often performed under pre-established or negotiated prices or cost-plus pricing arrangements. Margins for installation work may vary from project to project, and may be higher than maintenance work, as work obtained on a fixed price basis has higher risk than other types of pricing arrangements. We have historically derived approximately 30% of our annual revenues from maintenance work, but a higher portion of installation work in any given period may affect our gross margins for that period.

Subcontract work. Work that is subcontracted to other service providers generally yields lower margins. An increase in subcontract work in a given period may contribute to a decrease in margins. In recent years, we have subcontracted approximately 15% to 20% of our work to other service providers.

Materials versus labor. Typically, our customers are responsible for supplying the materials for their projects; however, for some of our contracts we may agree to procure all or part of the required materials. Margins may be lower on projects where we furnish a significant amount of materials, including projects where we provide engineering, procurement and construction (EPC) services, as our markup on materials is generally lower than our markup on labor costs. Furthermore, fluctuations in the price of materials we are required to procure, including as a result of changes in U.S. trade relationships with other countries or other economic or political conditions, may impact our margins. In a given period, an increase in the percentage of work with higher materials procurement requirements may decrease our overall margins.

Size, scope and complexity of projects. We may experience a decrease or fluctuations in margins when larger, more complex electric transmission and pipeline projects experience significant delays or other difficulties impacting performance. Larger projects with higher voltage capacities, larger diameter throughput capacities, increased engineering, design or construction complexities, more difficult terrain requirements or longer distance requirements typically yield opportunities for higher margins as we assume a greater degree of performance risk and there is greater utilization of our resources for longer construction timeframes. Conversely, smaller or less complex electric transmission and pipeline projects typically provide lower margin opportunities, as there are a greater number of competitors capable of performing in this market, and competitors at times may more aggressively pursue available volumes of work to absorb fixed costs. A greater percentage of smaller scale or less complex electric transmission and pipeline work also could negatively impact margins due to the inefficiency of transitioning between a greater number of smaller projects versus continuous production on fewer larger projects. Our margins may be further impacted by delays in the timing of larger projects, extended bidding procedures for more complex EPC projects or temporary decreases in capital spending by our customers. Also, at times we may choose to maintain a portion of our workforce and equipment in an underutilized capacity to ensure we are strategically positioned to deliver on larger, more complicated electric transmission or pipeline projects when they move forward.

Project variability and performance. Margins for a single project may fluctuate quarter to quarter due to changes in the volume or type of work performed, the pricing structure under the project contract or job productivity. Productivity can be influenced by many factors, including unexpected project difficulties or site conditions; project location, including locations with challenging operating conditions; whether the work is on an open or encumbered right of way; inclement weather or severe weather events; environmental restrictions or regulatory delays; protests, other political activity or legal challenges related to a project; and the performance of third parties. These types of factors are not practicable to quantify through accounting data but may individually or in the aggregate have a direct impact on the gross margin of a specific project.

Depreciation. We include depreciation in cost of services, which is common practice in our industry; however, some companies within our industry do not. This can make comparability of our margins to those of other companies difficult and must be taken into consideration when comparing us to other companies.

Insurance. As discussed in *Contractual Obligations — Insurance*, we are insured for employer's liability, workers' compensation, auto liability and general liability claims. We also have employee health care benefit plans for most employees not subject to collective bargaining agreements. Margins could be impacted by fluctuations in insurance accruals as additional claims arise and as circumstances and conditions of existing claims change.

Foreign currency risk. Our financial performance is reported on a U.S. dollar-denominated basis but is partially subject to fluctuations in foreign currency exchange rates. Fluctuations in exchange rates relative to the U.S. dollar, primarily Canadian and Australian dollars, could cause material fluctuations in comparisons of our results of operations between periods.

Change in fair value of contingent consideration liabilities. We anticipate fluctuations in operating income margins as a result of changes in the fair value of contingent consideration liabilities associated with prior acquisitions, which occur as we obtain additional information on the likelihood that the acquired businesses will achieve their post-acquisition performance objectives. See Note 2 of the Notes to Condensed Consolidated Financial Statements in Item 1. *Financial Statements* for more information about the valuation methodologies and assumptions related to the determination of the fair value of these liabilities.

Selling, General and Administrative Expenses

Selling, general and administrative expenses consist primarily of compensation and related benefits, marketing and communication costs, facility costs (e.g., rent and utilities), professional fees, bad debt expense, acquisition costs, gains and losses on the sale of property and equipment, letter of credit fees and maintenance, training and conversion costs related to information technology systems.

Results of Operations

The results of acquired businesses have been included in the following results of operations beginning on their respective acquisition dates.

Consolidated Results

The following table sets forth selected statements of operations and other data for the periods indicated (dollars in thousands):

	Three Months Ended June 30,				Six Months Ended June 30,			
	2019		2018		2019		2018	
Revenues	$ 2,839,199	100.0 %	$ 2,656,348	100.0 %	$ 5,646,458	100.0 %	$ 5,073,924	100.0 %
Cost of services (including depreciation)	2,519,694	88.7	2,322,977	87.5	4,962,972	87.9	4,439,505	87.5
Gross profit	319,505	11.3	333,371	12.5	683,486	12.1	634,419	12.5
Selling, general and administrative expenses	223,944	7.9	206,104	7.8	455,852	8.1	421,526	8.3
Amortization of intangible assets	12,610	0.4	10,507	0.3	25,280	0.4	20,912	0.4
Change in fair value of contingent consideration liabilities	4,371	0.2	(6,279)	(0.2)	4,287	0.1	(6,279)	(0.1)
Operating income	78,580	2.8	123,039	4.6	198,067	3.5	198,260	3.9
Interest expense	(15,821)	(0.6)	(9,178)	(0.3)	(29,697)	(0.5)	(15,956)	(0.3)
Interest income	267	—	660	—	576	—	806	—
Other income (expense), net	6,521	0.2	(10,426)	(0.4)	65,480	1.2	(22,401)	(0.4)
Income before income taxes	69,547	2.4	104,095	3.9	234,426	4.2	160,709	3.2
Provision for income taxes	41,088	1.4	29,389	1.1	84,932	1.6	47,392	1.0
Net income	28,459	1.0	74,706	2.8	149,494	2.6	113,317	2.2
Less: Net income attributable to non-controlling interests	1,115	—	341	—	1,662	—	1,338	—
Net income attributable to common stock	$ 27,344	1.0 %	$ 74,365	2.8 %	$ 147,832	2.6 %	$ 111,979	2.2 %

Three months ended June 30, 2019 compared to the three months ended June 30, 2018

Revenues. Revenues increased $182.9 million, or 6.9%, to $2.84 billion for the three months ended June 30, 2019. Contributing to the increase were incremental revenues of $164.2 million from electric power infrastructure services and $18.7 million from pipeline and industrial infrastructure services. Electric power infrastructure services revenues for the three months ended June 30, 2019 were impacted by a $48.8 million reversal of revenues associated with the termination of a large telecommunications project in Peru and the inherent uncertainty involved in arbitration proceedings and recovery of amounts owed. See *Legal Proceedings* in Note 11 of the Notes to Consolidated Financial Statements in Item 1. *Financial Statements* for additional information and disclosure related to this matter. See *Segment Results* below for additional information and discussion related to segment revenues.

Gross profit. Gross profit decreased $13.9 million, or 4.2%, to $319.5 million for the three months ended June 30, 2019. Gross profit as a percentage of revenues decreased to 11.3% for the three months ended June 30, 2019 from 12.5% for the three months ended June 30, 2018. The decreases in gross profit and gross profit as a percentage of revenues were primarily due to a $79.2 million charge, or a negative 260 basis point impact to gross profit as a percentage of revenues, associated with the termination of the telecommunications project in Peru referenced above, which included a $48.8 million reversal of revenues as described above and a $30.4 million increase to cost of services. Partially offsetting the project termination charge were the overall increase in revenues described above and margin improvements in both electric power infrastructure services and pipeline and industrial infrastructure services. See *Segment Results* below for additional information and discussion related to segment operating income (loss).

Selling, general and administrative expenses. Selling, general and administrative expenses increased $17.8 million, or 8.7%, to $223.9 million for the three months ended June 30, 2019. This increase was primarily attributable to a $7.4 million increase in legal and other professional fees and a $7.2 million increase in compensation expenses, largely associated with higher salaries due to increased personnel to support business growth and annual and incentive compensation increases. Also contributing to the increase was a $2.3 million increase related to information systems and rent expense to support business growth. Partially offsetting these increases was a $3.3 million decrease in asset impairment charges for the three months ended June 30, 2019. Selling, general and administrative expenses as a percentage of revenues increased to 7.9% for the three months ended June 30, 2019 from 7.8% for the three months ended June 30, 2018.

Amortization of intangible assets. Amortization of intangible assets increased $2.1 million to $12.6 million for the three months ended June 30, 2019. This increase was primarily due to increased amortization of intangible assets associated with recently acquired businesses, partially offset by reduced amortization expense from previously acquired intangible assets as certain of these assets became fully amortized.

Change in fair value of contingent consideration liabilities. A $4.4 million increase in the fair value of contingent consideration liabilities was recognized during the three months ended June 30, 2019, which resulted in a corresponding decrease in operating income, as compared to a $6.3 million decrease in the fair value of contingent consideration liabilities recognized during the three months ended June 30, 2018, which resulted in a corresponding increase in operating income. These changes were primarily due to changes in forecasted performance in post-acquisition periods for certain acquired businesses and the effect of present value accretion on fair value calculations. It is anticipated that changes in fair value will be recorded periodically until contingent consideration liabilities are settled. See *Contractual Obligations — Contingent Consideration Liabilities* for more information.

Interest expense. Interest expense increased $6.6 million to $15.8 million for the three months ended June 30, 2019 as compared to the three months ended June 30, 2018 due to increased borrowing activity and a higher weighted average interest rate.

Other income (expense), net. Other income (expense), net consisted of net income of $6.5 million for the three months ended June 30, 2019, as compared to net expense of $10.4 million for the three months ended June 30, 2018. The net income recognized in the three months ended June 30, 2019 was partially due to a $3.1 million bargain purchase gain, net of taxes, related to the acquisition of an electrical infrastructure services business. The net expense recognized in the three months ended June 30, 2018 was primarily related to the deferral of earnings on a large electric transmission project in Canada that was substantially completed and placed into commercial operation during the three months ended March 31, 2019.

Provision for income taxes. The provision for income taxes was $41.1 million for the three months ended June 30, 2019, with an effective tax rate of 59.1%. The provision for income taxes was $29.4 million for the three months ended June 30, 2018, with an effective tax rate of 28.2%. The increase in the effective tax rate was primarily due to the $79.2 million charge associated with the termination of the telecommunications project in Peru, for which no income tax benefit was recognized, and the mix of earnings, partially offset by a $2.5 million benefit from a change in the Alberta Canada statutory income tax rate.

Other comprehensive income (loss). Other comprehensive income (loss), net of taxes was a gain of $15.9 million in the three months ended June 30, 2019 compared to a loss of $20.1 million in the three months ended June 30, 2018. The gain in the three months ended June 30, 2019 was due to the strengthening of foreign currencies associated with our international operations, primarily the Canadian and Australian dollars, against the U.S. dollar as of June 30, 2019 when compared to March 31, 2019. The loss in the three months ended June 30, 2018 was due to the strengthening of the U.S. dollar against foreign currencies associated with our international operations, primarily the Canadian and Australian dollars, as of June 30, 2018 when compared to March 31, 2018.

Six months ended June 30, 2019 compared to the six months ended June 30, 2018

Revenues. Revenues increased $572.5 million, or 11.3%, to $5.65 billion for the six months ended June 30, 2019. Contributing to the increase were incremental revenues of $259.7 million from electric power infrastructure services and $312.9 million from pipeline and industrial infrastructure services. As described previously, electric power infrastructure services revenues for the three months ended June 30, 2019 were impacted by a $48.8 million reversal of revenues associated with the termination of a telecommunications project in Peru. See *Segment Results* below for additional information and discussion related to segment revenues.

Gross profit. Gross profit increased $49.1 million, or 7.7%, to $683.5 million for the six months ended June 30, 2019. Gross profit as a percentage of revenues was 12.1% for the six months ended June 30, 2019 as compared to 12.5% for the six months ended June 30, 2018. The increase in gross profit was primarily due to the overall increase in revenues described above and margin improvements in both electric power infrastructure services and pipeline and industrial infrastructure services, partially offset by the $79.2 million Peru project termination charge discussed previously. The project termination charge had a negative 130 basis point impact to gross profit as a percentage of revenues for the six months ended June 30, 2019. See *Segment Results* below for additional information and discussion related to segment operating income (loss).

Selling, general and administrative expenses. Selling, general and administrative expenses increased $34.3 million, or 8.1%, to $455.9 million for the six months ended June 30, 2019. This increase was primarily attributable to a $15.7 million increase in compensation expenses, largely associated with higher salaries due to increased personnel to support business growth and annual and incentive compensation increases and a $6.8 million increase in legal and other professional fees. Also contributing to the increase were a $5.1 million increase in information systems and rent expense to support business growth and a $4.7 million increase in deferred compensation expense, which was primarily associated with market value changes. Partially offsetting these increases was a $3.3 million decrease in asset impairment charges for the six months ended June 30, 2019. Selling, general and administrative expenses as a percentage of revenues decreased to 8.1% for the six months ended June 30, 2019 from 8.3% for the six months ended June 30, 2018, primarily due to the increase in revenues described above.

Amortization of intangible assets. Amortization of intangible assets increased $4.4 million to $25.3 million for the six months ended June 30, 2019. This increase was primarily due to increased amortization of intangible assets associated with recently acquired businesses, partially offset by reduced amortization expense from previously acquired intangible assets as certain of these assets became fully amortized.

Change in fair value of contingent consideration liabilities. A $4.3 million increase in the fair value of contingent consideration liabilities was recognized during the six months ended June 30, 2019, which resulted in a corresponding decrease in operating income, as compared to $6.3 million decrease in the fair value of contingent consideration liabilities recognized during the six months ended June 30, 2018, which resulted in a corresponding increase in operating income. These changes were primarily due to changes in forecasted performance in post-acquisition periods for certain acquired businesses and the effect of present value accretion on fair value calculations. It is anticipated that changes in fair value will be recorded periodically until contingent consideration liabilities are settled. See *Contractual Obligations — Contingent Consideration Liabilities* for more information.

Interest expense. Interest expense increased $13.7 million to $29.7 million for the six months ended June 30, 2019 as compared to the six months ended June 30, 2018 due to increased borrowing activity and a higher weighted average interest rate.

Other income (expense), net. Other income (expense), net was a net income of $65.5 million for the six months ended June 30, 2019, as compared to a net expense of $22.4 million for the six months ended June 30, 2018. This change was primarily related to our equity investment in a large electric transmission project in Canada that was substantially completed and placed into commercial operation during the three months ended March 31, 2019. As a result of the project completion, we recognized $60.3 million of earnings that were previously deferred as a component of "Other income (expense), net" in prior periods. The net expense recognized in the six months ended June 30, 2018 was primarily related to the deferral of earnings on the same project. In addition, during the six months ended June 30, 2019, a $3.1 million bargain purchase gain, net of taxes, was recognized, which related to the acquisition of an electrical infrastructure services business, and other expense of $4.0 million was recognized related to a reduction of an indemnification asset, which resulted from the favorable settlement of a pre-acquisition foreign tax-related obligation.

Provision for income taxes. The provision for income taxes was $84.9 million for the six months ended June 30, 2019, with an effective tax rate of 36.2%. The provision for income taxes was $47.4 million for the six months ended June 30, 2018, with an effective tax rate of 29.5%. The increase in the effective tax rate was primarily due to the $79.2 million charge associated with the termination of the large telecommunications project in Peru, for which no income tax benefit was recognized, and the mix of earnings. Favorably impacting the effective tax rate were a $4.5 million decrease in reserves for uncertain tax positions resulting from the favorable settlement of a pre-acquisition obligation associated with certain non-U.S. income taxes and the expiration of U.S. state income tax statutes of limitations and a $2.5 million benefit from a change in the Alberta Canada statutory income tax rate.

Other comprehensive income (loss). Other comprehensive income (loss), net of taxes was a gain of $34.7 million in the six months ended June 30, 2019 compared to a loss of $45.1 million in the six months ended June 30, 2018. The gain in the six months ended June 30, 2019 was due to the strengthening of the foreign currencies associated with our international operations, primarily the Canadian and Australian dollars, when compared to the U.S. dollar as of June 30, 2019 when compared to December 31, 2018, and the loss in the six months ended June 30, 2018 was due to a strengthening of the U.S. dollar against foreign currencies associated with our international operations, primarily the Canadian and Australian dollars, as of June 30, 2018 when compared to December 31, 2017.

Segment Results

The following table sets forth segment revenues and segment operating income (loss) for the periods indicated (dollars in thousands):

	Three Months Ended June 30,				Six Months Ended June 30,			
	2019		2018		2019		2018	
Revenues:								
Electric Power Infrastructure Services	$ 1,734,336	61.1%	$ 1,570,173	59.1%	$ 3,398,359	60.2%	$ 3,138,680	61.9%
Pipeline and Industrial Infrastructure Services	1,104,863	38.9	1,086,175	40.9	2,248,099	39.8	1,935,244	38.1
Consolidated revenues from external customers	$ 2,839,199	100.0%	$ 2,656,348	100.0%	$ 5,646,458	100.0%	$ 5,073,924	100.0%
Operating income (loss):								
Electric Power Infrastructure Services	$ 92,935	5.4%	$ 146,011	9.3%	$ 254,552	7.5%	$ 286,906	9.1%
Pipeline and Industrial Infrastructure Services	69,943	6.3%	43,829	4.0%	110,642	4.9%	53,886	2.8%
Corporate and non-allocated costs	(84,298)	—	(66,801)	—	(167,127)	N/A	(142,532)	N/A
Consolidated operating income	$ 78,580	2.8%	$ 123,039	4.6%	$ 198,067	3.5%	$ 198,260	3.9%

Three months ended June 30, 2019 compared to the three months ended June 30, 2018

Electric Power Infrastructure Services Segment Results

Revenues increased $164.2 million, or 10.5%, to $1.73 billion for the three months ended June 30, 2019. This change in revenues was primarily due to increased customer spending on transmission and distribution services, including increased revenues in the western United States associated with grid modernization and accelerated fire hardening programs, and approximately $35 million in revenues from acquired businesses. These increases were partially offset by lower revenues on a larger transmission project in Canada that was substantially completed during the three months ended March 31, 2019; an approximately $26 million decrease in communications infrastructure services revenues, which included a $48.8 million reversal of revenues related to the termination of a large telecommunications project in Peru;less favorable foreign currency exchange rates, which negatively impacted revenues by approximately $8 million and were primarily attributable to the relationship between the U.S. dollar and the Canadian and Australian dollars; and a $7 million decrease in emergency restoration services revenues, which was primarily attributable to the significant impact of winter storms in early 2018.

Operating income decreased $53.1 million, or 36.4%, to $92.9 million for the three months ended June 30, 2019. Operating income as a percentage of revenues decreased to 5.4% for the three months ended June 30, 2019 from 9.3% for the three months ended June 30, 2018. These decreases were primarily due to the $79.2 million charge associated with the termination of the telecommunications project in Peru, partially offset by higher operating income from the increased segment revenues described above, including higher spending on continuing fire hardening programs and improved execution across the segment. The project termination charge had a negative 430 basis point impact to operating income as a percentage of revenues for the three months ended June 30, 2019 and included a reduction of previously recognized earnings on the project, a reserve against a portion of unpaid project costs incurred through the project termination date, an accrual for a portion of alleged liquidated damages and estimated costs to complete the project turnover and close out the project. Also negatively impacting the three months ended June 30, 2019 were pronounced seasonal effects in Canada, which in addition to normal revenue seasonality, had elevated levels of unabsorbed costs as the crews and equipment completing the large transmission project transitioned to new projects that are expected to commence in the fourth quarter of 2019. Additionally, operating income for the three months ended June 30, 2018 included the favorable progress on the large transmission project in Canada that successfully executed through project procurement, winter schedule and productivity risks, resulting in a decrease in cost contingencies. This large transmission project was substantially completed in the three months ended March 31, 2019.

Pipeline and Industrial Infrastructure Services Segment Results

Revenues increased $18.7 million, or 1.7%, to $1.10 billion for the three months ended June 30, 2019. This change was primarily due to an increase in revenues from pipeline transmission and gas distribution services, which resulted from increased capital spending by our customers and included an increase in the number of and activity on larger pipeline transmission projects. The timing of construction for these types of larger projects is highly variable due to potential permitting delays, worksite access limitations related to environmental regulations and seasonal weather patterns. Due to these factors, the majority of our larger pipeline transmission project work for 2018 was performed in the second half of the year, while the majority of such work for 2019 is expected to be performed in the first half of the year. Partially offsetting these increases were less favorable foreign currency exchange rates during the three months ended June 30, 2019, which negatively impacted revenues by approximately $5 million and were primarily attributable to the relationship between the U.S. dollar and the Canadian and Australian dollars.

Operating income increased $26.1 million, or 59.6%, to $69.9 million for the three months ended June 30, 2019. Operating income as a percentage of revenues increased to 6.3% for the three months ended June 30, 2019 from 4.0% for the three months ended June 30, 2018. These increases were primarily due to improved margins on both gas distribution services and larger pipeline transmission projects. Also contributing to the increases were a $3.3 million reduction in asset impairment charges and a $1.3 million reduction in severance and restructuring costs. Additionally, the three months ended June 30, 2018 was negatively impacted by harsh weather conditions on a midstream project in the northeastern United States, which has been completed. Partially offsetting these increases was a $13.6 million loss during the three months ended June 30, 2019 associated with continued rework and start-up delays on a processing facility project in Texas, which was approximately 96% complete as of June 30, 2019.

Corporate and Non-allocated Costs

Certain selling, general and administrative expenses and amortization of intangible assets are not allocated to segments. Corporate and non-allocated costs for the three months ended June 30, 2019 increased $17.5 million to $84.3 million compared to the three months ended June 30, 2018. The increase was primarily due to $4.4 million increase in the fair value of contingent consideration liabilities in the three months ended June 30, 2019 compared to a $6.3 million decrease in the fair value of certain contingent consideration liabilities recognized in the three months ended June 30, 2018. Also contributing to the increase were a $2.2 million increase in legal and other professional fees and a $2.1 million increase in intangible amortization expense.

Six months ended June 30, 2019 compared to the six months ended June 30, 2018

Electric Power Infrastructure Services Segment Results

Revenues for this segment increased $259.7 million, or 8.3%, to $3.40 billion for the six months ended June 30, 2019. This change in revenues was primarily due to increased customer spending on transmission and distribution services, including increased revenues in the western United States associated with grid modernization and accelerated fire hardening programs, and approximately $70 million in revenues from acquired businesses. These increases were partially offset by lower revenues on a larger transmission project in Canada that was substantially completed during the three months ended March 31, 2019; a $24 million decrease in emergency restoration services revenues, which was primarily attributable to the significant impact of winter storms in early 2018; and less favorable foreign currency exchange rates, which negatively impacted revenues by approximately $22 million and were primarily attributable to the relationship between the U.S. dollar and the Canadian and Australian dollars. Additionally, there was a slight decrease in communications infrastructure services revenues; however, the decrease included a $48.8 million reversal of revenues related to the large telecommunications project in Peru described previously.

Operating income decreased $32.4 million, or 11.3%, to $254.6 million for the six months ended June 30, 2019. Operating income as a percentage of segment revenues decreased to 7.5% for the six months ended June 30, 2019 from 9.1% for the six months ended June 30, 2018. These decreases were primarily due to the $79.2 million charge associated with the termination of the large telecommunications project in Peru described previously; more pronounced seasonal effects in Canada, which in addition to normal revenue seasonality, had elevated levels of unabsorbed costs as the crews and equipment completing a large transmission project transitioned to new projects that are expected to commence in the fourth quarter of 2019; and lower revenues from emergency restoration services described above, which typically yield higher margins due in part to higher equipment utilization and absorption of fixed costs. Positively impacting the six months ended June 30, 2019 was the increase in revenues described above, including higher spending on continuing fire hardening programs and improved execution across the segment. The telecommunications project termination charge had a negative 220 basis point impact to operating income as a percentage of revenues for the six months ended June 30, 2019. Additionally, operating income for the six months ended June 30, 2018 included the favorable progress on the large transmission project in Canada that successfully executed through project procurement, winter schedule and productivity risks, resulting in a decrease in cost contingencies.

Pipeline and Industrial Infrastructure Services Segment Results

Revenues for this segment increased $312.9 million, or 16.2%, to $2.25 billion for the six months ended June 30, 2019. This change was primarily due to an increase in revenues from pipeline transmission, gas distribution and industrial services, which resulted from increased capital spending by our customers and included an increase from larger pipeline transmission projects. The timing of construction for these types of larger projects is highly variable due to potential permitting delays, worksite access limitations related to environmental regulations and seasonal weather patterns. Due to these factors, the majority of our larger pipeline transmission project work for 2018 was performed in the second half of the year, while the majority of such work for 2019 is expected to be performed in the first half of the year. Partially offsetting these increases were less favorable foreign currency exchange rates during the six months ended June 30, 2019, which negatively impacted revenues by approximately $22 million and were primarily attributable to the relationship between the U.S. dollar and the Canadian and Australian dollars.

Operating income increased $56.8 million, or 105.3%, to $110.6 million for the six months ended June 30, 2019. Operating income as a percentage of segment revenues increased to 4.9% for the six months ended June 30, 2019 from 2.8% for the six months ended June 30, 2018. These increases were primarily due to improved margins across our transmission, distribution and industrial services operations resulting from improved execution and utilization, as well as an increase in revenues from larger pipeline transmission projects, which typically yield higher margins. Also contributing to these increases were a $3.3 million reduction in asset impairment charges, a $1.3 million reduction in severance and restructuring costs and the impact of severe weather on various ongoing projects that resulted in lower productivity during the six months ended June 30, 2018. Partially offsetting these increases was a $21.5 million loss during the six months ended June 30, 2019 associated with continued rework and start-up delays on a processing facility project in Texas, which was approximately96% complete at June 30, 2019.

Corporate and Non-allocated Costs

Certain selling, general and administrative expenses and amortization of intangible assets are not allocated to segments. Corporate and non-allocated costs for thesix months ended June 30, 2019 increased $24.6 million to $167.1 million compared to the six months ended June 30, 2018. This increase was partially due to a $4.3 million increase in the fair value of contingent consideration liabilities in thesix months ended June 30, 2019, as compared to a $6.3 million decrease in the fair value of contingent consideration liabilities recognized during the six months ended June 30, 2018. Also contributing to the increase were a $4.7 million increase in deferred compensation expense primarily associated with market value changes and a $4.4 million increase in intangible amortization. Partially offsetting these increases was a $4.6 million decrease in acquisition-related costs.

Liquidity and Capital Resources

Cash Requirements

Amounts related to our cash and cash equivalents based on geographic location of the bank accounts were as follows (in thousands):

	June 30, 2019	December 31, 2018
Cash and cash equivalents held in domestic bank accounts	$ 52,432	$ 62,495
Cash and cash equivalents held in foreign bank accounts	20,924	16,192
Total cash and cash equivalents	$ 73,356	$ 78,687

Cash and cash equivalents held by joint ventures, which are either consolidated or proportionately consolidated, are available to support joint venture operations, but we cannot utilize those assets to support our other operations. We generally have no right to cash and cash equivalents held by a joint venture other than participating in distributions and in the event of dissolution. Amounts related to cash and cash equivalents held by joint ventures, which are included in our total cash and cash equivalents balances, were as follows (in thousands):

	June 30, 2019	December 31, 2018
Cash and cash equivalents held by domestic joint ventures	$ 7,927	$ 8,544
Cash and cash equivalents held by foreign joint ventures	15	441
Total cash and cash equivalents held by joint ventures	7,942	8,985
Cash and cash equivalents not held by joint ventures	65,414	69,702
Total cash and cash equivalents	$ 73,356	$ 78,687

At June 30, 2019, we were in compliance with the covenants under the credit agreement for our senior secured credit facility. We anticipate that our cash and cash equivalents on hand, existing borrowing capacity under our senior secured credit facility, our ability to access capital markets and future cash flows from operations will provide sufficient funds to enable us to meet our debt repayment obligations, fund future operating needs and planned capital expenditures during 2019, and facilitate our ability to pay any future dividends we declare and grow through acquisitions or otherwise in the foreseeable future.

Our industry is capital intensive, and we expect the need for substantial capital expenditures to continue into the foreseeable future to meet the anticipated demand for our services, all of which may require cash. Total capital expenditures are expected to be approximately $275 million for 2019, of which we have spent $141.4 million through June 30, 2019.

We also evaluate opportunities for strategic acquisitions, stock repurchases under our authorized stock repurchase programs and opportunities to invest in strategic partnerships with customers and infrastructure investors. These investment opportunities exist in the markets and industries we serve and may require the use of cash to purchase debt or equity investments.

Management monitors financial markets and national and global economic conditions for factors that may affect our liquidity and capital resources. We consider our investment policies related to cash and cash equivalents to be conservative in that we maintain a diverse portfolio of what we believe to be high-quality cash and cash equivalent investments with short-term maturities. Accordingly, we do not anticipate that any weakness in the capital markets will have a material impact on the principal amounts of our cash and cash equivalents or our ability to rely upon our senior secured credit facility for funds. To date, we have not experienced a loss of or lack of access to our cash or cash equivalents or funds under our senior secured credit facility; however, our access to invested cash and cash equivalents or availability under our senior secured credit facility could be impacted in the future by adverse conditions in financial markets.

We generally do not provide for taxes related to undistributed earnings of our foreign subsidiaries because such earnings either would not be taxable when remitted or they are considered to be indefinitely reinvested. We could also be subject to additional foreign withholding taxes if we were to repatriate cash that is indefinitely reinvested outside the United States, but we do not expect such amounts to be material.

Sources and Uses of Cash

As of June 30, 2019, we had cash and cash equivalents of $73.4 million and working capital of $1.85 billion. We had $1.54 billion of loans outstanding under our senior secured credit facility, which included $577.5 million outstanding under the term loan facility and $962.9 million of outstanding revolving loans. Of the total outstanding borrowings, $1.39 billion were denominated in U.S. dollars, $106.9 million were denominated in Canadian dollars and $40.0 million were denominated in Australian dollars. We also had $345.0 million of letters of credit and bank guarantees outstanding under our senior secured credit facility, $234.2 million of which were denominated in U.S. dollars and $110.8 million of which were denominated in currencies other than the U.S. dollar, primarily Australian or Canadian dollars. As of June 30, 2019, our senior secured credit facility had $677.1 million available for loans or issuing new letters of credit or bank guarantees.

In summary, our cash flows for each period were as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Net cash provided by (used in) operating activities	$ (108,664)	$ 156,520	$ (191,414)	$ 182,513
Net cash used in investing activities	$ (68,171)	$ (93,354)	$ (215,327)	$ (185,252)
Net cash provided by (used in) financing activities	$ 165,378	$ (44,822)	$ 401,638	$ (18,103)

Operating Activities

Cash flow from operations is primarily influenced by demand for our services and operating margins but can also be influenced by working capital needs associated with the various types of services that we provide. In particular, working capital needs may increase when we commence large volumes of work under circumstances where project costs, primarily labor, equipment and subcontractors, are required to be paid before the associated receivables are billed and collected. Accordingly, changes within working capital in accounts receivable, contract assets and contract liabilities are normally related and are typically affected on a collective basis by changes in revenue due to the timing and volume of work performed and variability in the timing of customer billings and payments. Additionally, working capital needs are generally higher during the summer and fall months due to increased demand for our services when favorable weather conditions exist in many of our operating regions. Conversely, working capital assets are typically converted to cash during the winter months. These seasonal trends can be offset by changes in project timing due to delays or accelerations and other economic factors that may affect customer spending.

Net cash used in operating activities during the three and six months ended June 30, 2019 included the payment of $112 million as a result of the exercise of on-demand advance payment and performance bonds in connection with the termination of the large telecommunications project discussed previously. Net cash used in operating activities was also impacted by increased working capital, including mobilization and tooling costs, to support business growth and due to extended billing and collection cycles for certain utility customers. These items were partially offset by the collection of $109 million of pre-petition receivables related to the PG&E bankruptcy proceedings during the three months ended June 30, 2019. Additionally, during the three and six months ended June 30, 2018, a significant advance billing position on a larger electric transmission project in Canada favorably impacted net cash flow from operating activities.

Days sales outstanding (DSO) as of June 30, 2019 was 91 days, as compared to 74 days at June 30, 2018. Although the increase was primarily attributable to certain of the items described above, approximately three days of the increase are attributable to the reclassification of significant retainage balances from long-term to current receivables during the first quarter of 2019 in connection with a large electric transmission project in Canada. Additionally, approximately five days of the increase are attributable to retainage balances for certain pipeline projects that were substantially completed in previous periods. DSO is calculated by using the sum of current accounts receivable, net of allowance (which includes retainage and unbilled balances), plus contract assets less contract liabilities, divided by average revenues per day during the quarter.

Investing Activities

Net cash used in investing activities in the three months ended June 30, 2019 included $72.8 million of capital expenditures and $3.8 million used for acquisitions. These items were partially offset by $8.6 million of proceeds from the sale of property and equipment. Net cash used in investing activities in the three months ended June 30, 2018 included $81.8 million of capital expenditures and $15.5 million primarily related to the acquisition of certain properties and training facilities associated with a business acquired during the three months ended March 31, 2018. These items were partially offset by $7.2 million of proceeds from the sale of property and equipment. Net cash used in investing activities in the six months ended June 30, 2019 included $141.4 million of capital expenditures, $55.3 million used for acquisitions and $37.9 million of cash paid for investments in unconsolidated affiliates and other entities. These items were partially offset by $19.4 million of proceeds from the sale of property and equipment. Net cash used in investing activities in the six months ended June 30, 2018 included $148.6 million used for capital expenditures and $46.2 million used for acquisitions. These items were partially offset by $13.0 million of proceeds from the sale of property and equipment.

Our industry is capital intensive, and we expect the need for substantial capital expenditures to continue into the foreseeable future to meet the anticipated demand for our services. We also have various contractual obligations related to investments in unconsolidated affiliates and other capital commitments that are detailed in *Contractual Obligations* below. In addition, we expect to continue to pursue strategic acquisitions and investments, although we cannot predict the timing or magnitude of the potential cash outlays for these initiatives.

Additionally, certain of our acquisitions included the potential payment of contingent consideration, payable in the event certain performance objectives are achieved by the acquired businesses. The majority of these contingent consideration liabilities are subject to a maximum payment amount, which totaled $153.0 million as of June 30, 2019. Included within this maximum amount is approximately $18.0 million related to certain acquisitions completed in 2018, payable if the acquired businesses achieve certain performance objectives over five-year and three-year post-acquisition periods, and approximately $100.0 million related to the 2017 acquisition of Stronghold, Ltd. and Stronghold Specialty, Ltd., payable at the end of a three-year post-acquisition period if the acquired business achieves certain performance objectives. The significant majority of these liabilities would be paid at least 70% to 85% in cash. The aggregate fair value of all of our contingent consideration liabilities was $75.0 million as of June 30, 2019.

Financing Activities

Net cash provided by financing activities in the three months ended June 30, 2019 included $167.0 million of net borrowings under our senior secured credit facility and $7.3 million of net short-term borrowings, partially offset by $5.8 million of cash payments of dividends and cash dividend equivalents. Net cash used in financing activities in the three months ended June 30, 2018 included $39.1 million of net repayments under our senior secured credit facility and $16.0 million of cash payments for common stock repurchases, partially offset by $12.9 million of net short-term borrowings. Net cash provided by financing activities in the six months ended June 30, 2019 included $466.7 million of net borrowings under our senior secured credit facility, partially offset by $20.1 million of cash payments for common stock repurchases, $15.9 million of net short-term repayments, $15.3 million of cash payments to satisfy tax withholding obligations associated with stock-based compensation and $11.6 million of cash payments of dividends and cash dividend equivalents. Net cash used in financing activities in the six months ended June 30, 2018 included $189.9 million of common stock repurchases and $14.2 million of payments to satisfy tax withholding obligations associated with stock-based compensation, largely offset by $175.5 million of net borrowings under our senior secured credit facility and $12.9 million of net short-term debt borrowings.

Stock Repurchases

We repurchased the following shares of common stock in the open market under our stock repurchase programs (in thousands):

Quarter ended:	**Shares**		**Amount**
June 30, 2019	—	$	—
March 31, 2019	376	$	11,953
December 31, 2018	7,652	$	233,633
September 30, 2018	701	$	23,751
June 30, 2018	595	$	19,993
March 31, 2018	4,969	$	173,913

Our policy is to record a stock repurchase as of the trade date; however, the payment of cash related to a repurchase is made on the settlement date of the trade. During the three months ended June 30, 2019 and 2018, cash payments related to stock repurchases were $0.2 million and $16.0 million, and during the six months ended June 30, 2019 and 2018, cash payments related to stock repurchases were $20.1 million and $189.9 million.

As of June 30, 2019, $286.8 million remained authorized under our current repurchase program. Repurchases under the 2018 Repurchase Program may be implemented through open market repurchases or privately negotiated transactions, at management's discretion, based on market and business conditions, applicable contractual and legal requirements, including restrictions under our senior secured credit facility, and other factors. We are not obligated to acquire any specific amount of common stock and the 2018 Repurchase Program may be modified or terminated by our Board of Directors at any time at its sole discretion and without notice. For additional detail about our stock repurchases, refer to Note 9 of the Notes to Condensed Consolidated Financial Statements in Item 1. *Financial Statements*.

Dividends

We declared and paid the following cash dividends and cash dividend equivalents during 2018 and the first six months of 2019 (in thousands, except per share amounts):

Declaration Date	Record Date	Payment Date	Dividend Per Share	Dividends Declared
May 24, 2019	July 1, 2019	July 15, 2019	$ 0.04	$ 6,233
March 21, 2019	April 5, 2019	April 19, 2019	$ 0.04	$ 5,896
December 6, 2018	January 2, 2019	January 16, 2019	$ 0.04	$ 5,838

A significant majority of dividends declared were paid on the corresponding payment dates. Holders of restricted stock units (RSUs) awarded under the Quanta Services, Inc. 2011 Omnibus Equity Incentive Plan (the 2011 Plan) generally received cash dividend equivalent payments equal to the cash dividend payable on account of the underlying Quanta common stock on the payment dates. Holders of exchangeable shares of certain of Canadian subsidiaries of Quanta were paid a cash dividend of $0.04 per exchangeable share on the payment dates. However, holders of RSUs awarded under the Quanta Services, Inc. 2019 Omnibus Equity Incentive Plan (the 2019 Plan) and holders of unearned and unvested performance stock units (PSUs) receive cash dividend equivalent payments only to the extent such RSUs and PSUs become earned and/or vest. Additionally, cash dividend equivalents related to certain equity awards that have been deferred pursuant to the terms of a deferred compensation plan maintained by us are recorded as liabilities in such plans until the deferred awards are settled.

The declaration, payment and amount of future cash dividends, if any, will be at the discretion of our Board of Directors after taking into account various factors, including our financial condition, results of operations, cash flows from operations, current and anticipated capital requirements and expansion plans, the income tax laws then in effect and the requirements of Delaware law. In addition, as discussed in *Debt Instruments - Senior Secured Credit Facility* below, our credit agreement restricts the payment of cash dividends unless certain conditions are met.

Debt Instruments

Senior Secured Credit Facility

We have a credit agreement with various lenders that provides for (i) a $1.99 billion revolving credit facility and (ii) a term loan facility with total term loan commitments of $600.0 million. In addition, subject to the conditions specified in the credit agreement, we have the option to increase the capacity of the credit facility, in the form of an increase in the revolving credit facility, incremental term loans or a combination thereof, by up to an additional $400.0 million, from time to time, upon receipt of additional commitments from new or existing lenders. Borrowings under the credit agreement are to be used to refinance existing indebtedness and for working capital, capital expenditures and other general corporate purposes. The maturity date for both the revolving credit facility and the term loan facility is October 31, 2022, and we are required to make quarterly principal payments on the term loan facility as described below.

With respect to the revolving credit facility, the entire amount available may be used by us for revolving loans and letters of credit in U.S. dollars and certain alternative currencies. Up to $600.0 million may be used by certain of our subsidiaries for revolving loans and letters of credit in certain alternative currencies, up to $100.0 million may be used for swing line loans in U.S. dollars, up to $50.0 million may be used for swing line loans in Canadian dollars and up to $50.0 million may be used for swing line loans in Australian dollars.

In October 2018, we borrowed the full amount of the term loan facility and used all of such proceeds to repay outstanding revolving loans. As of June 30, 2019, we had $1.54 billion of outstanding borrowings under the credit agreement, which included $577.5 million borrowed under the term loan facility and $962.9 million of outstanding revolving loans. Of the total outstanding borrowings, $1.39 billion were denominated in U.S. dollars, $106.9 million were denominated in Canadian dollars and $40.0 million were denominated in Australian dollars. We also had $345.0 million of letters of credit and bank guarantees issued under our revolving credit facility, of which $234.2 million were denominated in U.S. dollars and $110.8 million were denominated in currencies other than the U.S. dollar, primarily Canadian and Australian dollars. The remaining $677.1 million of available commitments under the credit facility was available for loans or issuing new letters of credit and bank guarantees.

Revolving loans borrowed in U.S. dollars bear interest, at our option, at a rate equal to either (i) the Eurocurrency Rate (as defined in the credit agreement) plus 1.125% to 2.000%, as determined based on our Consolidated Leverage Ratio (as described below), or (ii) the Base Rate (as described below) plus 0.125% to 1.000%, as determined based on our Consolidated Leverage Ratio. Revolving loans borrowed in any currency other than U.S. dollars bear interest at a rate equal to the Eurocurrency Rate plus 1.125% to 2.000%, as determined based on our Consolidated Leverage Ratio. Additionally, standby or commercial letters of credit issued under the credit agreement are subject to a letter of credit fee of 1.125% to 2.000%, based on our Consolidated Leverage Ratio, and Performance Letters of Credit (as defined in the credit agreement) issued under the credit agreement in support of certain contractual obligations are subject to a letter of credit fee of 0.675% to 1.150%, based on our Consolidated Leverage Ratio.

Term loans bear interest at rates generally consistent with the revolving loans borrowed in U.S. dollars, except that the additional amount over the Eurocurrency Rate is 1.125% to 1.875%, as determined based on our Consolidated Leverage Ratio. We are also required to make quarterly principal payments of $7.5 million on the term loans on the last business day of each March, June, September and December. The aggregate outstanding principal amount of all outstanding term loans must be paid on the maturity date; however, we may voluntarily prepay that amount from time to time, in whole or in part, without premium or penalty.

We are also subject to a commitment fee of 0.20% to 0.40%, based on our Consolidated Leverage Ratio, on any unused availability under the revolving credit facility.

Consolidated Leverage Ratio is the ratio of our Consolidated Funded Indebtedness to Consolidated EBITDA (as those terms are defined in the credit agreement). For purposes of calculating our Consolidated Leverage Ratio, Consolidated Funded Indebtedness is reduced by available cash and cash equivalents (as defined in the credit agreement) in excess of $25.0 million. The Base Rate equals the highest of (i) the Federal Funds Rate (as defined in the credit agreement) plus 0.5%, (ii) the prime rate publicly announced by Bank of America, N.A. and (iii) the Eurocurrency Rate plus 1.00%. Consolidated Interest Coverage Ratio is the ratio of (i) Consolidated EBIT (as defined in the credit agreement) for the four fiscal quarters most recently ended to (ii) Consolidated Interest Expense (as defined in the credit agreement) for such period (excluding all interest expense attributable to capitalized loan costs and the amount of fees paid in connection with the issuance of letters of credit on our behalf during such period).

The credit agreement contains certain covenants, including (i) a maximum Consolidated Leverage Ratio of 3.0 to 1.0 (except that in connection with certain permitted acquisitions in excess of $200.0 million, such ratio is 3.5 to 1.0 for the fiscal quarter in which the acquisition is completed and the two subsequent fiscal quarters) and (ii) a minimum Consolidated Interest Coverage Ratio of 3.0 to 1.0. As of June 30, 2019, we were in compliance with all of the covenants under the credit agreement.

Subject to certain exceptions, (i) all borrowings under the credit agreement are secured by substantially all of our assets and the assets of our wholly owned U.S. subsidiaries and by a pledge of all of the capital stock of our wholly owned U.S. subsidiaries and 65% of the capital stock of direct foreign subsidiaries of our wholly owned U.S. subsidiaries and (ii) our wholly owned U.S. subsidiaries guarantee the repayment of all amounts due under the credit agreement. Subject to certain conditions, all collateral will automatically be released from the liens at any time we maintain an Investment Grade Rating (defined in the credit agreement as two of the following three conditions being met: (i) a corporate credit rating that is BBB- or higher by Standard & Poor's Rating Services, (ii) a corporate family rating that is Baa3 or higher by Moody's Investors Services, Inc. or (iii) a corporate credit rating that is BBB- or higher by Fitch Ratings, Inc.).

The credit agreement also limits certain acquisitions, mergers and consolidations, indebtedness, asset sales and prepayments of indebtedness and, subject to certain exceptions, prohibits liens on our assets. The credit agreement allows cash payments for dividends and stock repurchases subject to compliance with the following requirements (after giving effect to the dividend or stock repurchase): (i) no default or event of default under the credit agreement; (ii) continued compliance with the financial covenants in the credit agreement; and (iii) at least $100.0 million of availability under the revolving credit facility and/or cash and cash equivalents on hand.

The credit agreement provides for customary events of default and contains cross-default provisions with our underwriting, continuing indemnity and security agreement with our sureties and certain other debt instruments exceeding $150.0 million in borrowings or availability. If an Event of Default (as defined in the credit agreement) occurs and is continuing, on the terms and subject to the conditions set forth in the credit agreement, the lenders may declare all amounts outstanding and accrued and unpaid interest immediately due and payable, require that we provide cash collateral for all outstanding letter of credit obligations, terminate the commitments under the credit agreement, and foreclose on the collateral.

Off-Balance Sheet Transactions

As is common in our industry, we have entered into certain off-balance sheet arrangements in the ordinary course of business that result in risks not directly reflected in our balance sheets. Our significant off-balance sheet transactions include certain obligations relating to our investments and joint venture arrangements, liabilities associated with non-cancelable operating leases, letters of credit obligations, surety guarantees related to performance bonds, committed expenditures to purchase equipment and certain multiemployer pension plan liabilities. See *Contractual Obligations* below and Note 11 of the Notes to Consolidated Financial Statements in Item 1. *Financial Statements* for a description of these arrangements.

Contractual Obligations

The following table summarizes our future contractual obligations as of June 30, 2019, excluding amounts discussed below related to unrecognized tax benefits, multiemployer pension plan obligations, interest associated with letters of credit and bank guarantees, commitment fees under our senior secured credit facility, commitments associated with our insurance liabilities and acquisition-related contingent consideration liabilities (in thousands):

	Total	Remainder of 2019	2020	2021	2022	2023	Thereafter
Long-term debt - principal (1)	$ 1,549,145	$ 17,040	$ 31,034	$ 31,034	$ 1,466,418	$ 1,034	$ 2,585
Long-term debt - cash interest (2)	312	156	156	—	—	—	—
Short-term debt (3)	18,814	18,814	—	—	—	—	—
Operating lease obligations (4)	312,747	54,850	89,084	62,724	40,366	25,394	40,329
Operating leases obligations that have not yet commenced (5)	8,208	300	1,287	1,359	1,297	1,163	2,802
Finance lease obligations (6)	2,251	1,012	707	342	117	48	25
Short-term lease obligations (7)	18,323	14,620	3,703	—	—	—	—
Equipment purchase commitments (8)	29,526	29,526	—	—	—	—	—
Capital commitment related to investments in unconsolidated affiliates (9)	1,722	1,722	—	—	—	—	—
Total contractual obligations	$ 1,941,048	$ 138,040	$ 125,971	$ 95,459	$ 1,508,198	$ 27,639	$ 45,741

(1) We had $1.54 billion of outstanding borrowings under our senior secured credit facility, which included $577.5 million borrowed under the term loan facility and $962.9 million of outstanding revolving loans, both of which bear interest at variable market rates. Assuming the principal amount outstanding at June 30, 2019 remained outstanding and the interest rate in effect at June 30, 2019 remained the same, the annual cash interest expense would be approximately $60.4 million, payable until October 31, 2022, the maturity date of the facility. Additionally, in connection with the term loan facility, we are required to make quarterly principal payments of $7.5 million and pay the remaining balance on the maturity date for the facility.

(2) Amount represents cash interest expense on our fixed-rate long-term debt, which excludes our senior secured credit facility.

(3) Amount was recorded on our June 30, 2019 condensed consolidated balance sheet.

(4) Amounts represent undiscounted operating lease obligations at June 30, 2019. The operating lease obligations recorded on our June 30, 2019 condensed consolidated balance sheet represent the present value of these amounts.

(5) Amounts represent undiscounted operating leases obligations that have not commenced as of June 30, 2019. The operating leases obligations will be recorded on our consolidated balance sheet beginning on the commencement date of each lease.

(6) Amounts represent undiscounted finance lease obligations at June 30, 2019. The finance lease obligations recorded on our June 30, 2019 condensed consolidated balance sheet represent the present value of these amounts.

(7) Amounts represent short-term lease obligations that are not recorded on our June 30, 2019 condensed consolidated balance sheet due to our accounting policy election. Month-to-month rental expense associated primarily with certain equipment rentals is excluded from these amounts because we are unable to accurately predict future rental amounts.

(8) Amount represents capital committed for the expansion of our vehicle fleet in order to accommodate manufacturer lead times on certain types of vehicles. Although we have committed to the purchase of these vehicles at the time of their delivery, we expect that these orders will be assigned to third party leasing companies and made available to us under certain of our master equipment lease agreements, which will release us from our capital commitment.

(9) Amount represents outstanding capital commitments associated with investments in unconsolidated affiliates. As of June 30, 2019, we had outstanding capital commitments associated with investments in unconsolidated affiliates related to planned oil and gas infrastructure projects of $16.6 million, of which $1.7 million is expected to be paid in 2019. The remaining $14.9 million of these capital commitments is anticipated to be paid by May 31, 2022; however, we have excluded these capital commitments from the Contractual Obligations table because we are unable to determine the timing of the payment. Included in this amount is $14.4 million related to a partnership we formed with select investors during the year ended December 31, 2017 that provides up to $1.0 billion of capital, including approximately $80.0 million from us, available to invest in certain specified types of infrastructure projects through August 2024. As of June 30, 2019, we had contributed $15.1 million to this partnership in connection with certain investments and the payment of management fees. Because we are not obligated to invest this amount and are unable to determine the timing of any such investments, we have excluded the remaining capital available to this partnership from the Contractual Obligations table.

Unrecognized Tax Benefits

Quanta and certain subsidiaries remain under examination by various U.S. state, Canadian and other foreign tax authorities for multiple periods. We believe it is reasonably possible that within the next 12 months unrecognized tax benefits may decrease by up to $5.9 million as a result of settlement of these examinations or the expiration of certain statute of limitations periods. Because we are unable to accurately predict the timing and amounts of any obligations related to unrecognized tax benefits, the Contractual Obligations table excludes unrecognized tax benefits.

Multiemployer Pension Plans

The Contractual Obligations table excludes obligations under the multiemployer pension plans in which our union employees participate. Certain of our operating units are parties to collective bargaining agreements with unions that represent certain of their employees. The agreements require the operating units to pay specified wages, provide certain benefits to union employees and contribute certain amounts to multiemployer pension plans and employee benefit trusts. Our multiemployer pension plan contribution rates generally are made to the plans on a "pay-as-you-go" basis based on our union employee payrolls. The location and number of union employees that we employ at any given time and the plans in which they may participate vary depending on our need for union resources in connection with our ongoing projects. Therefore, we are unable to accurately predict our union employee payroll and the resulting multiemployer pension plan contribution obligations for future periods.

We may also be required to make additional contributions to our multiemployer pension plans if they become underfunded, and these additional contributions will be determined based on our union employee payrolls. The Pension Protection Act of 2006 added special funding and operational rules generally applicable to plan years beginning after 2007 for multiemployer plans that are classified as "endangered," "seriously endangered" or "critical" status based on multiple factors (including, for example, the plan's funded percentage, the plan's cash flow position and whether the plan is projected to experience a minimum funding deficiency). Plans in these classifications must adopt measures to improve their funded status through a funding improvement or rehabilitation plan, as applicable, which may require additional contributions from employers (e.g., a surcharge on benefit contributions) and/or modifications to retiree benefits. Certain multiemployer plans to which our operating units contribute or may contribute in the future are in "endangered," "seriously endangered" or "critical" status. The amount of additional funds, if any, that we may be obligated to contribute to these plans in the future cannot be reasonably estimated and are not included in the above table due to uncertainty regarding the future levels of work that require union employees covered by these plans, as well as the future contribution levels and possible surcharges on contributions applicable to these plans.

We may be subject to additional liabilities imposed by law as a result of our participation in multiemployer defined benefit pension plans. The Employee Retirement Income Security Act of 1974, as amended by the Multiemployer Pension Plan Amendments Act of 1980, imposes certain liabilities upon an employer who is a contributor to a multiemployer plan if the employer withdraws from the plan or the plan is terminated or experiences a mass withdrawal. These liabilities include an allocable share of the unfunded vested benefits in the plan for all plan participants, not merely the benefits payable to a contributing employer's own retirees. As a result, participating employers may bear a higher proportion of liability for unfunded vested benefits if other participating employers cease to contribute or withdraw, with the reallocation of liability being more acute in cases when a withdrawn employer is insolvent or otherwise fails to pay its withdrawal liability. We are not aware of any material withdrawal liabilities that have been incurred or asserted and that remain outstanding as a result of our withdrawal from a multiemployer defined benefit pension plan.

Letters of Credit and Bank Guarantee Fees and Commitment Fees

The Contractual Obligations table excludes interest associated with letters of credit and bank guarantees and commitment fees under our senior secured credit facility because the amount of outstanding letters of credit and bank guarantees, availability and applicable interest rates and fees are all variable. Assuming that the amount of letters of credit and bank guarantees outstanding and the interest rate as of June 30, 2019 remained the same, the annual cash interest expense for our letters of credit and bank guarantees would be approximately $4.3 million. For additional information regarding our letters of credit and bank guarantees and the interest rates and fees associated with these items and our borrowings under our senior secured credit facility, see *Liquidity and Capital Resources — Debt Instruments* above.

Performance Bonds and Parent Guarantees

The Contractual Obligations table does not include any commitments associated with our performance bonds or parent guarantees. As ofJune 30, 2019, we are not aware of any material obligations for payments related to these obligations.

Many customers, particularly in connection with new construction, require us to post performance and payment bonds issued by a financial institution known as a surety. These bonds provide a guarantee to the customer that we will perform under the terms of a contract and pay our subcontractors and vendors. If we fail to perform, the customer may demand that the surety make payments or provide services under the bond. We must reimburse the surety for any expenses or outlays it incurs. Under our underwriting, continuing indemnity and security agreement with our sureties and with the consent of the lenders that are party to our credit agreement, we have granted security interests in certain of our assets as collateral for our obligations to the sureties. We may be required to post letters of credit or other collateral in favor of the sureties or our customers in the future, which would reduce the borrowing availability under our senior secured credit facility. We have not been required to make any material reimbursements to our sureties for bond-related costs except as set forth in *Legal Proceedings* in Note 11 of the Notes to Consolidated Financial Statements in Item 1.*Financial Statements* in connection with the exercise of certain advance payment and performance bonds related to a project located in Peru. However, to the extent further reimbursements are required, the amounts could be material and could adversely affect our consolidated business, financial condition, results of operations or cash flows.

Performance bonds expire at various times ranging from mechanical completion of the related projects to a period extending beyond contract completion in certain circumstances, and as such a determination of maximum potential amounts outstanding requires the use of certain estimates and assumptions. Such amounts can also fluctuate from period to period based upon the mix and level of our bonded operating activity. As of June 30, 2019, the total amount of the outstanding performance bonds was estimated to be approximately $2.6 billion. Our estimated maximum exposure as it relates to the value of the performance bonds outstanding is lowered on each bonded project as the cost to complete is reduced, and each commitment under a performance bond generally extinguishes concurrently with the expiration of our related contractual obligation. The estimated cost to complete these bonded projects was approximately $759 million as of June 30, 2019.

Additionally, from time to time, we guarantee certain obligations and liabilities of our subsidiaries that may arise in connection with, among other things, contracts with customers, equipment lease obligations, joint venture arrangements and contractors' licenses. These guarantees may cover all of the subsidiary's unperformed, undischarged and unreleased obligations and liabilities under or in connection with the relevant agreement. For example, with respect to customer contracts, a guarantee may cover a variety of obligations and liabilities arising during the ordinary course of the subsidiary's business or operations, including, among other things, warranty and breach of contract claims, third party and environmental liabilities arising from the subsidiary's work and for which it is responsible, liquidated damages amounts, or indemnity claims. We are not aware of any obligations or liabilities currently asserted under any of these guarantees that are material, individually or in the aggregate. However, to the extent a subsidiary incurs a material obligation or liability and we have guaranteed the performance or payment of such liability, the recovery by a customer or other counterparty or a third party will not be limited to the assets of the subsidiary. As a result, responsibility under the guarantee could exceed the amount recoverable from the subsidiary alone and could materially and adversely affect our consolidated business, financial condition, results of operations and cash flows.

Insurance

We are insured for employer's liability, workers' compensation, auto liability and general liability claims. Under these third-party insurance programs, the deductible for employer's liability is $1.0 million per occurrence, the deductible for workers' compensation is $5.0 million per occurrence, and the deductibles for auto liability and general liability are $10.0 million per occurrence. We manage and maintain a portion of our casualty risk through our wholly-owned captive insurance company, including claims up to deductibles under our third-party insurance programs. In connection with our casualty insurance programs, we are required to issue letters of credit to secure our obligations. We also have employee health care benefit plans for most employees not subject to collective bargaining agreements, of which the primary plan is subject to a deductible of $0.5 million per claimant per year.

Losses under all of these insurance programs are accrued based upon our estimate of the ultimate liability for claims reported and an estimate of claims incurred but not reported, with assistance from third-party actuaries. These insurance liabilities are difficult to assess and estimate due to unknown factors, including the severity of an injury, the extent of damage, the determination of our liability in proportion to other parties and the number of incidents not reported. The accruals are based upon known facts and historical trends, and management believes such accruals are adequate. As of June 30, 2019 and December 31, 2018, the gross amount accrued for insurance claims totaled $264.6 million and $272.9 million, with $198.5 million and $210.1 million considered to be long-term and included in "Insurance and other non-current liabilities." Related insurance recoveries/receivables as of June 30, 2019 and December 31, 2018 were $34.9 million and $56.5 million, of which $0.4 million and $0.3 million are included in "Prepaid expenses and other current assets" and $34.5 million and $56.2 million are included in "Other assets, net."

We renew our insurance policies on an annual basis, and therefore deductibles and levels of insurance coverage may change in future periods. In addition, insurers may cancel our coverage or determine to exclude certain items from coverage, or we may elect not to obtain certain types or incremental levels of insurance based on the potential benefits considered relative to the cost of such insurance. In any such event, our overall risk exposure would increase, which could negatively affect our results of operations, financial condition and cash flows. The Contractual Obligations table excludes commitments associated with our insurance liabilities, as we are unable to determine the timing of payments related to these obligations.

Contingent Consideration Liabilities

The Contractual Obligations table excludes acquisition-related contingent consideration associated with certain acquisitions, the payment of which is contingent upon the achievement of certain performance objectives by the acquired businesses during post-acquisition periods and, if earned, would be payable to the former owners of the acquired businesses. The liabilities recorded represent the estimated fair values of future amounts payable to the former owners of the acquired businesses and are estimated by management based on entity-specific assumptions that are evaluated on an ongoing basis. As of June 30, 2019 and December 31, 2018, the aggregate fair value of these outstanding and unearned contingent consideration liabilities totaled $75.0 million and $70.8 million, all of which was included in “Insurance and other non-current liabilities” on our condensed consolidated balance sheets. Because acquisition-related contingent consideration liabilities are contingent upon future events, we include these liabilities in the Contractual Obligations table when the contingencies are resolved. We expect a significant portion of these liabilities to be settled by late 2020 or early 2021.

The fair values of these liabilities were primarily determined using a Monte Carlo simulation valuation methodology based on probability-weighted performance projections and other inputs including a discount rate and an expected volatility factor for each acquisition. The expected volatility factors ranged from 22.2% to 30.0% based on historical asset volatility of selected guideline public companies. Depending on contingent consideration payment terms, the present values of the estimated payments are discounted based on a risk-free rate and/or our cost of debt, ranging from 2.1% to 3.9%. The fair value determinations incorporate significant inputs not observable in the market. Accordingly, the level of inputs used for these fair value measurements is the lowest level (Level 3), as further described in Note 2 of the Notes to Condensed Consolidated Financial Statements in Item 1. *Financial Statements*. Significant changes in any of these assumptions could result in a significantly higher or lower potential liability.

The majority of our contingent consideration liabilities are subject to a maximum payment amount, which aggregated to$153.0 million as of June 30, 2019. One contingent consideration liability is not subject to a maximum payout amount, and that liability had a fair value of $1.0 million as of June 30, 2019.

Our aggregate contingent consideration liabilities can change due to additional business acquisitions, settlement of outstanding liabilities, changes in the fair value based on forecasted performance in post-acquisition periods and accretion in present value. During the three and six months ended June 30, 2019, we recognized net increases in the fair value of our aggregate contingent consideration liabilities of $4.4 million and $4.3 million. During the three and six months ended June 30, 2018, we recognized net decreases in the fair value of our aggregate contingent consideration liabilities of $6.3 million. These changes are reflected in “Change in fair value of contingent consideration liabilities” in our condensed consolidated statements of operations.

Concentrations of Credit Risk

We are subject to concentrations of credit risk related primarily to our cash and cash equivalents and our net receivable position with customers, which includes amounts related to billed and unbilled accounts receivable and contract assets net of advanced billings with the same customer. Substantially all of our cash and cash equivalents are managed by what we believe to be high credit quality financial institutions. In accordance with our investment policies, these institutions are authorized to invest cash and cash equivalents in a diversified portfolio of what we believe to be high quality cash and cash equivalent investments, which consist primarily of interest-bearing demand deposits, money market investments and money market mutual funds. Although we do not currently believe the principal amount of these cash and cash equivalents is subject to any material risk of loss, changes in economic conditions could impact the interest income we receive from these investments. In addition, we grant credit under normal payment terms, generally without collateral, to our customers, which include electric power and energy companies, governmental entities, general contractors, and builders, owners and managers of commercial and industrial properties located primarily in the United States, Canada, Australia and Latin America. Consequently, we are subject to potential credit risk related to changes in business and economic factors throughout these locations, which may be heightened as a result of uncertain economic and financial market conditions that have existed in recent years. However, we generally have certain statutory lien rights with respect to services provided. Some of our customers have experienced significant financial difficulties (including bankruptcy), and customers may experience financial difficulties in the future. These difficulties expose us to increased risk related to collectability of billed and unbilled receivables and contract assets for services we have performed.

On January 29, 2019, PG&E, one of our largest customers, filed for bankruptcy protection under Chapter 11 of the U.S. Bankruptcy Code, as amended. We are monitoring the bankruptcy proceeding and evaluating the treatment of, and potential claims related to, our pre-petition receivables. As of the bankruptcy filing date, we had approximately $157 million of billed and unbilled receivables, $48 million of which remained unpaid as of June 30, 2019. During the three months ended June 30, 2019, the bankruptcy court approved the assumption by PG&E of two substantial contracts with a subsidiary of Quanta, which authorized PG&E to pay approximately $116 million of pre-petition receivables due under those contracts, $109 million of which was received during the three months ended June 30, 2019. We also believe we will ultimately collect the approximately $41 million of pre-petition receivables that were not assumed by PG&E, which amount has been classified as non-current within “Other assets, net” in our condensed consolidated balance sheet as of June 30, 2019. However, the ultimate outcome of the bankruptcy proceeding is uncertain, and our belief regarding collection of the remaining receivables is based on a number of assumptions that are potentially subject to change as the proceeding progresses. Should any of those assumptions change, the amount collected could be materially less than the amount of the remaining receivables. Additionally, we are continuing to perform services for PG&E while the bankruptcy case is ongoing and believe that amounts billed for post-petition services will continue to be collected in the ordinary course of business.

One customer within our Electric Power Infrastructure Services segment represented13.3% and 11.5% of our consolidated revenues for the three andsix months ended June 30, 2019. No customer represented 10% or more of our consolidated revenues for the three andsix months ended June 30, 2018, and no customer represented 10% or more of our consolidated net receivable position at June 30, 2019 and December 31, 2018.

Project Insurance Claim

In June 2018, while performing a horizontal directional drill and installing an underground gas pipeline, one of our subsidiaries experienced a partial collapse of a borehole. Subsequent to the incident, we have been working with our customer to mitigate the impact of the incident and to complete the project; however, we have encountered additional challenges due to the collapsed borehole. As required by the contract, the customer procured certain insurance coverage for the project, with our subsidiary as an additional insured. We are working collaboratively with the customer to pursue insurance claims with the customer's insurance carriers. During the three months ended June 30, 2019, the insurers preliminarily acknowledged coverage for the incident; however, the amount of coverage is to be determined. To the extent we are not successful in recovering the full amount of the insurance claims we are pursuing, we plan to pursue contractual relief from the customer.

As of June 30, 2019, we recorded an insurance receivable of$71.9 million in accordance with GAAP related to accounting for insurance claims and potential recoveries. The amount represents a portion of the insurance claims being pursued by us, which amount to approximately $120 million as of such date. We expect the insurance claims and the amount of the insurance receivable to increase in future periods as mitigation activities continue. The mitigation plan remains subject to inherent risks associated with underground pipeline installation, which could cause the costs to mitigate the incident to increase materially. The project is ongoing, and the final amount of the insurance claims is not currently known. However, our claims associated with the project, including both insurance claims and potential contractual claims, will be substantially in excess of the currently recognized receivable. To the extent we are unsuccessful in realizing insurance or contractual recoveries, additional charges to operating results, which could be material, would be required.

Legal Proceedings

We are from time to time party to various lawsuits, claims and other legal proceedings that arise in the ordinary course of business. These actions typically seek, among other things, compensation for alleged personal injury, breach of contract and/or property damages, employment-related damages, punitive damages, civil penalties or other losses, or injunctive or declaratory relief. With respect to all such lawsuits, claims and proceedings, we record a reserve when it is probable that a loss has been incurred and the amount of loss can be reasonably estimated. In addition, we disclose matters for which management believes a material loss is at least reasonably possible. See Note 11 of the Notes to Condensed Consolidated Financial Statements in Item 1. *Financial Statements* of Part I for additional information regarding litigation, claims and other legal proceedings.

Related Party Transactions

In the normal course of business, we enter into transactions from time to time with related parties. Our significant related party transactions typically involve real property and facility leases with prior owners of certain acquired businesses.

Critical Accounting Policies Update

The discussion and analysis of our financial condition and results of operations are based on our consolidated financial statements, which have been prepared in accordance with GAAP. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect, among other things, the reported amounts of assets, liabilities, revenues, and expenses, as well as disclosures of contingent assets and liabilities known to exist as of the date the consolidated financial statements are published. Our critical accounting estimates are detailed in Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations* in Part II of our 2018 Annual Report. Significant changes to our critical accounting policies as a result of adopting new guidance related to leases effective January 1, 2019 are referenced below:

Leases

See *Leases* in Note 2 of the Notes to Condensed Consolidated Financial Statements in Item 1.*Financial Statements* of Part I of this Quarterly Report for information on the new accounting standard related to leases.

Outlook

We believe there are growth opportunities across the industries we serve and continue to have a positive long-term outlook. Overall, favorable end-market drivers have spurred demand for infrastructure services in both our Electric Power Infrastructure Services and Pipeline and Industrial Infrastructure Services segments, and we believe both segments are generally in a multi-year up-cycle. Additionally, the traditional electric utility model has evolved since our inception, with many long-standing customers shifting their focus from fossil fuel-based electric power generation to an advanced integrated utility model primarily concentrated on electric transmission and distribution investment and increasing their focus on gas distribution and ownership of pipeline infrastructure. We have strategically adapted our business over time to respond to these changes, which allows us to collaborate with our customers and create unique solutions that benefit end users. We are focused on long-term profitable growth and continuing to distinguish ourselves through safe execution and best-in-class field leadership. Although not without risks and challenges, including those discussed below and in *Uncertainty of Forward-Looking Statements and Information* and referenced in Item 1A. *Risk Factors* of Part II of this Quarterly Report, we believe, with our full-service operations, broad geographic reach, financial position and technical expertise, we are well-positioned to capitalize on opportunities and trends in the industries we serve.

Electric Power Infrastructure Services Segment

We expect demand for electricity in North America to grow over the long term and believe that certain segments of the North American electric power grid are not adequate to efficiently serve the power needs of the future. These factors have affected and will continue to affect reliability, requiring utilities to upgrade, modernize and expand their existing transmission and distribution systems. Furthermore, federal legislation also requires the power industry to meet federal reliability standards for its transmission and distribution systems. In response to these dynamics, over the past several years, many utilities across North America have begun to implement plans to upgrade their transmission and distribution systems in order to improve reliability and reduce congestion.

As demand for power increases, we expect the need for new power generation facilities to also increase. The development of such facilities, expected to be powered by certain traditional energy sources (e.g., natural gas) and renewable energy sources (e.g., solar and wind), would necessitate new or expanded transmission infrastructure to transport power to demand centers. Furthermore, we anticipate that the amount of electricity generated by natural gas-powered facilities will continue to increase as compared to coal-powered facilities, based on access to low cost natural gas resources from unconventional shale formations in the United States and Canada and the more favorable environmental characteristics of natural gas. To the extent this dynamic continues, transmission and substation infrastructure will be needed to interconnect these new generation facilities. We also anticipate that modification and reengineering of existing transmission and substation infrastructure will be required as existing coal and nuclear generation facilities are retired or shut down.

With respect to distribution systems, a number of utilities are implementing system upgrades or hardening programs in response to severe weather events that have occurred over the past several years, such as hurricanes, which is increasing distribution investment in some regions of the United States. Similarly, California and other regions in the western U.S. are implementing system resiliency initiatives to prevent and manage the impact of wildfires on their transmission and distribution infrastructure. We also anticipate that utilities will continue to integrate smart grid technologies into their distribution systems over time to improve grid management and create efficiencies. Further, to the extent adoption of electrical vehicle technology increases, we believe upgrades to distribution and other electrical infrastructure will be required to accommodate increased load demand.

We believe that several existing, pending or proposed legislative or regulatory actions may also positively impact long-term demand for the services we provide, particularly in connection with electric power infrastructure and renewable energy spending. For example, legislative or regulatory action that alleviates some of the siting and right-of-way challenges that impact transmission projects would potentially accelerate future construction, and federal reliability standards for transmission and distribution systems could create incentives for system investment and maintenance. We also consider renewable energy, including solar and wind generation facilities, to be an ongoing opportunity for our engineering, project management and installation services; however, the economic feasibility of these projects may depend on the availability of tax incentive programs and there is no assurance that existing incentive programs will be extended or that new incentive programs will be implemented.

Despite these positive trends, the regulatory and environmental permitting processes remain a hurdle for some proposed transmission and renewable energy projects, and these factors continue to create uncertainty as to timing of projects and customer spending. In the near term, margins for our electric power infrastructure services operations have been impacted by regulatory and permitting delays, particularly for larger transmission projects, and unfavorable economic and market conditions in Canada. We anticipate many of these issues to subside over the long term, and we expect this segment’s backlog to remain strong during the remainder of 2019.

Our customers are also seeking additional specialized labor resources to address an aging utility workforce and labor availability issues, increasing pressure to reduce costs and improve reliability, and increasing duration and complexity of customer capital programs. We believe these trends will continue, possibly to the point where customer demand for labor resources will outpace the supply of industry resources. Our ability to take advantage of available opportunities is limited by our ability to employ, train and retain the necessary skilled personnel. We are taking proactive steps to develop our workforce, including through strategic relationships with universities, the military and unions; the expansion and development of our training facility, which provides classroom and on-the-job training programs; and the development of our postsecondary educational institution, which specializes in pre-apprenticeship training, apprenticeship training and specialized utility task training for electric workers, and includes curriculum for the gas distribution and communications industries. Although we believe these initiatives will help address workforce needs, meeting our customers' demand for labor resources could remain challenging.

With respect to our communications service offerings, consumer and commercial demand for communication and data-intensive, high-bandwidth wireline and wireless services and applications is driving significant investment in infrastructure and the deployment of new technologies. In particular, we believe there is increasing demand to upgrade or build fiber optic networks that are closer or connected to the end user. In North America, communications providers are also in the early stages of developing new fifth generation wireless services (5G), which are intended to facilitate bandwidth-intensive services at high speeds for consumers and a wide range of commercial applications. These 5G networks require significant fiber network development and the deployment of new small cells to provide 5G services. As a result of these near- and longer-term industry trends, we believe there will be meaningful demand for our services. While we also continue to perform certain communications services in Latin America and believe the drivers mentioned above are generally present, we are currently evaluating whether additional opportunities in that market align with our long-term strategy, both in terms of expected profitability and risk profile.

Pipeline and Industrial Infrastructure Services Segment

We continue to see growth opportunities in our Pipeline and Industrial Infrastructure Services segment, primarily with respect to services related to natural gas distribution, pipeline integrity, downstream industrial services, the installation and maintenance of larger pipeline systems and associated facilities, and horizontal directional drilling. We have experienced an increase in demand for our natural gas distribution services as a result of improved economic conditions, lower natural gas prices and a significant need to upgrade and replace aging infrastructure. We believe there are also growth opportunities for our pipeline integrity, rehabilitation and replacement services. Regulatory measures have increased and could continue to increase the frequency or stringency of pipeline integrity testing requirements, which we expect to result in increased capital expenditures by our customers.

We believe, looking at trends and estimates for process facility utilization rates and overall refining capacity, North America will be the largest downstream maintenance market in the world over the next several years. Furthermore, we believe processing facilities located along the U.S. Gulf Coast region should have certain strategic advantages due to their access and proximity to affordable hydrocarbon resources. While our high-pressure and critical-path turnaround services can be negatively impacted in any given year or period by severe weather events along the U.S. Gulf Coast region, these services, as well as our capabilities with respect to instrumentation, high-voltage and other electrical services, piping, fabrication and storage, and other industrial services, are expected to have favorable near-term industry drivers and longer-term opportunities. Additionally, a number of larger pipeline projects from the North American shale formations and Canadian oil sands to power plants, refineries, liquefied natural gas (LNG) export facilities and other demand centers are in various stages of development. While there is risk the projects will not move forward or could be delayed, we believe many of our customers remain committed to them given the cost and time required to move from conception to construction.

Furthermore, due to its abundant supply and current low price, we believe demand for North American natural gas will continue to increase in the future and that natural gas will remain a fuel of choice for both primary power generation and backup power generation for renewable-driven power plants. In certain areas of North America, the existing pipeline system infrastructure is insufficient to support this expected future development. Furthermore, the abundance of affordable natural gas in the United States, Canada and Australia has resulted in efforts to develop LNG export facilities to serve higher-price international markets, which could provide pipeline and related facilities development opportunities for us. Although fluctuating commodity prices, regulatory issues and changing economic conditions may impact the number of projects that ultimately move forward, we believe our comprehensive service offerings and broad geographic presence enable us to competitively pursue opportunities that become available.

Despite these positive trends, regulatory and environmental permitting challenges and political and legal challenges have caused the delay of some larger pipeline projects during the past several years. These dynamics negatively impacted our segment margins, in part as a result of our inability to adequately cover certain fixed costs. Margins for larger pipeline projects are also subject to significant performance risk, which can arise from, among other things, adverse weather conditions, challenging geography, customer decisions and crew productivity. Specific opportunities for larger pipeline projects are also sometimes difficult to predict because of the seasonality of bidding and construction cycles.

Although much of this segment's services are influenced by hydrocarbon production volume rather than shorter-term changes in commodity prices, the broader oil and gas industry is highly cyclical and subject to volatility as a result of fluctuations in natural gas, natural gas liquids and oil prices. Certain of our end markets remain challenged as the broader energy market has not fully recovered from the significant decline in oil prices that occurred in 2014 and 2015. Exploration and production companies and midstream companies significantly reduced capital spending in response to the price decline, and demand in certain areas where the price of oil is influential, such as Australia, the Canadian Oil Sands, certain oil-driven U.S. shale formations and the Gulf of Mexico, has been adversely impacted by low oil prices. If oil and natural gas prices decline or remain at lower levels over the long term, our outlook may change and demand for our services could be materially impacted.

Overall, we remain optimistic about this segment's operations. Over the past several years we have taken steps to diversify and expand our operations in this segment, with services such as pipeline integrity, natural gas distribution, and downstream industrial services, in order to potentially mitigate end-market cyclicality. Additionally, from a near- and medium-term perspective, we continue to believe that larger pipeline project opportunities can provide significant profitability, although these projects are often subject to more cyclicality and execution risk than our other service offerings.

Strategic Acquisitions and Investments

We continue to evaluate potential strategic acquisitions and investments to broaden our customer base, expand our geographic area of operations, grow our portfolio of services and increase opportunities across our operations. We believe that attractive growth opportunities exist primarily due to the highly fragmented and evolving nature of the industries in which we operate and adjacent industries, along with the inability of many companies to expand and modernize due to capital or liquidity constraints. We will pursue opportunities designed to enhance our core business and leadership position in the industries we serve and provide innovative solutions to our customers. We also believe our unique operating model and entrepreneurial mindset will continue to be attractive to acquisition candidates.

Uncertainty of Forward-Looking Statements and Information

This Quarterly Report includes "forward-looking statements" reflecting assumptions, expectations, projections, intentions or beliefs about future events that are intended to qualify for the "safe harbor" from liability established by the Private Securities Litigation Reform Act of 1995. You can identify these statements by the fact that they do not relate strictly to historical or current facts. They use words such as "anticipate," "estimate," "project," "forecast," "may," "will," "should," "could," "expect," "believe," "plan," "intend" and other words of similar meaning. In particular, these include, but are not limited to, statements relating to the following:

- Projected revenues, net income, earnings per share, margins, weighted average shares outstanding, capital expenditures, tax rates and other projections of operating or financial results;
- Expectations regarding our business or financial outlook, growth, trends or opportunities in particular markets;
- The expected value of contracts or intended contracts with customers;
- The scope, services, term or results of any projects awarded or expected to be awarded to us;
- The development of larger electric transmission and pipeline projects, as well as the level of oil, natural gas and natural gas liquids prices and their impact on our business or demand for our services;
- Future capital allocation initiatives, including the amount, timing and strategies with respect to any future stock repurchases, and expectations regarding the declaration, amount and timing of any future cash dividends;
- The impact of existing or potential legislation or regulation;
- Potential opportunities that may be indicated by bidding activity or similar discussions with customers;
- The future demand for and availability of labor resources in the industries we serve;
- The expected realization of remaining performance obligations or backlog;
- The potential benefits from investments or acquisitions;

- The expected outcome of pending or threatened legal proceedings;
- Beliefs and assumptions about the collectability of receivables;
- The business plans or financial condition of our customers;
- Our plans and strategies;
- Possible recovery of pending or contemplated insurance claims, change orders and claims asserted against customers or third parties; and
- The current economic and regulatory conditions and trends in the industries we serve.

These forward-looking statements are not guarantees of future performance, involve or rely on a number of risks, uncertainties, and assumptions that are difficult to predict or beyond our control, and reflect management's beliefs and assumptions based on information available at the time the statements are made. We caution you that actual outcomes and results may differ materially from what is expressed, implied or forecasted by our forward-looking statements and that any or all of our forward-looking statements may turn out to be inaccurate or incorrect. Those statements can be affected by inaccurate assumptions and by known or unknown risks and uncertainties, including the following:

- Market conditions;
- The effects of industry, economic, financial or political conditions outside our control, including weakness in the capital markets or any actual or potential shutdown, sequester, default or similar event or occurrence involving the U.S. federal government;
- Quarterly variations in our operating and financial results, liquidity, financial condition, capital requirements, and reinvestment opportunities;
- Trends and growth opportunities in relevant markets;
- Delays, reductions in scope or cancellations of anticipated, pending or existing projects, including as a result of weather, regulatory or permitting issues, environmental processes, project performance issues, claimed force majeure events, protests or other political activity, legal challenges or customer capital constraints;
- The successful negotiation, execution, performance and completion of anticipated, pending and existing contracts, including the ability to obtain future project awards;
- Our dependence on suppliers, subcontractors, equipment manufacturers and other third-party contractors;
- Estimates relating to revenue recognition and costs associated with contracts;
- Our ability to attract and the potential shortage of skilled employees and our ability to retain key personnel and qualified employees;
- Our dependence on fixed price contracts and the potential to incur losses with respect to these contracts;
- Adverse weather conditions or significant weather events, including hurricanes, tropical storms and floods;
- Risks associated with operational hazards that arise due to the nature of the services we provide and the conditions in which we operate;
- Our ability to generate internal growth;
- Competition in our business, including our ability to effectively compete for new projects and market share;
- The effect of natural gas, natural gas liquids and oil prices on our operations and growth opportunities and on our customers' capital programs and demand for our services;

- The future development of natural resources;
- The failure of existing or potential legislative actions and initiatives to result in demand for our services;
- Fluctuations of prices of certain materials used in our business, including as a result of the imposition of tariffs or changes in U.S. trade relationships with other countries;
- Unexpected costs or liabilities that may arise from pending or threatened legal proceedings, indemnity obligations, reimbursement obligations associated with letters of credit or bonds or other claims or actions asserted against us, including liabilities, costs, fines or penalties for which we are not covered by, or are in excess of, our third-party insurance;
- The outcome of pending or threatened legal proceedings;
- Risks relating to the potential unavailability or cancellation of third-party insurance, the exclusion of coverage for certain losses, and potential increases in premiums for coverage deemed beneficial to us;
- Damage to our brand or reputation arising as a result of cyber-security or data privacy breaches, environmental and occupational health and safety matters, or other negative corporate incidents;
- Cancellation provisions within our contracts and the risk that contracts expire and are not renewed or are replaced on less favorable terms;
- Loss of customers with whom we have long-standing or significant relationships;
- The potential that participation in joint ventures or similar structures exposes us to liability and/or harm to our reputation for acts or omissions by our partners;
- Our inability or failure to comply with the terms of our contracts, which may result in additional costs, unexcused delays, warranty claims, failure to meet performance guarantees, damages or contract terminations;
- The inability or refusal of our customers to pay for services, including failure to collect our outstanding receivables;
- The failure to recover on payment claims against project owners or third-party contractors or to obtain adequate compensation for customer-requested change orders;
- The failure of our customers to comply with regulatory requirements applicable to their projects, which may result in project delays and cancellations;
- Budgetary or other constraints that may reduce or eliminate tax incentives or government funding for projects, which may result in project delays or cancellations;
- Estimates and assumptions in determining our financial results, remaining performance obligations and backlog;
- Our ability to successfully complete our remaining performance obligations or realize our backlog;
- Risks associated with operating in international markets, including instability of foreign governments, currency exchange fluctuations, and compliance with unfamiliar foreign legal systems and cultural practices, the U.S. Foreign Corrupt Practices Act and other applicable anti-bribery and anti-corruption laws, and complex U.S. and foreign tax regulations and international treaties;
- Our ability to successfully identify, complete, integrate and realize synergies from acquisitions;
- The potential adverse impact resulting from uncertainty surrounding acquisitions and investments, including the ability to retain key personnel from acquired businesses, the potential increase in risks already existing in our operations and poor performance or decline in value of our investments;
- The adverse impact of impairments of goodwill, other intangible assets, receivables, long-lived assets or investments;

- Our growth outpacing our decentralized management and infrastructure;
- Requirements relating to governmental regulation and changes thereto;
- Inability to enforce our intellectual property rights or the obsolescence of such rights;
- Risks related to the implementation of new information technology solutions;
- The impact of our unionized workforce on our operations, including labor stoppages or interruptions due to strikes or lockouts;
- The cost of borrowing, availability of cash and credit, fluctuations in the price and volume of our common stock, debt covenant compliance, interest rate fluctuations and other factors affecting our financing and investing activities;
- The ability to access sufficient funding to finance desired growth and operations, including our ability to access capital markets on favorable terms;
- Our ability to obtain performance bonds and other project security;
- Our ability to meet the regulatory requirements applicable to us and our subsidiaries, including the Sarbanes-Oxley Act of 2002;
- Rapid technological and other structural changes that could reduce the demand for our services;
- New or changed tax laws, treaties or regulations;
- Legislative or regulatory changes that result in increased costs, including with respect of labor and healthcare costs;
- Significant fluctuations in foreign currency exchange rates; and
- The other risks and uncertainties described elsewhere herein and in Item 1A. *Risk Factors* of Part I of our 2018 Annual Report and as may be detailed from time to time in our other public filings with the SEC.

All of our forward-looking statements, whether written or oral, are expressly qualified by these cautionary statements and any other cautionary statements that may accompany such forward-looking statements or that are otherwise included in this report. In addition, we do not undertake and expressly disclaim any obligation to update or revise any forward-looking statements to reflect events or circumstances after the date of this report or otherwise.

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

The information in this section should be read in connection with the information on financial market risk related to changes in interest rates and currency exchange rates in Item 7A. *Quantitative and Qualitative Disclosures About Market Risk* of Part II of our 2018 Annual Report. Our primary exposure to market risk relates to unfavorable changes in concentration of credit risk, interest rates and currency exchange rates.

Credit Risk. We are subject to concentrations of credit risk related to our cash and cash equivalents and net receivable position with customers, which includes amounts related to billed and unbilled accounts receivable and contract assets net of advanced billings with the same customer. Substantially all of our cash and cash equivalents are managed by what we believe to be high credit quality financial institutions. In accordance with our investment policies, these institutions are authorized to invest cash and cash equivalents in a diversified portfolio of what we believe to be high-quality investments, which primarily include interest-bearing demand deposits, money market investments and money market mutual funds. Although we do not currently believe the principal amounts of these cash and cash equivalents are subject to any material risk of loss, changes in economic conditions could impact the interest income we receive from these investments.

In addition, we grant credit under normal payment terms, generally without collateral, and therefore are subject to potential credit risk related to our customers' inability to pay for services provided. For example, in January 2019 one of our customers, PG&E, filed for bankruptcy protection under Chapter 11 of the U.S. Bankruptcy Code, as amended. See Item 2. *Management's Discussion and Analysis of Financial Condition and Results of Operations — Concentration of Credit Risk* for additional information regarding our pre-petition receivables and this bankruptcy matter. Furthermore, the risk of nonpayment may be heightened as a result of depressed economic and financial market conditions. We believe the concentration of credit risk related to billed and unbilled receivables and contract assets is limited because of the diversity of our customers, and we perform ongoing credit risk assessments of our customers and financial institutions and in some cases obtain collateral or other security from our customers.

Interest Rate Risk. As of June 30, 2019, we had no derivative financial instruments to manage interest rate risk. As such, we were exposed to earnings and fair value risk due to changes in interest rates with respect to our long-term obligations. As of June 30, 2019, the fair value of our variable rate debt of$1.54 billion approximated book value. Our weighted average interest rate on our variable rate debt for the three months ended June 30, 2019 was 3.88%. The annual effect on our pretax earnings of a hypothetical 50 basis point increase or decrease in variable interest rates would be approximately $7.7 million based on our June 30, 2019 balance of variable rate debt.

Foreign Currency Risk. The U.S. dollar is the functional currency for the majority of our operations, which are primarily located within the United States. The functional currency for our foreign operations, which are primarily located in Canada, Australia and Latin America, is typically the currency of the country in which the foreign operating unit is located. Accordingly, our financial performance is subject to fluctuation due to changes in foreign currency exchange rates relative to the U.S. dollar. During the three and six months ended June 30, 2019, revenues from our foreign operations accounted for9.8% and 15.7% of our consolidated revenues. Fluctuations in foreign exchange rates during the three and six months ended June 30, 2019 caused a decrease of approximately $13 million and $44 million in foreign revenues compared to the three andsix months ended June 30, 2018.

We are also subject to foreign currency risk with respect to sales, purchases and borrowings that are denominated in a currency other than the respective functional currencies of our operating units. To minimize the risk from changes in foreign currency exchange rates, we may enter into foreign currency derivative contracts to hedge our foreign currency risk on a cash flow basis. There were no outstanding foreign currency derivative contracts at June 30, 2019.

We also have foreign exchange risk related to cash and cash equivalents in foreign banks. Based on the balance of cash and cash equivalents in foreign banks of$20.9 million as of June 30, 2019, an assumed 5% adverse change to foreign exchange rates would result in a fair value decline of$0.7 million. Fluctuations in fair value are recorded in "Accumulated other comprehensive income (loss)," a separate component of stockholders' equity.

Item 4. *Controls and Procedures.*

Attached as exhibits to this Quarterly Report on Form 10-Q are certifications of Quanta's Chief Executive Officer and Chief Financial Officer that are required in accordance with Rule 13a-14 of the Securities Exchange Act of 1934, as amended (the Exchange Act). This item includes information concerning the controls and controls evaluation referred to in the certifications, and it should be read in conjunction with the certifications for a more complete understanding of the topics presented.

Evaluation of Disclosure Controls and Procedures

Our management has established and maintains a system of disclosure controls and procedures that are designed to provide reasonable assurance that information required to be disclosed by us in the reports that we file or submit under the Exchange Act, such as this Quarterly Report, is recorded, processed, summarized and reported within the time periods specified in the SEC rules and forms. The disclosure controls and procedures are also designed to provide reasonable assurance 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.

As of the end of the period covered by this Quarterly Report, we evaluated the effectiveness of the design and operation of our disclosure controls and procedures pursuant to Rule 13a-15(b) of the Exchange Act. This evaluation was carried out under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer. Based on this evaluation, these officers have concluded that, as of June 30, 2019, our disclosure controls and procedures were effective to provide reasonable assurance of achieving their objectives.

Evaluation of Internal Control over Financial Reporting

No change in our internal control over financial reporting occurred during the quarter endedJune 30, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Design and Operation of Control Systems

Our management, including the Chief Executive Officer and Chief Financial Officer, does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Further, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within the company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and breakdowns can occur because of simple errors or mistakes. Controls can 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 based in part on 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.*

We are from time to time party to various lawsuits, claims and other legal proceedings that arise in the ordinary course of business. These actions typically seek, among other things, compensation for alleged personal injury, breach of contract and/or property damages, employment-related damages, punitive damages, civil penalties or other losses, or injunctive or declaratory relief. With respect to all such lawsuits, claims and proceedings, we record a reserve when it is probable that a loss has been incurred and the amount of loss can be reasonably estimated. In addition, we disclose matters for which management believes a material loss is at least reasonably possible. See Note 11 of the Notes to Condensed Consolidated Financial Statements in Item 1. *Financial Statements* of Part I of this Quarterly Report, which is incorporated by reference in this Item 1, for additional information regarding litigation, claims and other legal proceedings.

Item 1A. *Risk Factors.*

As of the date of this filing, there have been no material changes from the risk factors previously disclosed in Item 1A *Risk Factors* of Part I of our 2018 Annual Report. Our business is subject to a variety of risks and uncertainties, and when considering an investment in our company, you should carefully consider all of the risk factors described herein and in our 2018 Annual Report. The matters specifically identified are not the only risks and uncertainties facing our company, and additional risks and uncertainties not known to us or not specifically identified may also impair our business. If any of these risks and uncertainties occur, our business, financial condition, results of operations and cash flows could be negatively impacted, which could negatively impact the value of an investment in our company.

Item 2. *Unregistered Sales of Equity Securities and Use of Proceeds.*

Unregistered Sales of Equity Securities

None.

Issuer Purchases of Equity Securities During the Second Quarter of 2019

The following table contains information about our purchases of equity securities during the three months ended June 30, 2019.

Period	Total Number of Shares Purchased [(1)(2)]	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Number (or Approximate Dollar Value) of Shares that may yet be Purchased Under the Plans or Programs [(1)]
April 1-30, 2019				
Open Market Stock Repurchases (1)	—	$ —	—	$ 286,756,122
Tax Withholdings (2)	12	$ 37.35	—	
May 1-31, 2019				
Open Market Stock Repurchases (1)	—	$ —	—	$ 286,756,122
Tax Withholdings (2)	23,105	$ 35.13	—	
June 1-30, 2019				
Open Market Stock Repurchases (1)	—	$ —	—	$ 286,756,122
Tax Withholdings (2)	4	$ 37.95	—	
Total	23,121		—	$ 286,756,122

(1) Includes shares repurchased as of the trade date of such repurchases. On September 4, 2018, we issued a press release announcing that our Board of Directors approved a stock repurchase program that authorizes us to purchase, from time to time through June 30, 2021, up to $500.0 million of our outstanding common stock (the 2018 Repurchase Program). Repurchases under this program can be made in open market and privately negotiated transactions, at our discretion, based on market and business conditions, applicable contractual and legal requirements and other factors. This program does not obligate us to acquire any specific amount of common stock and may be modified or terminated by our Board of Directors at any time at its sole discretion and without notice.

(2) Includes shares purchased from employees to satisfy tax withholding obligations in connection with the vesting of restricted stock unit and performance unit awards or the settlement of previously vested but deferred restricted stock unit awards.

Item 3. ***Defaults Upon Senior Securities.***

None.

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

Not applicable.

Item 5. ***Other Information.***

None.

Item 6. ***Exhibits.***

Exhibit No.		Description
3.1		Restated Certificate of Incorporation of Quanta Services, Inc. (previously filed as Exhibit 3.1 to the Company's Form 8-K filed March 26, 2019 and incorporated herein by reference)
3.2		Bylaws of Quanta Services, Inc., as amended and restated December 6, 2018 (previously filed as Exhibit 3.1 to the Company's Form 8-K filed December 11, 2018 and incorporated herein by reference)
10.1	^	Quanta Services, Inc. 2019 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.1 to the Company's Form 8-K filed May 24, 2019 and incorporated herein by reference)
10.2	^	Form of RSU Award Agreement for awards to employees/consultants pursuant to the 2019 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.2 to the Company's Form 8-K filed May 24, 2019 and incorporated herein by reference)
10.3	^	Form of RSU Award Agreement for awards to non-employee directors pursuant to the 2019 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.3 to the Company's Form 8-K filed May 24, 2019 and incorporated herein by reference)
10.4	^	Form of PSU Award Agreement for awards to employees/consultants pursuant to the 2019 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.4 to the Company's Form 8-K filed May 24, 2019 and incorporated herein by reference)
31.1	*	Certification by Chief Executive Officer pursuant to Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
31.2	*	Certification by Chief Financial Officer pursuant to Rule 13a -14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
32.1	*	Certification by 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 (furnished herewith)
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.LAB	*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	*	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF	*	XBRL Taxonomy Extension Definition Linkbase Document
104	*	Cover Page Interactive Data File - the cover page interactive data file does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document

^ Management contracts or compensatory plans or arrangements

* Filed or furnished herewith

SIGNATURE

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

QUANTA SERVICES, INC.

By: /s/ JERRY K. LEMON

Jerry K. Lemon
Chief Accounting Officer
(Principal Accounting Officer)

Dated: August 2, 2019

Exhibit 31.1

I, Earl C. Austin, Jr., certify that:

1. I have reviewed this quarterly report on Form 10-Q of Quanta Services, Inc.;

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.

Dated: August 2, 2019

By: /s/ EARL C. AUSTIN, JR.

Earl C. Austin, Jr.
President, Chief Executive Officer and Chief Operating Officer
(Principal Executive Officer)

Exhibit 31.2

I, Derrick A. Jensen, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Quanta Services, Inc.;

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.

Dated: August 2, 2019

By: /s/ DERRICK A. JENSEN
Derrick A. Jensen
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION

PURSUANT TO 18 U.S.C. SECTION 1350,

AS ADOPTED PURSUANT TO

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Each of the undersigned officers of Quanta Services, Inc. (the "Company") hereby certifies, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to such officer's knowledge that:

(1) the accompanying Form 10-Q report for the period endingJune 30, 2019 as filed with the U.S. Securities and Exchange Commission (the "Report") fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934, as amended; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company as of the dates and for the periods expressed in the Report.

Dated: August 2, 2019

/s/ EARL C. AUSTIN, JR.

Earl C. Austin, Jr.
President, Chief Executive Officer and Chief Operating Officer

Dated: August 2, 2019

/s/ DERRICK A. JENSEN

Derrick A. Jensen
Chief Financial Officer