

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

Form 10-K

(Mark One)

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

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

Commission file number 001-13831



Quanta Services, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

74-2851603

(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)

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

Securities registered pursuant to Section 12(g) of the Act: None

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

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

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

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

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

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

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

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

As of June 28, 2019 (the last business day of the Registrant's most recently completed second fiscal quarter), the aggregate market value of the Common Stock of the Registrant held by non-affiliates of the Registrant, based on the last sale price of the Common Stock reported by the New York Stock Exchange on such date, was \$5.4 billion.

As of February 25, 2020, the number of outstanding shares of Common Stock of the Registrant was 142,508,874.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's Definitive Proxy Statement for the 2020 Annual Meeting of Stockholders are incorporated by reference into Part III of this Form 10-K.

QUANTA SERVICES, INC.
ANNUAL REPORT ON FORM 10-K
For the Year Ended December 31, 2019
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PART I

ITEM 1. *Business*

General

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 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. We have a workforce of approximately 40,300 employees as of December 31, 2019 and serve a diverse customer base. We believe our reputation for safety leadership, responsiveness and performance, geographic reach, comprehensive service offerings and financial strength have resulted in strong relationships with numerous customers, which include many of the leading companies in the industries we serve, and have positioned us to continue to take advantage of other opportunities. Our services are typically provided pursuant to master service agreements, repair and maintenance contracts and fixed price and non-fixed price installation contracts. Quanta is organized as a corporation under the laws of the State of Delaware and was formed in 1997.

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 year ended December 31, 2019 were \$12.11 billion, of which 59% was attributable to the Electric Power Infrastructure Services segment and 41% was attributable to the Pipeline and Industrial Infrastructure Services segment.

We believe that our business strategies, along with our safety culture and financial strength, differentiate us from our competition and position us to capitalize on future capital spending by our customers. We offer comprehensive and diverse solutions on a broad geographic scale and have a solid base of long-standing customer relationships in each of the industries we serve. We also have an experienced management team, both at the executive level and within our operating units, and various proprietary technologies that enhance our service offerings. Our strategies of expanding our portfolio of service offerings for existing and potential customers, increasing our geographic, technological and training capabilities, promoting best practices and cross-selling services to our existing customers, as well as continuing to maintain our financial strength, place us in the position to capitalize on opportunities and trends in the industries we serve and expand our operations to select new markets. 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.

Reportable Segments

The following is an overview of the types of services provided by each of our reportable segments.

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 our proprietary robotic arm techniques, 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, hydro power and backup 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 (including services in connection with 5G wireless deployment); 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 the majority of our postsecondary educational institution, which specializes in pre-apprenticeship training, apprenticeship training and specialized utility task training for electric workers, as well as training for the pipeline and industrial 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, distribution, 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, upgrade, 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 energy market and designs, installs and maintains fueling systems and water and sewer infrastructure.

Financial Information and Geographic Areas

We operate primarily in the United States; however, we derived \$1.92 billion, \$2.60 billion and \$2.48 billion of our revenues from foreign operations during the years ended December 31, 2019, 2018 and 2017. Of our foreign revenues, 75%, 76% and 79% were earned in Canada during the years ended December 31, 2019, 2018 and 2017. In addition, we held property and equipment of \$314.1 million and \$304.0 million in foreign countries, primarily Canada, as of December 31, 2019 and 2018.

Customers, Strategic Alliances and Preferred Provider Relationships

Our customers include electric power, energy and communications companies, as well as commercial, industrial and governmental entities. We have a large and diverse customer base, including many of the leading companies in the industries we serve, and 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. For the year ended December 31, 2019, our ten largest customers accounted for 34% of our consolidated revenues. Representative customers include:

- American Electric Power Company, Inc.
- ATCO Electric
- Berkshire Hathaway, Inc.
- CenterPoint Energy, Inc.
- Dominion Energy, Inc.
- Duke Energy Corporation
- Enbridge Inc.
- Entergy Corporation
- Enterprise Products Partners L.P.
- EQT Midstream
- Eversource Energy
- Exelon Corporation
- FirstEnergy Corp.
- Fortis Inc.
- National Grid plc
- NextEra Energy, Inc.
- PG&E Corporation
- Puget Sound Energy, Inc.
- Semptra Energy
- Southern California Edison Company
- The Southern Company
- TC Energy Corporation
- Valero Energy Corporation
- Verizon Communications Inc.

Although we have a centralized marketing and business development strategy, management at each of our operating units is responsible for developing and maintaining successful long-term relationships with customers. Our operating unit management teams build upon existing customer relationships to secure additional projects and increase revenues. Many of these customer relationships are long-standing and are maintained through a partnering approach with centralized account management, which includes project evaluation and consulting, quality performance, performance measurement and direct customer contact. Additionally, operating unit management focuses on pursuing growth opportunities with prospective customers. We also encourage operating unit management to cross-sell services of our other operating units to their customers and coordinate with our other operating units to pursue projects, especially those that are larger and more complex. We believe our ability to provide services that cover a broad spectrum of our customers' requirements is a significant differentiator. Our corporate-level business development and regional management groups support these activities by promoting and marketing our services for existing and prospective large national accounts, as well as projects that are capable of utilizing services from multiple operating units.

We are a preferred service provider for many of our customers, which means we have met minimum standards for a specific category of service, maintained a high level of performance and agreed to certain payment terms and negotiated rates. We strive to maintain preferred status as we believe it provides us an advantage in the award of future work for the applicable customer. Furthermore, many of our strategic relationships with customers take the form of strategic alliance or long-term maintenance agreements, which typically extend for an initial term and may include renewal options to extend the initial term. Strategic alliance agreements also generally state an intention to work together over a period of time and/or on specific types of projects, and many provide us with preferential bidding procedures.

Remaining Performance Obligations and Backlog

A performance obligation is a promise in a contract with a customer to transfer a distinct good or service. 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, which includes estimated revenues attributable to consolidated joint ventures and variable interest entities (VIEs), 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 they will be earned and are probable of collection.

We have also historically disclosed our backlog, a measure commonly used in our industry but not recognized under generally accepted accounting principles in the United States (GAAP). We believe this measure enables management to more effectively forecast our future capital needs and results and better identify future operating trends that may not otherwise be apparent. We believe this measure is also useful for investors in forecasting our future results and comparing us to our competitors. Our remaining performance obligations are a component of backlog, 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 can be terminated, on short notice even if we are not in default. We determine the estimated backlog for these MSAs using recurring historical trends, factoring in seasonal demand and projected customer needs based upon ongoing communications. In addition, many of our MSAs are subject to renewal, and these potential renewals are considered in determining estimated backlog. As a result, estimates for remaining performance obligations and backlog are subject to change based on, among other things, project accelerations; project cancellations or delays, including but not limited to those caused by commercial issues, regulatory requirements, natural disasters and adverse weather conditions; and final acceptance of change orders by customers. These factors can cause revenues to be realized in periods and at levels that are different than originally projected.

As of December 31, 2019 and 2018, MSAs accounted for 53% and 53% of our estimated 12-month backlog and 61% and 60% of total backlog.

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):

	December 31, 2019		December 31, 2018	
	12 Month	Total	12 Month	Total
Electric Power Infrastructure Services				
Remaining performance obligations	\$ 2,483,109	\$ 3,957,710	\$ 2,093,461	\$ 3,045,553
Estimated orders under MSAs and short-term, non-fixed price contracts	2,873,446	5,864,527	2,467,654	5,499,887
Backlog	5,356,555	9,822,237	4,561,115	8,545,440
Pipeline and Industrial Infrastructure Services				
Remaining performance obligations	670,707	1,344,741	1,003,543	1,635,918
Estimated orders under MSAs and short-term, non-fixed price contracts	1,919,791	3,837,923	1,411,329	2,161,275
Backlog	2,590,498	5,182,664	2,414,872	3,797,193
Total				
Remaining performance obligations	3,153,816	5,302,451	3,097,004	4,681,471
Estimated orders under MSAs and short-term, non-fixed price contracts	4,793,237	9,702,450	3,878,983	7,661,162
Backlog	\$ 7,947,053	\$ 15,004,901	\$ 6,975,987	\$ 12,342,633

Competition

The markets in which we operate are highly competitive. We compete with other contractors in most of the geographic markets in which we operate, and several of our competitors are large companies that have significant financial, technical and marketing resources. In addition, there are relatively few barriers to entry into some of the industries in which we operate and, as a result, any organization that has adequate financial resources and access to technical expertise may become a competitor. A significant portion of our revenues is currently derived from unit price or fixed price agreements, and price is often an important

factor in the award of such agreements. Accordingly, we could be underbid by our competitors. We believe that as demand for our services increases, customers often consider other factors in choosing a service provider, including technical expertise and experience, safety ratings, financial and operational resources, geographic presence, industry reputation and dependability, which we expect to benefit larger contractors such as us. In addition, competition may lessen as industry resources, such as labor supplies, approach capacity. There can be no assurance, however, that our competitors will not develop the expertise, experience and resources to provide services that are superior in both price and quality to our services, or that we will be able to maintain or enhance our competitive position. We also face competition from the in-house service organizations of our existing or prospective customers, which employ personnel who perform some of the same types of services we provide. Although these companies currently outsource a significant portion of these services, there can be no assurance that they will continue to do so in the future or that they will not acquire additional in-house capabilities.

Human Capital Resources

Employee Profile

Our operations are decentralized and labor-intensive, and therefore we rely on both management personnel and skilled labor personnel to successfully operate our business. As of December 31, 2019, we had approximately 40,300 employees, consisting of approximately 9,800 salaried employees, including executive officers, professional and administrative staff, project managers and engineers, job superintendents and field personnel, and approximately 30,500 hourly employees, the number of which fluctuates depending upon the number and size of the projects that are ongoing and planned at any particular time. Approximately 35% of our employees at December 31, 2019 were covered by collective bargaining agreements, which require the payment of specified wages, the observance of certain workplace rules and the payment of certain amounts to multiemployer pension plans and employee benefit trusts. These collective bargaining agreements have varying terms and expiration dates, and the majority contain provisions that prohibit work stoppages or strikes, even during specified negotiation periods relating to agreement renewals, and provide for binding arbitration dispute resolution in the event of prolonged disagreement.

Employee Benefits and Talent Development

We provide health, welfare and benefit plans for employees who are not covered by collective bargaining agreements. We also have a 401(k) plan pursuant to which eligible U.S. employees who are not provided retirement benefits through a collective bargaining agreement may make contributions through a payroll deduction. We make matching cash contributions of 100% of each employee's contribution up to 3% of that employee's salary and 50% of each employee's contribution between 3% and 6% of such employee's salary, up to the maximum amount permitted by law.

We depend on our key personnel to successfully operate our business, including our executive officers, senior corporate management and management at our operating units. We focus on attraction and retention of these key personnel by offering competitive compensation packages, including employment agreements in certain circumstances, and opportunities for advancement. We have also implemented enterprise-wide talent development and succession planning programs designed to identify future and/or replacement candidates for key positions.

Employee Training and Safety

Our industry is experiencing a shortage of journeyman linemen and specialty craft labor in certain geographic areas. Furthermore, the cyclical nature of the natural gas and oil industry can create shortages of qualified labor in those markets during periods of high demand. In order to take advantage of available opportunities and successfully implement our long-term strategy, we must be able to employ, train and retain the necessary skilled personnel. As a result, we support and utilize various training and educational programs and have developed additional company-wide and project-specific employee training and educational programs.

We own and operate Northwest Lineman College, which provides training programs for the electric power, pipeline and industrial and communications industries and specializes in pre-apprenticeship training, apprenticeship training and specialized utility task training for electric workers. We have also continued to invest in our internal education and training capabilities, including the expansion of our training facility to add training for beginning linemen, lead and cable splicing and directional drilling to our existing energized electric power and pipeline integrity training as well as a new formed gas distribution technician program. This facility provides classroom and on-the-job training programs and allows us to train employees in a controlled environment without the challenges of limited structure access and utility constraints.

Additionally, we have entered into strategic relationships with universities, the military and unions in order to develop our workforce. For example, our operating units performing more sophisticated and technical jobs utilize, when applicable, training programs provided by the International Brotherhood of Electrical Workers/National Electrical Contractors Associations (IBEW/NECA) Apprenticeship Program, training programs sponsored by the four trade unions administered by the Pipe Line Contractors Association (PLCA), apprenticeship training programs sponsored by the Canadian Union of Skilled Workers (CUSW) or our equivalent programs. Under the IBEW/NECA Apprenticeship Program, all journeyman linemen are required to complete classroom

education and on-the-job training, as well as extensive testing and certification. Certain of our operating units have established apprenticeship training programs approved by the U.S. Department of Labor that prescribe equivalent training requirements for employees who are not otherwise subject to the requirements of the IBEW/NECA Apprenticeship Program. Similarly, the CUSW offers apprenticeship training for construction and maintenance electricians and powerline technicians that requires classroom education and on-the-job training. In addition, the Laborers International Union of North America, the International Brotherhood of Teamsters, the United Association of Plumbers and Pipefitters and the International Union of Operating Engineers have training programs specifically designed for developing and improving the skills of their members who work in the pipeline construction industry. Our operating units also share best practices for training and educational programs.

Performance of our services requires the use of heavy equipment and exposure to inherently hazardous conditions. In response to these inherent hazards and as part of our commitment to the safety of our employees, customers and third parties, our corporate and operating unit management personnel have established safety programs, policies and procedures and training requirements for our employees both before they begin work and on an ongoing basis. For example, we have implemented an enterprise-wide Automated External Defibrillator (AED) program, which provides AEDs to all of our crews and training to enhance life safety response measures. Our operating units also share best practices for safety policies and practices.

Materials

Our customers typically supply most or all of the materials required for each job. However, for some of our contracts, we may procure all or part of the materials required. As we continue to expand our comprehensive engineering, procurement and construction offerings, the cost of materials may become a proportionately larger component of our consolidated cost of services. We do not anticipate experiencing any significant procurement difficulties, as we purchase our required materials from a variety of sources. However, a number of factors that we may not be able to predict or control could result in increased costs for these materials, including general market and political conditions and global trade relationships. For example, recent changes in U.S. policies related to global trade and tariffs, as well as retaliatory trade measures implemented by other countries, have resulted in uncertainty regarding the availability and pricing of certain commodities and materials important to our and our customers' businesses, including steel and aluminum.

Regulation

Our operations are subject to various federal, state, local and international laws and regulations including:

- licensing, permitting and inspection requirements applicable to contractors, electricians and engineers;
- regulations relating to worker safety and environmental protection;
- permitting and inspection requirements applicable to construction projects;
- wage and hour regulations;
- regulations relating to transportation of equipment and materials, including licensing and permitting requirements;
- building and electrical codes; and
- special bidding, procurement and other requirements on government projects.

We believe that we are in compliance with all material licensing and regulatory requirements that are necessary to conduct our operations. Our failure to comply with applicable regulations could result in substantial fines or revocation of our operating licenses, as well as give rise to termination or cancellation rights under our contracts or disqualify us from future bidding opportunities. See *Risks Related to Regulation and Compliance* in Item 1A. *Risk Factors* of this Annual Report on Form 10-K (Annual Report) for further information regarding regulations applicable to our business.

Environmental Matters and Climate-Related Impacts

We are committed to the protection of the environment and train our employees to perform their duties accordingly. We are subject to numerous federal, state, local and international environmental laws and regulations governing our operations, including the handling, transportation and disposal of non-hazardous and hazardous substances and wastes, as well as emissions and discharges into the environment, including discharges to air, surface water, groundwater and soil. We also are subject to laws and regulations that impose liability and cleanup responsibility for releases of hazardous substances into the environment. Under certain of these laws and regulations, liability can be imposed for cleanup of previously owned or operated properties or currently owned properties at which hazardous substances or wastes were discharged or disposed of by a former owner or operator, regardless

of whether we directly caused the contamination or violated any law at the time of discharge or disposal. The presence of contamination from such substances or wastes could also interfere with ongoing operations or adversely affect our ability to sell or lease the property or use it as collateral for financing. In addition, we could be held liable for significant penalties and damages under certain environmental laws and regulations or be subject to revocation of certain licenses or permits, which could materially and adversely affect our business, results of operations and cash flows. Our contracts with customers may also impose liability on us for environmental issues that arise through the performance of our services.

From time to time, we may incur costs and obligations for correcting environmental noncompliance matters and for remediation at or relating to certain of our properties. We believe that we are in substantial compliance with our environmental obligations and that any such obligations will not have a material adverse effect on our business or financial performance.

While the potential impact of climate-related changes on our operations is uncertain, management considers climate-related risks and opportunities in connection with its long-term strategic planning and short-term deployment of resources. For example, climate change may result in, among other things, increasing temperatures, rising sea levels and changes to patterns and intensity of wildfires, hurricanes, other storms and severe weather-related events and natural disasters. As discussed elsewhere in this Annual Report, including in Item 1A. *Risk Factors*, our operating results are significantly influenced by weather, and these changes could significantly impact our future operating results. A greater amount of rainfall, snow, ice or other less accommodating weather conditions, as well as an increase in severe weather events and natural disasters, could reduce our productivity or result in project delays or cancellations. However, an increase in certain of these events, such as hurricanes, tropical storms, wildfires, blizzards and ice storms, can create a greater amount of emergency restoration service work and increase customer spending on modernization and other infrastructure improvements (e.g., fire hardening programs in California and the western United States). Additionally, changes in climate could result in more accommodating weather patterns for greater periods of time in certain areas, which may enable us to increase our productivity. Climate change may also affect the conditions in which we operate, and in some cases, expose us to potentially increased liabilities associated with those environmental conditions. For example, severe drought and high wind speeds in the western United States have increased the risk of wildfires during certain portions of the year, which in turn has exposed us and other contractors to increased risk of liability in connection with our operations in those locations. These conditions have also resulted in increased costs for wildfire-related third-party insurance and reduced the amount insurance carriers are willing to make available under such policies.

Concerns about climate change could also result in potential new regulations, regulatory actions or requirements to fund energy efficiency activities, any of which could affect our customers and/or demand for our services. For example, any decrease in demand for fossil fuels could negatively impact demand for certain of our pipeline and industrial services. We also maintain a large fleet and a significant amount of construction machinery, all of which could be negatively impacted by new regulations related to greenhouse gas emissions from such sources. Furthermore, technological advancements, in response to regulatory changes or otherwise, could negatively impact our customers' businesses or alter the services our customers require, which could in turn reduce demand for our services. However, these same regulatory and technological changes could necessitate new or expanded power generation and transmission infrastructure, which could provide additional opportunities for us.

Risk Management and Insurance

We are insured for employer's liability, workers' compensation, auto liability and general liability claims. Under these 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, which insures all claims up to the amount of the applicable deductible of 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.

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, or coverage may not be available at reasonable and competitive rates. For example, due to the increased occurrence and future risk of wildfires in the western United States, Australia and other areas in recent years, insurers have reduced coverage limits and increased the cost of insurance coverage for those events. In any such event, our overall risk exposure would increase, which could negatively affect our results of operations, financial condition and cash flows.

Seasonality and Cyclical

Our revenues and results of operations can be subject to seasonal and other variations. These variations are influenced by, among other things, weather, customer spending patterns, bidding seasons, receipt of required regulatory approvals, permits and rights of way, project timing and schedules, and holidays. Please read the section entitled *Significant Factors Impacting Results* included in Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*.

Website Access and Other Information

Our website address is www.quantaservices.com. Interested parties may obtain free electronic copies of our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and any amendments to these reports through our website under the heading *Investor Relations / SEC Filings* or through the website of the Securities and Exchange Commission (the SEC) at www.sec.gov. These reports are available on our website as soon as reasonably practicable after we electronically file them with, or furnish them to, the SEC. We will also make available to any stockholder, without charge, copies of our Annual Report on Form 10-K as filed with the SEC. For copies of this or any other Quanta publication, stockholders may submit a request in writing to Quanta Services, Inc., Attn: Corporate Secretary, 2800 Post Oak Blvd., Suite 2600, Houston, Texas 77056, or by phone at (713) 629-7600.

Investors and others should note that we announce material financial information and make other public disclosures of information regarding Quanta through SEC filings, press releases, public conference calls, and our website. We also utilize social media to communicate this information, and it is possible that the information we post on social media could be deemed material. Accordingly, we encourage investors, the media and others interested in our company to follow Quanta, and review the information we post, on the social media channels listed on our website in the *Investors Relations / Social Media* section.

This Annual Report, our website and our social media channels contain information provided by other sources that we believe is reliable. We cannot provide assurance that the information obtained from other sources is accurate or complete. No information on our website or our social media channels is incorporated by reference herein.

ITEM 1A. Risk Factors

Our business is subject to a variety of risks and uncertainties, including, but not limited to, the risks and uncertainties described below. The matters described below are not the only risks and uncertainties facing our company, and risks and uncertainties not known to us or not described below also may impair our business operations. If any of the following risks actually occur, our business, financial condition, results of operations and cash flows can be negatively affected, the value of securities we have issued could be adversely affected, resulting in stockholders and purchasers losing part or all of their investment, and we may not be able to achieve our strategic initiatives or expectations. This Annual Report also includes statements reflecting assumptions, expectations, projections, intentions or beliefs about future events that are intended as "forward-looking statements" under the Private Securities Litigation Reform Act of 1995 and should be read in conjunction with the section entitled *Uncertainty of Forward-Looking Statements and Information* included in Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*.

Risks Related to Our Industries and Operating Our Business

Our operating results may vary significantly from quarter to quarter.

Our business can be highly cyclical and is subject to seasonality and other factors that can result in significantly different operating results from quarter to quarter, and therefore our results in any particular quarter may not be indicative of future results. Our quarterly results have been and may in the future be materially and/or adversely affected by, among other things:

- the timing and volume of work we perform and our performance with respect to ongoing projects;
- project delays, reductions in project scope, project terminations or cancellations and increases in project costs, including as a result of, among other things, natural disasters, adverse weather conditions or events, legal challenges or permitting, regulatory or environmental processes;
- variations in the size, scope, costs and margins of ongoing projects and the mix of our customers, contracts and business;
- fluctuations in economic, political and market conditions on a regional, national or global basis;
- pricing pressures as a result of competition;
- changes in the budgetary spending patterns or strategic plans of customers or federal, state, provincial and local governments;

- liabilities and costs incurred in our operations that are not covered by, or that are in excess of, our third-party insurance, including significant liabilities that arise from the inherently hazardous conditions of our operations (e.g., explosions, fires) and which could be exacerbated by the geographies in which we operate;
- disputes with customers or delays relating to billing and payment under our contracts and change orders;
- payment risk associated with the financial condition of customers, including customers affected by the volatility of natural gas and oil prices or that have filed for bankruptcy protection;
- the resolution of, or unexpected or increased costs associated with, pending or threatened legal proceedings, indemnity obligations, multiemployer pension plan obligations (e.g., withdrawal liability) or other claims asserted against us;
- the termination or expiration of existing customer agreements;
- restructuring, severance and other costs associated with winding down certain operations and exiting markets, including our Latin American operations;
- estimates and assumptions in determining our financial results, remaining performance obligations and backlog, including the timing and significance of impairments of long-lived assets, equity or other investments, receivables, goodwill or other intangible assets;
- significant fluctuations in foreign currency rates;
- the recognition of tax impacts related to changes in tax laws or uncertain tax positions; and
- the timing and magnitude of costs we incur to support growth internally or through acquisitions or otherwise.

Negative economic and market conditions, including low oil and natural gas production volumes and prices, can adversely impact our customers' future spending as well as payment for our services.

Stagnant or declining economic conditions, including a prolonged economic downturn or recession, as well as significant events that have an impact on financial or capital markets, can adversely impact the demand for our services and result in the delay, reduction or cancellation of certain projects. A number of factors can adversely affect the industries we serve, including, among other things, financing conditions, potential bankruptcies and global and U.S. trade relationships and other geopolitical events. A reduction in cash flow or the lack of availability of debt or equity financing for our customers could result in a reduction in our customers' spending for our services and also impact the ability of our customers to pay amounts owed to us, which could have a material adverse effect on our business, financial condition, results of operations and cash flows. Consolidation, competition, capital constraints or negative economic conditions in the electric power, energy or communications industries can also result in reduced spending by, or the loss of, one or more of our customers.

Our Pipeline and Industrial Infrastructure Services segment is exposed to risks associated with the oil and gas industry. These risks, which are not subject to our control, include the volatility of natural gas and oil prices and production, the development of and consumer demand for alternative energy sources, and legislative and regulatory actions, as well as public opinion, regarding the impact of fossil fuels on the climate and environment. Specifically, lower prices and production volumes, or perceived risk thereof, can result in decreased or delayed spending by our customers, including with respect to larger pipeline and industrial projects. In addition, the 2020 U.S. presidential and congressional elections may result in a change in administration and control of Congress with the potential consequence of increased restrictions on oil and gas production activities, which could have a material adverse effect on the oil and gas industry. If the profitability of our Pipeline and Industrial Infrastructure Services segment were to decline, our overall financial position, results of operations and cash flows could also be adversely affected. Additionally, a decline in prices, production or the development of resource plays can negatively impact certain portions of our Electric Power Infrastructure Services segment. For example, the low price of oil has had an adverse impact on the Canadian economy, which has impacted demand for some of our electric power services in Canada.

A variety of issues outside of our control could affect the timing of and our performance on projects, which may result in additional costs to us, reductions or delays in revenues, the payment of liquidated damages or project termination.

Our business is dependent in part upon projects that can be cyclical in nature and are subject to risks of delay or cancellation. The timing of or failure to obtain contracts, delays in awards of, start dates for or completion of projects and the cancellations of projects can result in significant periodic fluctuations in our business, financial condition, results of operations and cash flows. Many of our projects involve challenging engineering, permitting, procurement and construction phases that occur over extended time periods, sometimes several years, and we have encountered and may in the future encounter project delays or project performance issues as a result of, among other things:

- delays in the delivery or management of design or engineering information, equipment or materials;
- schedule changes;

- natural disasters, including wildfires, earthquakes and significant weather events (e.g., hurricanes, tropical storms, tornadoes, floods, droughts, blizzards and extreme temperatures);
- adverse weather conditions (e.g., prolonged rainfall or snowfall, early thaw in Canada and the northern United States, other unseasonable weather patterns);
- our or a customer's failure to timely obtain permits or rights of way or meet other permitting, regulatory or environmental requirements or conditions;
- difficult terrain and site conditions where delivery of materials and availability of labor are impacted or where there is exposure to harsh and hazardous conditions;
- protests, legal challenges or other political activity or opposition to a project;
- changes in permitting and regulatory requirements during the course of our work; and
- other factors such as terrorism, military action and public health crises (including the outbreak of the recent coronavirus);
- additional complexity, timing uncertainty or extended bidding, regulatory and permitting processes associated with the projects where we provide engineering, procurement and construction (EPC) services.

In addition, we contract with third-party suppliers and subcontractors to assist us with the completion of contracts, and approximately 15% to 20% of our work is subcontracted to other service providers. A delay or failure to perform by suppliers or by subcontractors can result in delays in the overall progress of the project or cause us to incur additional costs.

Many of these difficulties and delays are beyond our control and can negatively impact our ability to complete the project in accordance with the required delivery schedule or achieve our anticipated margin on the project. Delays and additional costs may be substantial and not recoverable from third parties, and in some cases, we may be required to compensate the customer for such delays. Furthermore, in certain circumstances we guarantee project completion or performance by a scheduled date, and failure to meet the schedule or performance requirements can result in additional costs or penalties, including liquidated damages. Such amounts could exceed expected project profit. In extreme cases, project delay or performance difficulties can result in project cancellation by a customer or damage to our reputation or relationship with a customer, which can adversely affect our ability to secure new contracts. Additional costs or penalties, a reduction in our productivity or efficiency or a project termination in any given period can have a material adverse effect on our business, financial condition, results of operations and cash flows. For example, as discussed in further detail in *Legal Proceedings* within Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*, the termination of a telecommunications project in Peru resulted in a \$79.2 million charge to earnings in the second quarter of 2019.

Our revenues and profitability can be exposed to potential risk if our customers encounter financial difficulties or file bankruptcy or disputes arise with our customers.

Our contracts often require us to satisfy or achieve certain milestones in order to receive payment, or in the case of cost-reimbursable contracts, provide support for billings in advance of payment. As a result, we can incur significant costs or perform significant amounts of work prior to receipt of payment. We face difficulties collecting payment and sometimes failed to receive payment for such costs in circumstances where our customers do not proceed to project completion, terminate or cancel a contract, default on their payment obligations, or dispute the adequacy of our billing support. We have in the past brought, and may in the future bring, claims against our customers related to the payment terms of our contracts. For example, we have filed an international arbitration proceeding against the customer in connection with the terminated telecommunications project in Peru, which seeks to recover, among other things, amounts related to a net receivable position of approximately \$120 million as of December 31, 2019. For additional information on this matter, see *Legal Proceedings* within Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*. A failure to promptly recover on these types of claims can have a negative impact on our financial condition, results of operations and cash flows, and any such claims may harm our relationships with our customers.

Slowing economic conditions in the industries we serve can also impair the financial condition of our customers and hinder their ability to pay us on a timely basis or at all. Further, to the extent a customer files bankruptcy, payment of amounts owed can be delayed and certain payments we receive prior to the filing of the bankruptcy petition may be avoided and returned to the customer's bankruptcy estate. For example, in January 2019, PG&E Corporation and Pacific Gas and Electric Company (collectively, PG&E), one of our largest customers, filed for bankruptcy protection under Chapter 11 of the U.S. Bankruptcy Code, as amended, which impacted the collection of approximately \$165 million of pre-petition receivables. See Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations - Concentrations of Credit Risk* for additional information on this matter. Additionally, many of our customers for larger projects are project-specific entities that do not have significant assets other than their interests in the project and could be more likely to encounter financial difficulties relating to their businesses. We ultimately may be unable to collect amounts owed to us by customers experiencing financial difficulties or

in bankruptcy, and accounts receivable from such customers may become uncollectible and ultimately have to be written off, which could have an adverse effect on our future financial condition, results of operations and cash flows.

Our business is subject to operational hazards, including, among others, wildfires and explosions, that can result in significant liabilities and that may be exacerbated by certain geographies and locations where we perform services, and we may not be insured against all potential liabilities.

Due to the nature of services we provide and the conditions in which we and our customers operate, our business is subject to operational hazards and accidents that can result in significant liabilities. These operational hazards include, among other things, electricity, fires, explosions, leaks, collisions, mechanical failures, and damage from severe weather conditions and natural disasters. Furthermore, certain of our customers operate energy- and communications-related infrastructure assets in locations and environments that increase the likelihood and/or severity of these operational hazards, including as a result of changes in climate and other factors in recent years. In particular, we perform a significant amount of services, including operational, consulting and other services, for customers that operate electrical power, natural gas and communications infrastructure assets in the western United States, Australia and other locations that have recently experienced, and have a higher risk of, wildfires. For example, certain of Quanta's operating units perform inspection, consulting, repair, maintenance and other services for utilities and other customers that operate electric power and other infrastructure in California and other areas in the western United States, including recent inspection of, and other services relating to, the electrical transmission and distribution infrastructure operated by PG&E in California. PG&E and certain other utility customers have been determined to be or are potentially responsible for catastrophic wildfires that have occurred in recent years. Quanta's operating units have received document hold requests and subpoenas in connection with these events. We are not a party to any pending legal proceeding relating to such wildfires at this time, and no related claims asserting liabilities against Quanta or its operating units have been filed. However, there is no assurance that claims will not be filed in the future.

We also often perform services in locations that are densely populated and that have higher value property and assets, such as California and metropolitan areas, which can increase the impact of any of these hazards or other accidents we experience. We recently acquired The Hallen Construction Co., Inc. (Hallen), a company that specializes in underground gas and electric distribution and transmission services and operates in metropolitan areas throughout the northeastern United States, including New York City, New York. This acquisition, including certain assumed liabilities associated with its pre-acquisition operations, which are described further in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*, increases our potential exposure to certain of these hazards and accidents.

Events arising from operational hazards and accidents have resulted in significant liabilities to us in the past and may expose us to significant claims and liabilities in the future. These claims and liabilities can arise through indemnification obligations to customers, our negligence or otherwise, and because our services in certain instances are integral to the operation and performance of our customers' infrastructure, such claims and liabilities can arise even if our operations are not the cause of the harm. Our exposure to liability can also extend for a number of years after we complete our services, and potential claims and liabilities arising from significant accidents and events can take a number of years and significant legal costs to ultimately resolve.

Potential liabilities include, among other things, claims associated with personal injury, including severe injury or loss of life, and significant damage to property, equipment and the environment, and other claims discussed above and can lead to suspension of operations, adverse effects to our safety record and reputation and/or material legal costs and liabilities. In addition, if any of these events or losses related thereto are found to be the result of our or our customer's activities or services, we could be subject to government enforcement actions or regulatory penalties, litigation and/or civil or governmental actions, including investigations, citations and fines. Insurance coverage may not be available to us or may be insufficient to cover the cost of any of these liabilities and legal costs. If we are not fully insured or indemnified against such liabilities and legal costs or a counterparty fails to meet its indemnification obligations to us, it could materially and adversely affect our business, financial condition, results of operations and cash flows. Further, to the extent our reputation or safety record is adversely affected, demand for our services could decline or we may not be able to bid for certain work.

Unavailability or cancellation of third-party insurance coverage would increase our overall risk exposure, as well as disrupt our operations, and estimates of losses covered by our insurance policies could prove incorrect.

We maintain insurance coverage from third-party insurers as part of our overall risk management strategy and because some of our contracts require us to maintain specific insurance coverage limits. We are insured for, among other things, employer's liability, workers' compensation, auto liability and general liability claims, but such insurance is subject to deductibles and limits and may be canceled or may not cover all of our losses. We manage and maintain a portion of our casualty risk through our wholly-owned captive insurance company, which insures all claims up to the amount of the applicable deductible of our third-party insurance programs. In connection with our casualty insurance programs, we are required to issue letters of credit to secure our obligations. Our insurance policies include various coverage requirements, including the requirement to give appropriate notice, and coverage could be denied if we fail to comply with those requirements.

Additionally, our insurance coverages may not be sufficient or effective under all circumstances or against all claims and liabilities asserted against us, and if we are not fully insured against such claims and liabilities, it could expose us to significant liabilities and materially and adversely affect our business, financial condition, results of operations and cash flows. We also renew our insurance policies on an annual basis, and therefore deductibles and levels of coverage offered by third parties may change in future periods. For example, due to the increased occurrence in recent years and future risk of wildfires in California and other areas in the western United States, Australia and other locations, insurers have reduced coverage limits and increased the cost of insurance coverage for those events. As a result, we expect our level of insurance coverage for wildfire events will decrease at the time of our annual insurance renewal in the spring of 2020, and such level may not be sufficient to cover potential losses. In addition, our third party insurers could decide to further reduce or exclude coverage for wildfires in the future. There can also be no assurance that any of our other existing third-party insurance coverages will be renewed at their current levels or at all or that any future coverage will be available at reasonable and competitive rates. Our third-party insurers could also fail, cancel our coverage or otherwise be unable or unwilling to provide us with adequate insurance coverage. Adverse changes in our insurance coverage could increase our exposure to uninsured losses, which could have a negative effect on our business, financial condition, results of operations and cash flows or result in a disruption of our operations.

Losses under our 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. If we experience claims or costs above our estimates, our business, financial condition, results of operations and cash flows could be materially and adversely affected.

Our business is labor-intensive, and we may be unable to attract and retain qualified employees or we may incur significant costs in the event we are unable to efficiently manage our workforce.

Our ability to efficiently manage our business and achieve our strategic initiatives is limited by our ability to employ, train and retain the necessary skilled personnel, which is subject to a number of risks. The commencement of new, large-scale infrastructure projects or increased demand for infrastructure improvements, as well as the aging electric utility workforce, has reduced and may further reduce the pool of skilled workers, including qualified journeyman linemen, available for our Electric Power Infrastructure Services segment. With respect to our Pipeline and Industrial Infrastructure Services segment, there is limited availability of experienced supervisors and foremen that can oversee larger diameter pipeline projects. The cyclical nature of the natural gas and oil industry can also create shortages of qualified labor during periods of high demand and production. A shortage in the supply of these personnel creates competitive hiring markets that may result in increased labor expenses. Additionally, we have incurred, and expect to continue to incur, significant education and training expenses in order to recruit and train employees.

The uncertainty of contract award timing and project delays can also present difficulties in managing our workforce size. Our inability to efficiently manage our workforce may require us to incur costs resulting from excess staff, reductions in staff, or redundancies that could have a material adverse impact on our business, financial condition, results of operations and cash flows.

The loss of, or reduction in business from, one or a few customers could have a material adverse effect on our business.

A few customers have in the past and may in the future account for a significant portion of our revenues. For example, our ten largest customers accounted for 34% of our consolidated revenues for the year ended December 31, 2019. Although we have long-standing relationships with many of our significant customers, a significant customer may unilaterally reduce or discontinue business with us at any time or merge or be acquired by a company that decides to reduce or discontinue business with us. PG&E, one of our largest customers, has filed for bankruptcy, and other significant customers may file for bankruptcy protection or cease operations, which could also result in reduced or discontinued business with us. The loss of business from a significant customer could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may fail to adequately recover on contract change orders or claims brought by us against customers.

We have in the past brought, and may in the future bring, claims against our customers. These types of claims occur due to, among other things, delays caused by customers and third parties and changes in project scope, which can result in additional costs that may not be recovered until the claim is resolved. While we generally negotiate with the customer for additional compensation, we may be unable to obtain, through negotiation, arbitration, litigation or otherwise, adequate amounts to compensate us for the additional work or expenses incurred. Litigation or arbitration with respect to these matters is generally lengthy and costly, involves significant uncertainty as to timing and amount of any resolution, and can adversely affect our relationship with existing or potential customers. Furthermore, we can be required to invest significant working capital to fund cost overruns while the resolution of a claim is pending. Failure to obtain adequate and prompt compensation for these matters can result in a reduction of revenues and gross profit recognized in prior periods or the recognition of a loss. Any such reduction or loss can be substantial and can have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our failure to accurately estimate project costs or successfully execute a project could result in reduced profits or losses.

We currently generate, and expect to continue generating, a significant portion of our revenues under fixed price contracts, including contracts for projects where we provide EPC services (e.g., large electric transmission and pipeline projects, facility and terminal projects). Under these contracts, we assume risks related to project estimates and execution, and project revenues, profitability and costs can vary, sometimes substantially, from our original projections due to a variety of factors, including:

- unforeseen circumstances or project modifications not included in our cost estimates or covered by our contract for which we cannot obtain adequate compensation, including concealed or unknown environmental, geological or geographical site conditions and technical problems such as design or engineering issues;
- failure to accurately estimate project costs or accurately establish the scope of our services;
- failure to coordinate performance of subcontractors, suppliers and other third parties or delays and failure to perform by such parties;
- inability to meet project schedule requirements or achieve guaranteed performance or quality standards for a project, which can result in increased costs or the payment of liquidated damages to the customer;
- failure to properly make judgments in accordance with applicable professional standards (e.g., engineering standards);
- changes in the cost of equipment, commodities, materials or labor;
- contract termination or suspension and our inability to obtain reimbursement for services performed, costs incurred or expected profit;
- delays or productivity issues caused by adverse weather conditions, significant weather events or other natural disasters;
- delays and additional costs associated with obtaining required permits or approvals;
- changes in laws or regulations;
- delays and additional costs attributable to legal challenges and protests and other political activity; and
- quality issues, including those requiring rework or replacement.

These factors and events can result in reputational harm or cause actual revenues and gross profits for a project to differ from what we originally estimated, resulting in reduced profitability or losses on projects. Such differences can materially and adversely affect our business, financial condition, results of operations and cash flows.

Changes in estimates related to revenues and costs associated with our contracts with customers could result in a reduction or elimination of revenues, a reduction of profits or the recognition of losses.

For fixed price contracts and certain unit-price contracts, we recognize revenue as performance obligations are satisfied over time and earnings or losses recognized on individual contracts are based on estimates of contract revenues, costs and profitability, as discussed in further detail in Note 2 of the Notes to Consolidated Financial Statements included in Item 8. *Financial Statements and Supplementary Data*. Changes in contract estimates are recognized on a cumulative catch-up basis in the period in which the revisions to the estimates are made, and contract losses are recognized in full when losses are determined to be probable and can be reasonably estimated. Variable consideration amounts, including performance incentives, early pay discounts and penalties, may also cause changes in contract estimates. In addition, we recognize amounts associated with change orders and/or claims as revenue when it is probable that the contract price will be adjusted and the amount of any such adjustment can be reasonably estimated, which can result in the recognition of costs prior to the recognition of the related revenue. Furthermore, actual amounts collected in connection with change orders can differ from estimated amounts.

Consequently, the timing for recognition of revenues and profit or loss and any subsequent changes in estimates is uncertain and could result in a reduction or an elimination of previously reported revenues or profits or the recognition of losses on the associated contract. Any such adjustments could be significant and could have a material adverse impact on our financial condition, results of operations and cash flows.

During the ordinary course of our business, we are subject to lawsuits, claims and other legal proceedings.

We have in the past been, and may in the future be, named as a defendant in lawsuits, claims and other legal proceedings that arise in the ordinary course of our business. These actions seek, among other things, compensation for alleged personal injury (including claims for loss of life), workers' compensation, employment discrimination, sexual harassment, workplace misconduct, wage and hour claims and other employment-related damages, compensation for breach of contract, negligence or gross negligence or property damage, environmental liabilities, multiemployer pension plan withdrawal liabilities, punitive damages, consequential damages, and civil penalties or other losses or injunctive or declaratory relief. In addition, we generally indemnify our customers for claims related to the services we provide and actions we take under our contracts, and, in some instances, we are allocated risk

through our contract terms for actions by our customers, subcontractors or other third parties. Because our services in certain instances can be integral to the operation and performance of our customers' infrastructure, we have been and may become subject to lawsuits or claims for any failure of the systems that we work on, even if our services are not the cause of such failures. We could also be subject to civil and criminal liabilities, which could be material. Insurance coverage may not be available or may be insufficient for these lawsuits, claims or legal proceedings. The outcome of any allegations, lawsuits, claims or legal proceedings, as well as any public reaction thereto, is inherently uncertain and could result in significant costs, damage to our brands or reputation and diversion of management's attention from our business. Payments of significant amounts, even if reserved, could materially and adversely affect our business, reputation, financial condition, results of operations and cash flows. For details on our existing litigation, claims and other legal proceedings, refer to Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*.

We may be unsuccessful at generating internal growth, which could adversely affect our business.

Many of the factors affecting our ability to generate internal growth are beyond our control, and we cannot be certain that our strategies for achieving internal growth will be successful. Inability to successfully generate internal growth may adversely affect our financial condition, results of operations and cash flows. Our ability to generate internal growth will be affected by, among other factors, our ability to:

- expand the range of services we offer to customers to address their evolving infrastructure needs;
- attract new customers;
- increase the number of projects performed for existing customers;
- hire and retain qualified employees;
- expand geographically; and
- address regulatory, environmental and permitting requirements and economic or market conditions that affect us or our customers.

Many of our contracts may be canceled or suspended on short notice or may not be renewed upon completion or expiration, and we may be unsuccessful in replacing our contracts, which could adversely affect our business.

Our customers have in the past and may in the future cancel, delay or reduce the number or size of projects available to us for a variety of reasons, including capital constraints or inability to meet regulatory requirements. Furthermore, many of our customers may cancel or suspend our contracts on short notice, typically 30 to 90 days, even if we are not in default under the contract. Certain of our customers assign work to us on a project-by-project basis under master service agreements. Under these agreements, our customers generally have no obligation to assign a specific amount of work to us. Our financial condition, results of operations and cash flows can be negatively impacted if any of the following occur:

- our customers cancel or suspend contracts having significant value;
- we fail to renew a significant number of our existing contracts;
- we complete a significant number of non-recurring projects and cannot replace them with similar projects;
- the anticipated volume of work under an existing master service agreement is not assigned to us;
- we are not the successful bidder on our existing contracts that are subject to re-bid in the future; or
- we fail to reduce operating and overhead expenses consistent with any decrease in our revenues.

Our business is highly competitive, and competitive pressures, technological advancements and other market conditions could negatively affect our business.

The specialty contracting business is served by numerous companies, from small, owner-operated private companies to large multi-national, public companies. Relatively few barriers prevent entry into some areas of our business, and as a result, any organization that has adequate financial resources and access to technical expertise may become one of our competitors. In addition, some of our competitors have significant financial, technical and marketing resources. Our competitors may have or may develop the expertise, experience and resources to provide services that are superior in both price and quality to our services. Similarly, we cannot be certain that we will maintain or enhance our competitive position within the specialty contracting business or maintain our current customer base. Certain of our competitors may have lower overhead cost structures, and therefore may be able to provide services at lower rates than us. We also face competition from the in-house service organizations of our existing or prospective customers, which are capable of performing, or acquiring businesses that perform, some of the same types of services we provide. These customers may also face pressure or be compelled by regulatory or other requirements to self-perform an

increasing amount of the services we currently perform for them. Therefore, we cannot be certain that our existing or prospective customers will continue to outsource these services in the future.

Furthermore, a substantial portion of our revenues is directly or indirectly dependent upon obtaining new contracts. The timing of project awards is unpredictable and often involves complex and lengthy negotiations and bidding processes. These processes are impacted by a wide variety of factors, including price, governmental approvals, financing contingencies, commodity prices, environmental conditions and overall market and economic conditions. The competitive environment we operate in can also affect the timing of contract awards and the commencement or progress of work under awarded contracts. For example, based on rapidly changing competition dynamics, we have experienced, and may in the future experience, more competitive pricing in certain markets, such as the smaller scale transmission and distribution electric power market. Our bids also may not be successful due to, among other things, a potential customer's perception of our ability to perform the work or the technological advantages held by our competitors. Additionally, changing competitive pressures present difficulties in matching workforce size with available contract awards. As a result, the competitive environment we operate in can have a material adverse effect on our business, financial condition, results of operations and cash flows and cause our results of operations and cash flows to fluctuate significantly.

Technological advancements and other factors may alter our customers' existing operating model or the services they require, which may also result in reduced demand for our services. In addition, market changes within our customers' industries could impact their future demand for our services, such as a reduction in demand for hydrocarbons or plastics that negatively impacts certain of our customers. Our future success will depend, in part, on our ability to anticipate and adapt to these changes to our customers' existing operating model in a cost-effective manner and to offer services that meet customer demands and evolving industry standards. If we fail to adapt successfully to any change or obsolescence or incur significant expenditures in adapting to such change, our businesses, financial condition, results of operations and cash flows could be materially and adversely affected.

The nature of our business exposes us to potential liability for warranty, engineering and other related claims.

Under our contracts with customers, we typically provide warranties for our services and materials we provide, guaranteeing the work performed against, among other things, defects in workmanship, and may agree to indemnify our customers for losses related to our services. The length of the warranty periods we agree to vary and can extend for several years, and certain projects can have longer warranty periods and include facility performance warranties that are broader than the warranties we generally provide. Warranties generally require us to re-perform the services and/or repair or replace the warranted item and any other facilities impacted thereby, at our sole expense, and we could also be responsible for other damages if we are not able to adequately satisfy our warranty obligations. In addition, we can be required under contractual arrangements with our customers to warrant any defects or failures in materials we provide. While we generally require the materials suppliers to provide us warranties that are consistent with those we provide to our customers, if any of these suppliers default on their warranty obligations to us, we may incur costs to repair or replace the defective materials. Costs incurred as a result of warranty claims could adversely affect our business, financial condition, results of operations and cash flows.

Furthermore, our business involves professional judgments regarding the planning, design, development, construction, operations and management of electric power transmission, communications and pipeline infrastructure. Because our projects are often technically complex, our failure to make judgments and recommendations in accordance with applicable professional standards, including engineering standards, could result in damages. A significantly adverse or catastrophic event at a project site or completed project resulting from the services we performed could result in significant professional or product liability, personal injury (including claims for loss of life) or property damage claims or other claims against us, as well as reputational harm. These liabilities could exceed our insurance limits or impact our ability to obtain third-party insurance in the future, and customers, subcontractors or suppliers who have agreed to indemnify us against any such liabilities or losses might refuse or be unable to pay us. As a result, these claims could have a material adverse impact on our business, financial condition, results of operations and cash flows.

We can incur liabilities or suffer negative financial or reputational impacts relating to occupational health and safety matters.

Our operations are inherently hazardous and subject to extensive laws and regulations relating to the maintenance of safe conditions in the workplace. While we have invested, and will continue to invest, substantial resources in our occupational health and safety programs, our industry involves a high degree of operational risk, and there can be no assurance that we will avoid significant liability exposure. Although we have taken what we believe are appropriate precautions, we have suffered serious accidents, including fatalities, and we anticipate that our operations may result in additional serious accidents in the future. As a result of these events, we could be subject to substantial penalties, criminal prosecution or civil litigation, including claims for bodily injury or loss of life, that could result in substantial costs and liabilities. In addition, if our safety record were to substantially deteriorate over time or we were to suffer substantial penalties or criminal prosecution for violation of health and safety regulations, our customers could cancel our contracts and elect to procure future services from other providers. Unsafe work sites also have the potential to increase employee turnover, increase the costs of projects for our clients, and raise our operating costs. Any of the foregoing could have a material adverse impact on our business, financial condition, results of operations and cash flows.

Disruptions to our information technology systems or our failure to adequately protect critical data, sensitive information and technology systems could materially affect our business or result in harm to our reputation.

We rely on information technology systems to manage our operations and other business processes and to protect sensitive company information. We also collect and retain information about our customers, stockholders, vendors and employees, all of which expect that we will adequately protect such information. Breaches or disruptions of our information systems can result from, among other things, cyber-attacks, theft, inadvertent exposure of sensitive information, acts of terrorism, storms or other natural phenomena, information technology solution failures or network disruptions, and any such cyber-attacks or breaches can go unnoticed for some period of time. An intrusion into the information systems of a business we acquire may also ultimately compromise our systems. Furthermore, some of the energy infrastructure systems on which we work may be considered to be strategic targets, and therefore at greater risk of cyber-attacks or acts of terrorism than other targets. Cyber-attacks can result in compromises of our payment systems, monetary losses, inability to access our systems, delays in processing transactions or reporting financial results, the disclosure or misappropriation of confidential or proprietary company information (including for the purpose of transacting in our stock), or the release of customer, stockholder, vendor or employee data. An attack could also cause service disruptions to our internal systems or, in extreme circumstances, infiltration into, damage to or loss of control of our customers' energy infrastructure systems. Any such breach or disruption could subject us to significant liabilities, cause damage to our reputation or customer relationships, or result in regulatory investigations or other actions by governmental authorities.

We also continue to implement information technology solutions that require substantial financial and personnel resources. There is no guarantee that we will realize economic or other intended benefits from these systems. Furthermore, failure to properly implement these systems could result in substantial disruptions to our business, including with respect to coordinating and processing our normal business activities and financial reporting and testing and recording certain data necessary to provide oversight of our disclosure controls and procedures and effective internal controls over our financial reporting, as well as other unforeseen problems.

Any deterioration in the quality or reputation of our brands, which can be exacerbated by the effect of social media or significant media coverage, could have an adverse impact on our business or reputation.

Our brands and our reputation are among our most important assets. The success of our business and our ability to attract and retain customers depends on brand recognition and reputation. Such dependence makes our business susceptible to reputational damage and to competition from other companies. A variety of events could result in damage to our reputation or brands, some of which are outside of our control, including:

- acts or omissions that adversely affect our business such as a crime, scandal, cyber-related incident, litigation or other negative publicity;
- failure to successfully perform a high-profile project;
- actual or potential involvement in a catastrophic fire, explosion or similar event;
or
- actual or perceived responsibility for a serious accident or injury.

Intensifying media coverage, including the considerable expansion in the use of social media over recent years, has increased the volume and speed at which negative publicity arising from these events can be generated and spread, and we may be unable to timely respond to, correct any inaccuracies in, or adequately address negative perceptions arising from such media coverage. If the reputation or perceived quality of our brands decline, our business, financial condition, results of operations, or cash flows could be adversely affected and we could lose the confidence of our customers, which could adversely affect demand for our services.

Our financial results are based upon estimates and assumptions that may differ from actual results.

In preparing our consolidated financial statements in conformity with GAAP, several estimates and assumptions are used by management to report the assets, liabilities, revenues and expenses. These estimates and assumptions are necessary because certain information used in the preparation of our financial statements is dependent on future events, cannot be calculated with a high degree of precision from available data or cannot be readily calculated based on generally accepted methodologies. In some cases, these estimates are particularly difficult to determine, and we must exercise significant judgment. For example, we utilize estimates in our 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, loan receivables, purchase price allocations, acquisition-related contingent consideration liabilities, liabilities for insurance and other claims and guarantees, multiemployer pension plan withdrawal liabilities, revenue recognition for construction contracts inclusive of contractual change orders and claims, share-based compensation, operating results of reportable segments, provision (benefit) for income taxes and the calculation of uncertain tax positions. Actual results for all estimates can differ materially from the estimates and assumptions that we use and have a material adverse effect on our financial condition, results of operations and cash flows.

Additionally, our remaining performance obligations and backlog are difficult to determine with certainty. Customers often have no obligation under our contracts to assign or release work to us, and many contracts may be terminated on short notice. Cancellation or reduction in scope of a contract can significantly reduce the revenues and profit we receive. Consequently, our estimates of remaining performance obligations and backlog may not be accurate, and we may not be able to realize our estimated remaining performance obligations and backlog.

Our results of operations and financial condition may be adversely affected as a result of asset impairments.

Our results of operations and financial condition may be adversely affected by impairments to goodwill, other intangible assets, receivables, long-lived assets or investments. For example, when we acquire a business, we record goodwill in an amount equal to the amount we paid for the business minus the fair value of the net tangible assets and other intangible assets of the acquired business. Goodwill and other intangible assets that have indefinite useful lives cannot be amortized, but instead must be tested at least annually for impairment, as described in Note 2 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*. We have recorded impairments in the past, and any future impairments could have a material adverse effect on our financial condition and results of operations for the period in which the impairment is recognized. For example, during the fourth quarters of 2019 and 2018, we recorded \$13.9 million and \$49.4 million of asset impairment charges primarily related to the winding down and exit of certain oil-influenced operations and assets. Additionally, we have concluded to pursue an orderly exit of our Latin American operations, which could result in asset impairments related to those operations during 2020 or in subsequent years.

In addition, we enter into various types of investment arrangements in the normal course of business, each having unique terms and conditions. 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 whether that decline is considered to be other than temporary as described in Note 2 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*.

Our inability to successfully execute our acquisition strategy may have an adverse impact on our growth strategy.

Our business strategy includes expanding our presence in the industries we serve through strategic acquisitions of companies that complement or enhance our business. The number of acquisition targets that meet our criteria may be limited. We may also face competition for acquisition opportunities, and other potential acquirers may offer more favorable terms or have greater financial resources available for potential acquisitions. This competition may further limit our acquisition opportunities or raise the prices of acquisitions and make them less accretive, or possibly not accretive, to us. Failure to consummate future acquisitions could negatively affect our growth strategies. Additionally, our past acquisitions have involved, and our future acquisitions may involve, significant cash expenditures, the incurrence or assumption of debt and the assumption of burdensome regulatory requirements and liabilities. For example, in the Hallen acquisition, we assumed certain contingent liabilities associated with Hallen's pre-acquisition operations, which are described further in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*. As a result, past or future acquisitions may ultimately have a negative impact on our business, financial condition, results of operations and cash flows.

The success of our acquisition strategy also depends on our ability to successfully integrate the operations of the acquired businesses with our existing operations and realize the anticipated benefits from the acquired businesses, such as the expansion of our existing operations, elimination of redundant costs and capitalizing on cross-selling opportunities. Our ability to integrate and realize benefits can be negatively impacted by, among other things:

- failure of an acquired business to achieve the results we expect;
- diversion of our management's attention from operational and other matters or other potential disruptions to our existing business;
- difficulties incorporating the operations and personnel, or inability to retain key personnel, of an acquired business;
- additional financial reporting and accounting challenges associated with an acquired business;
- unanticipated events or liabilities associated with the operations of an acquired business;
- loss of business due to customer overlap or other factors;
- and
- risks and liabilities arising from the prior operations of an acquired business, such as performance, operational, safety, workforce or other compliance or tax issues, some of which we may not have discovered or accurately estimated during our due diligence and may not be covered by indemnification obligations or available insurance.

We cannot be sure that we will be able to successfully complete the integration process without substantial costs, delays, disruptions or other operational or financial problems. Failure to successfully integrate acquired businesses could adversely impact our business, financial condition, results of operations and cash flows.

Our business growth could outpace the capability of our decentralized management structure.

We cannot be certain that our management structure will be adequate to support our operations as they expand. For example, the ability to internally communicate, coordinate and execute business strategies, plans and tactics may be negatively impacted by our increasing size and complexity. A decentralized structure places significant control and decision-making powers in the hands of our operating unit management. This contributes to the risk that we may be slower or less able to identify or react to problems affecting key business matters than we would in a more centralized environment. The lack of timely access to information may also impact the quality of decision making by management. Our decentralized organization can also result in our operating subsidiaries assuming excessive risk without appropriate guidance from our centralized legal, accounting, safety, tax, treasury and insurance functions. Future growth could also impose significant additional responsibilities on members of our senior management, and we cannot be certain that we will be able to recruit, integrate and retain new senior level managers and executives. To the extent that we are unable to manage our growth effectively or are unable to attract and retain additional qualified management, we may not be able to expand our operations or execute our business plan.

The loss of key personnel could disrupt our business.

We depend on the continued efforts of our executive officers and senior management, including the management at each of our operating units. Although we typically enter into employment agreements with our executive officers and other key employees for initial terms of one to three years and subsequent renewal options, we cannot be certain that any individual will continue in such capacity for any particular period of time. The loss of key management personnel, as well as our inability to attract, develop and retain qualified employees that can succeed key personnel, could negatively impact our ability to manage our business.

Our investments expose us to risks and may result in conflicts of interest that could adversely impact our business or result in reputational harm.

We have entered into strategic relationships and investment arrangements with various partners, including customers and infrastructure investors, through which we have invested and intend to invest in infrastructure assets. We expect this activity to continue in the future and for additional information on our recent investment activity, see Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations - Recent Acquisitions, Investments and Divestitures*

These types of investments expose us to increased risks, including poor performance by the infrastructure projects in which we have invested due to, among other things, difficult market or economic conditions or slowdowns (which may occur across one or more industries, sectors or geographies) or changes to the supply or demand and fluctuations in the price of commodities. That negative performance could result in lower investment returns, a decline in value or total loss of our investments or the possible sale of our investments at values below our initial projections, including at a loss, all of which could adversely affect our business, financial condition, results of operations and cash flows. Additionally, poor performance of our investments or poor or incomplete performance by our capital partnership structure formed with select infrastructure investors could result in reputational harm to Quanta that impairs our ability to participate in future investment opportunities, which in turn could adversely affect our ability to secure certain future projects. For example, in October 2019, due to certain management changes, our capital partnership investment structure with select investors entered into a 180-day period during which the investors and Quanta will evaluate the partnership, at the end of which the investors or Quanta may elect to end the investment period for any future investments or dissolve the partnership. Further, our relationship with a customer or investor that partners with us in a poorly performing investment could become impaired, which may negatively impact our ability to continue providing services to that customer.

Conflicts of interest may also exist or arise for us in relation to our investment partners as a result of the structure of our investment arrangements. For example, in these structures, Quanta can be the contractor for a project as well as an equity investor and possibly the manager of investments in that project. In those instances, conflicts of interest can exist for such things as contractor pricing and the handling of contractor change orders and other claims. While we have taken certain actions that we believe minimize or address these and other anticipated conflicts of interest, including through internal management practices and the terms of our agreements with investment partners, our failure to properly manage such conflicts of interest can expose us to liability or harm our relationships with investment partners, which could impact our business, financial condition, results of operations and cash flows or cause reputational harm to Quanta.

Our participation in joint ventures exposes us to liability and/or harm to our reputation for failures of our partners.

We have entered into joint venture arrangements and likely will continue to do so. The purpose of these joint ventures is typically to combine skills and resources to allow for the bidding and performance of particular projects. Success on these projects can be adversely affected by the performance of our joint venture partners, over whom we may have little or no control. Differences in opinions or views between us and our joint venture partners may result in delayed decision-making or failure to agree on material issues that may adversely affect the business and operations of our joint ventures. Additionally, the failure by a joint venture partner to successfully perform or comply with applicable laws, regulations or client requirements could negatively impact our business.

We and our joint venture partners are generally jointly and severally liable for all liabilities and obligations of a joint venture.

If a joint venture partner fails to perform or is unable to satisfy required capital contributions or other obligations, including liabilities stemming from claims or lawsuits, we could be required to make additional investments, provide additional services or pay more than our proportionate share of a liability to make up for their shortfall. Further, if our partners experience cost overruns or project performance issues that we are unable to adequately address, the customer may terminate the project, which could result in legal liability to us, harm our reputation and reduce our profit or increase our loss on a project.

We extend credit to customers for purchases of our services and enter into other arrangements with certain of our customers, which subjects us to potential credit or investment risk.

We grant credit, generally without collateral, to our customers, which include utilities, energy companies, communications providers, governmental entities, general contractors, and builders, owners and managers of renewable energy facilities and commercial and industrial properties located primarily in the United States, Canada, Australia and Latin America. In certain circumstances, we also allow our customers to defer payment until certain project milestones have been met or until a project is substantially completed, and customers typically withhold some portion of amounts due to us as retainage until a project is complete. In addition, we have provided in the past and may provide in the future other forms of financing to our customers or make investments in our customers' projects. These payment arrangements subject us to potential credit risk related to changes in business and economic factors affecting our customers, and certain of our customers have experienced financial difficulties (including bankruptcy) in recent years, which has impacted our ability to collect amounts owed to us. If we are unable to collect such amounts, or retain amounts paid to us, our cash flows would be reduced, and we could experience losses if those amounts exceed current allowances. Business and economic factors resulting in financial difficulties (including bankruptcy) for our customers can also reduce the value of any financing or equity investment arrangements we have with our customers. The risk of loss may increase for projects where we provide services and make a financing or equity investment. Losses experienced as a result of these credit and investment risks could materially and adversely affect our financial condition, results of operations and cash flows.

Risks associated with operating in international markets and U.S. territories could restrict our ability to expand globally and harm our business and prospects.

Our overall business, financial condition, results of operations and cash flows can be negatively impacted by our activities and operations outside the continental United States, including our international operations and operations in U.S. territories. Although these operations are presently conducted primarily in Canada, Australia and Latin America, we also perform work in other foreign countries and U.S. territories and the number of locations we perform work in could increase in the future. Changes in economic conditions, including those resulting from wars and other conflicts, civil unrest, public health crises, such as the recent coronavirus, acts of terrorism, or volatility in global markets, may adversely affect demand for our services and our customers' ability to pay for our services. In addition, at times we are paid for work outside the United States in currencies other than the U.S. dollar. Such payments may exceed our local currency needs, and, in certain instances, those amounts may be subject to temporary blocking, taxes or tariffs, and we may experience difficulties if we attempt to convert such amounts to U.S. dollars.

There are numerous other risks associated with operating in international markets, including, but not limited to, changes in applicable regulatory requirements; foreign currency exchange fluctuations; political, economic and social instability; expropriation or nationalization of our assets and operations; unfamiliar foreign legal systems and business practices; and complex U.S. and foreign tax regulations and other laws and international treaties. For example, as discussed in further detail in *Legal Proceedings* within Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*, the termination of a telecommunications project in Peru resulted in a \$79.2 million charge to earnings in the second quarter of 2019. Furthermore, we may incur significant costs associated with an unsuccessful attempt to enter a new market, or we may enter a new market that ultimately proves to be unprofitable or has an otherwise adverse effect on our business. We may also incur significant costs or liabilities associated with winding down or exiting an existing market. For example, we have determined to pursue an orderly exit of our Latin American operations, which could result in significant costs or asset impairments during 2020 or in subsequent years.

Additionally, uncertain or changing economic and political conditions may make it difficult for our clients, our vendors, and us to accurately forecast and plan future business activities. For example, recent changes in U.S. policies related to global trade and tariffs, as well as retaliatory trade measures implemented by other countries have resulted in uncertainty surrounding the global economy. Increases in the cost of certain materials, including steel and aluminum, resulting from these and other trade policies may also impact customer spending. We cannot predict the outcome of these or other similar events, nor can we predict the timing, strength or duration of any economic recovery or downturn worldwide or within our customers' specific markets. These risks could restrict our ability to provide services to international customers, operate our international business profitably or fund our strategic objectives, which could negatively impact our overall business, financial condition, results of operations and cash flows.

Fluctuating foreign currency exchange rates may negatively impact our financial results.

The volume of services we provide internationally varies from year to year and our reported financial condition, results of operations and cash flows are exposed to the effects of fluctuating exchange rates. For the year ended December 31, 2019, we

derived \$1.92 billion, or 15.9%, of our consolidated revenues from foreign operations, the substantial majority of which was earned in Canada and Australia. The functional currencies for our foreign operations are 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. As the U.S. dollar strengthens against foreign currencies, our translation of foreign currency denominated revenues or expenses will result in lower U.S. dollar denominated revenues and expenses. Conversely, if the U.S. dollar weakens against foreign currencies, the translation of these foreign currency denominated revenues or expenses will result in increased U.S. dollar denominated revenues and expenses. For example, during the year ended December 31, 2019, foreign revenues decreased by approximately \$57 million in comparison with the year ended December 31, 2018 as a result of less favorable foreign currency exchange rates due primarily to the U.S. dollar strengthening against the Canadian and Australian dollars. Furthermore, to the extent the volume of services we provide internationally increases, our financial condition, results of operations and cash flows could be further exposed to the effects of fluctuating exchange rates.

Limitations on the availability of suppliers, subcontractors and equipment manufacturers that we depend on could adversely affect our business.

We rely on suppliers to obtain the necessary materials and subcontractors to perform portions of our services. We also rely on equipment manufacturers to provide us with the equipment required to conduct our operations. Limitations on the availability of suppliers, subcontractors or equipment manufacturers could negatively impact our operations, particularly in the event we rely on a single or small number of providers. The risk of a lack of available suppliers, subcontractors or equipment manufacturers can be heightened as a result of market, regulatory or economic conditions. For example, utilities in certain states, in order to receive certain funding, may expect us to engage a specified percentage of suppliers that meet diversity-ownership requirements, which can further limit our pool of available suppliers in those areas. Additionally, successful completion of our contracts can depend on whether our subcontractors successfully fulfill their contractual obligations. If our subcontractors fail to perform their contractual obligations, fail to meet the expected completion dates or quality standards or fail to comply with applicable laws, we may be required to incur additional costs or provide additional services to mitigate such shortcomings.

An increase in the prices of certain materials used in our business or fuel prices could adversely affect our business.

Under certain contracts, including where we have assumed responsibility for procuring materials for a project, we are exposed to price increases for materials such as copper and steel, which are used as components of supplies or materials utilized in all of our operations. In addition, our customers' capital budgets can be negatively impacted by an increase in prices of certain materials. Prices could be materially impacted by general market conditions and other factors, including global trade relationships. For example, recent changes to U.S. policies related to global trade and tariffs, as well as retaliatory trade measures implemented by other countries, have resulted in uncertainty concerning availability and pricing of certain commodities and goods important to our and our customers' businesses, including steel and aluminum. We are also exposed to increases in energy prices, including as they relate to fuel prices for our large rolling-stock fleet of approximately 49,700 units. Furthermore, some of our fixed price contracts do not allow us to adjust our prices and, as a result, increases in material or fuel costs could reduce our profitability with respect to such projects.

Our intellectual property rights may be unenforceable or become obsolete.

We utilize a variety of intellectual property rights while performing our services. We view our portfolio of proprietary energized services tools and techniques and other process and design technologies as competitive strengths, which we believe differentiate our service offerings. We also license certain technologies from third parties, and there is a risk that our relationships with such licensors may terminate or expire or may be interrupted or harmed. We may not be able to successfully preserve these intellectual property rights in the future, and these rights could be invalidated, circumvented or challenged. In addition, the laws of some foreign countries in which our services may be sold do not protect intellectual property rights to the same extent as the laws of the United States. If we are unable to protect and maintain our intellectual property rights, or if intellectual property challenges or infringement proceedings succeed against us, our ability to differentiate our service offerings could be reduced. Further, if our intellectual property rights or work processes become obsolete, we may not be able to differentiate our service offerings and some of our competitors may be able to offer more attractive services to our customers, which could materially and adversely affect our business, financial condition, results of operations and cash flows.

Increasing scrutiny and changing expectations from investors and our customers with respect to our environmental, social and governance practices may impose additional costs on us or expose us to new or additional risks.

Investors and other interested constituencies have focused increasingly on the environmental, social and governance (ESG) practices of companies. While we have programs and initiatives in place related to our ESG practices, investors may decide to reallocate capital or to not commit capital as a result of their assessment of our practices. In addition, our customers may require that we implement certain additional ESG procedures or standards before they will continue to do business with us. A failure to comply with investor or customer expectations and standards, which are evolving, or if we are perceived to not have responded appropriately to the growing concern for ESG issues, regardless of whether there is a legal requirement to do so, could also cause

reputational harm to our business and could have a material adverse effect on us. In addition, organizations that provide information to investors on corporate governance and related matters have developed ratings processes for evaluating companies on their approach to ESG matters, and unfavorable ratings of Quanta or our industries may lead to negative investor sentiment and the diversion of investment to other companies or industries, which could have a negative impact on our stock price and our costs of capital.

Risks Related to Regulation and Compliance

Regulatory requirements applicable to our industries and changes in current and potential legislative and regulatory initiatives may adversely affect demand for our services.

Because the vast majority of our revenue is derived from a few industries, the federal, state, provincial and local regulations affecting those industries, including, among other things, environmental, safety, and permitting requirements, have a material effect on our business. In recent years, our customers have faced heightened regulatory requirements and increased regulatory enforcement, which have resulted in delays, reductions in scope and cancellations of projects. Furthermore, certain regulatory requirements applicable to our customers are also required of us when we contract with such customers, and our inability to meet those requirements could also result in decreased demand for our services. Increased regulatory requirements have negatively impacted us and our customers and decreased demand for our services in the past, and may do so in the future, which can adversely affect our business, financial condition, results of operations and cash flows.

Concerns about climate-related issues could potentially result in new legislation, regulation, regulatory actions or other requirements at the local, state or federal level, any of which could negatively affect our customers and decrease demand for their services, result in increased costs associated with our operations, or impact the prices we charge our customers. For example, requirements to reduce, or taxes on the production and/or consumption of, fossil fuels could negatively impact the hydrocarbon production volumes of our customers, which could in turn negatively impact demand for our services. New regulations addressing greenhouse gas emissions from mobile sources could also significantly increase our costs in light of our large rolling-stock fleet. In addition, if our operations are perceived to result in high greenhouse gas emissions, our reputation could suffer.

Additionally, current and potential legislative or regulatory initiatives may not result in incremental increased demand for our services, including legislation and regulation that mandate percentages of power to be generated from renewable sources, require utilities to meet reliability standards, and encourage installation of new electric power transmission and renewable energy generation facilities. While these actions and initiatives have positively impacted demand for our services in the past, it is not certain whether they will continue to do so in the future. It is also uncertain as to whether proposed legislative initiatives that could be beneficial for our industries, including those designed to ease regulatory and permitting requirements, will be enacted.

Our unionized workforce and related obligations may adversely affect our operations.

As of December 31, 2019, approximately 35% of our employees were covered by collective bargaining agreements. For a variety of reasons, our unionized workforce could adversely impact relationships with our customers and adversely affect our business, financial condition, results of operations and cash flows. For instance, although the majority of the collective bargaining agreements prohibit strikes and work stoppages, certain of our unionized employees have participated in strikes and work stoppages in the past, and we cannot be certain that strikes or work stoppages will not occur in the future. Our ability to complete future acquisitions also could be adversely affected because of our union status, including because our union agreements may be incompatible with the union agreements of a business we want to acquire or because a business we want to acquire may not want to become affiliated with a union-based company. Additionally, certain of our customers require or prefer a non-union workforce, and they may reduce the amount of work assigned to us if our non-union labor crews become unionized.

Our collective bargaining agreements generally require us to participate with other companies in multiemployer pension plans. To the extent a plan is underfunded, we may be subject to substantial liabilities if we withdraw or are deemed to withdraw from the plan or the plan is terminated or experiences a mass withdrawal. For example, we have been involved in several litigation matters associated with our withdrawal from the Central States, Southeast and Southwest Areas Pension Plan, certain of which were settled in 2017. Further, special funding and operational rules are generally applicable to multiemployer plans that are classified as “endangered,” “seriously endangered” or “critical” status based on multiple factors (including, for example, the plan’s funded percentage, cash flow position and whether it is projected to experience a minimum funding deficiency). Plans in these classifications must adopt measures to improve their funded status, which may require additional contributions from employers (e.g., a surcharge on benefit contributions) and/or modifications to retiree benefits. Certain plans to which we contribute or may contribute in the future are in “endangered,” “seriously endangered” or “critical” status, and we may be obligated to contribute material amounts to these plans in the future, which could negatively impact our business, financial condition, results of operations and cash flows.

We could be adversely affected by our failure to comply with the laws applicable to our foreign activities.

Applicable U.S. and non-U.S. anti-corruption laws, including but not limited to the U.S. Foreign Corrupt Practices Act (FCPA), prohibit us from, among other things, corruptly making payments to non-U.S. officials for the purpose of obtaining or retaining business. We pursue opportunities in certain parts of the world that experience government corruption, and in certain circumstances, compliance with these laws may conflict with local customs and practices. Our policies mandate compliance with all applicable anti-corruption laws and our procedures and practices are designed to ensure that our employees and intermediaries comply with these laws. However, there can be no assurance that such policies, procedures and practices will protect us from liability under the FCPA or other similar laws for actions or inadvertences by our employees or intermediaries. Liability for such actions or inadvertences could result in severe criminal or civil fines, penalties, forfeitures, disgorgements or other sanctions. This in turn could have a material adverse effect on our reputation, business, financial condition, results of operations, and cash flows. In addition, detecting, investigating and resolving actual or alleged violations of such laws can be expensive and can consume significant time and attention of our senior management, in-country management, and other personnel.

Compliance with and changes in tax laws could adversely affect our performance.

We are subject to extensive tax liabilities imposed by multiple jurisdictions, including income taxes, indirect taxes (excise/duty, sales/use, gross receipts, and value-added taxes), payroll taxes, franchise taxes, withholding taxes, and ad valorem taxes. New tax laws, treaties and regulations and changes in existing tax laws, treaties and regulations are continuously being enacted or proposed, which can result in significant changes to the tax rate on our earnings and have a material impact on our earnings and cash flows from operations. In addition, significant judgment is required in determining our worldwide provision for income taxes. In the ordinary course of our business, there are many transactions and calculations where the ultimate tax determination is uncertain. We are regularly under audit by tax authorities, and our tax estimates and tax positions could be materially affected by many factors, including the final outcome of tax audits and related litigation, the introduction of new tax accounting standards, legislation, regulations and related interpretations, our global mix of earnings, our ability to realize deferred tax assets and changes in uncertain tax positions. A significant increase in our tax rate can have a material adverse effect on our profitability and liquidity.

Our failure to comply with environmental laws and regulations could result in significant liabilities and increased costs.

Our operations are subject to various environmental laws and regulations, including those dealing with the handling and disposal of waste products, PCBs, fuel storage, water quality and air quality. We perform work in many different types of underground environments. If the field location maps supplied to us are not accurate, or if objects are present in the soil that are not indicated on the field location maps, our underground work could strike objects in the soil, some of which may contain pollutants. These objects may also rupture, resulting in the discharge of pollutants. In such circumstances, we may be liable for fines and damages, and we may be unable to obtain reimbursement from the parties providing the incorrect information. We perform work, including directional drilling, in and around environmentally sensitive areas such as rivers, lakes and wetlands. Due to the inconsistent nature of the terrain and water bodies, it is possible that such work may cause the release of subsurface materials that contain contaminants in excess of amounts permitted by law, potentially exposing us to remediation costs and fines. We also own and lease facilities that contain above- and below-ground fuel storage tanks. If these tanks were to leak, we could be responsible for remediation costs and fines. The obligations, liabilities, fines and costs associated with these and other events can be material and could have a material adverse impact on our business, financial condition, results of operations and cash flows. Moreover, new laws and regulations, stricter enforcement of existing laws and regulations, the discovery of previously unknown contamination or leaks, or the imposition of new clean-up requirements could require us to incur significant costs or become the basis for new or increased liabilities.

In certain instances, we have obtained indemnification and other rights from third parties (including predecessors or lessors) for such obligations and liabilities; however, these indemnities may not cover all of our costs and indemnitors may not pay amounts owed to us. Further, in connection with an acquisition, we cannot be certain that we identify all potential environmental liabilities relating to any acquired business when we are negotiating an indemnification right.

Certain regulatory requirements applicable to us and certain of our subsidiaries could materially impact our business.

We are subject to various specific regulatory regimes and requirements that could result in significant compliance costs and liabilities. As a public company, we are subject to the corporate governance and financial reporting requirements of The Sarbanes-Oxley Act of 2002, including requirements for management to report on our internal controls over financial reporting and for our independent registered public accounting firm to express an opinion on the operating effectiveness of our internal control over financial reporting. Our internal controls over financial reporting was effective as of December 31, 2019; however, there can be no assurance that our internal controls over financial reporting will be determined to be effective in future years. Failure to maintain effective internal controls or to identify significant internal control deficiencies in acquired businesses (both prior acquisitions and future acquisitions) could result in a decrease in the market value of our publicly traded securities, a reduced ability to obtain debt and equity financing, a loss of customers, fines or penalties, and/or additional expenditures to meet the requirements or remedy any deficiencies.

One of our subsidiaries has registered as an investment adviser with the SEC under the U.S. Investment Advisers Act of 1940, as amended (the Advisers Act). The Advisers Act and the rules promulgated thereunder impose substantive and material restrictions and requirements on the operations of this subsidiary, including certain fiduciary duties that apply to its relationships with its advisory clients. The SEC has broad administrative powers to institute proceedings and impose sanctions for violations of the Advisers Act, ranging from fines and censures to termination of an adviser's registration. This subsidiary is also subject to periodic SEC examinations and other requirements, including, among other things, maintaining an effective compliance program, recordkeeping and reporting requirements, disclosure requirements and complying with anti-fraud prohibitions. The failure of our subsidiary to comply with the requirements of the Advisers Act could result in fines, suspensions of individual employees or other sanctions against our subsidiary that could have a material adverse effect on us. Even if an investigation or proceeding does not result in a fine or sanction or if a fine or sanction imposed against our subsidiary or its employees were small in monetary amount, the adverse publicity relating to an investigation, proceeding or imposition of these fines or sanctions could harm our reputation and have a material adverse effect on us.

Our wholly-owned captive insurance company is a registered insurance broker with the Texas Department of Insurance, and therefore is subject to various rules and regulations and required to meet certain capital requirements, which can result in additional use of our resources.

We own and operate a postsecondary educational institution that specializes in pre-apprenticeship training, apprenticeship training and specialized utility task training for electric workers, as well as training for the pipeline and industrial and communications industries. In order to operate, each of the institution's campuses must be authorized by the state education agency where the campus is located, and the level of regulatory oversight varies substantially by state and can be extensive. If any of our campuses fail to comply with state licensing requirements, they may be unable to offer their programs and forced to close, which could result in harm to our reputation or negatively impact our ability to train skilled personnel that can be utilized to support our industry. Additionally, because our institution operates in a highly regulated industry, it is subject to compliance reviews and lawsuits or claims by government agencies and third parties. If the results of these reviews or proceedings are unfavorable to us, we may be required to pay significant monetary damages or be subject to fines, limitations on the operations of the institution, injunctions or other penalties. The postsecondary educational institution is also accredited by the Accrediting Commission of Career Schools and Colleges. Loss of accreditation could result in reputational harm or student-initiated litigation or negatively impact our ability to train skilled personnel that can be utilized to support our business.

We collect and retain information about our customers, stockholders, vendors and employees. New legislation and regulatory requirements, as well as contractual commitments, affect how we must store, use, transfer and process the confidential information of our employees, customers, vendors and stockholders. For example, the California Consumer Privacy Act (the CCPA) was signed into law in 2018 and largely took effect in January 2020. The CCPA, among other things, contains new disclosure obligations for businesses that collect personal information about California residents and enhanced consumer protections for those individuals, and provides for statutory fines for data security breaches or other CCPA violations. Meanwhile, over fifteen other states have considered privacy laws like the CCPA. These laws, as well as other new or changing legislative, regulatory or contractual requirements concerning data privacy and protection, could require us to expend significant additional compliance costs, and any failure to comply with such requirements can result in significant liability or harm to our reputation.

Opportunities within the government arena could subject us to increased regulation and costs and may pose additional risks relating to future funding and compliance.

Most government contracts are awarded through a regulated competitive bidding process, which can often be more time consuming than the bidding process for non-governmental projects. Additionally, involvement with government contracts could require a significant amount of costs to be incurred before any revenues are realized. We are also subject to numerous procurement rules and other public sector regulations when we contract with certain governmental agencies, any deemed violation of which could lead to fines or penalties or a loss of business. Government agencies routinely audit and investigate government contractors. Government agencies may review a contractor's performance under its contracts, cost structure and compliance with applicable laws, regulations and standards. If a government agency determines that costs were improperly allocated to specific contracts, such costs will not be reimbursed or a refund of previously reimbursed costs may be required. If a government agency alleges or proves improper activity, civil and criminal penalties could be imposed and serious reputational harm could result. Many government contracts must be appropriated each year, and without re-appropriation we would not realize all of the potential revenues from any awarded contracts.

Additionally, U.S. government shutdowns or any related under-staffing of the government departments or agencies that interact with our business could result in program cancellations, disruptions and/or stop work orders, could limit the government's ability to effectively progress programs and make timely payments, and could limit our ability to perform on our existing U.S. government contracts and successfully compete for new work.

Immigration laws, including our inability to verify employment eligibility and restrictions on movement of our foreign employees, could adversely affect our business or reputation.

We employ a significant number of employees, and while we utilize processes to assist in verifying the employment eligibility of potential new employees so that we maintain compliance with applicable laws, it is possible some of our employees may be unauthorized workers. In addition, we utilize certain non-immigrant visas to allow us to temporarily transfer certain of our foreign employees to the United States. The employment of unauthorized workers or failure to comply with the requirements of these non-immigrant visas could subject us to fines, penalties and other costs, as well as result in adverse publicity that negatively impacts our reputation and brand and may make it more difficult to hire and retain qualified employees. Furthermore, to the extent we are subject to penalties that prevent the future transfer of our foreign employees to the United States, we may incur additional costs to hire and train new employees. Immigration laws have also been an area of considerable political focus in recent years, and, from time-to-time, the U.S. government considers or implements changes to federal immigration laws, regulations or enforcement programs. Changes in immigration or work authorization laws may increase our obligations for compliance and oversight, which could subject us to additional costs and potential liability and make our hiring and employee transfer processes more cumbersome, or reduce the availability of potential employees.

We may incur additional healthcare costs

The costs of employee health care insurance in the U.S. has increased in recent years due to rising health care costs, legislative changes, and general economic conditions. We cannot predict what other health care legislation or regulations will be implemented at the federal or state level, including whether the Patient Protection and Affordable Care Act and the Health Care and Education Reconciliation Act of 2010 will be repealed and/or replaced, or the impact of any such future legislation or regulations. A continued increase in health care costs or related costs could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Risks Related to Financing Our Business

We may not have access in the future to sufficient funding to finance desired growth and operations.

If we cannot secure future funds or financing on acceptable terms or generate sufficient cash flow, we may be unable to support our future operations or growth strategy. The timing of our funding needs and the size of our operations and strategic initiatives that require capital cannot be readily predicted and may be substantial. The use of cash on hand, cash from operations and cash from our senior secured credit facility to fund these initiatives can limit our financial flexibility and increase our need to seek capital through additional debt or equity financings. We also rely on financing companies to fund the leasing of certain of our equipment, and credit market conditions may restrict access to capital for the leasing of additional equipment. A lack of available capital to fund the leasing of equipment could negatively impact our future operations.

The credit agreement for our senior secured credit facility contains certain restrictions, including financial covenants and other restrictions on our ability to borrow amounts under the agreement and limitations on our ability to incur additional debt or conduct certain types of preferred equity financings. Our ability to increase the current commitments under our senior secured credit facility is also dependent upon additional commitments from our lenders. Furthermore, if we are permitted to seek additional debt or equity financings, we cannot be certain they will be available to us on acceptable terms or at all, as banks are often restrictive in their lending practices, and additional debt financing may include covenants that further limit our operational and financial flexibility. If we are unable to borrow under our senior secured credit facility or secure other financing or if our lenders become unable or unwilling to fund their commitments to us, we may not be able to access the capital needed to fund our growth and operations. For additional information on the terms of our senior secured credit facility, please read Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations - Debt Instruments - Credit Facility*.

Additionally, the market price of our common stock has fluctuated significantly in the past, and may fluctuate significantly in the future, in response to various factors, including events beyond our control, which could impact our ability to utilize capital markets to obtain funds. A variety of events may cause the market price of our common stock to fluctuate significantly, including overall market conditions or volatility, actual or perceived negative financial results or other unfavorable information relating to us or our market peers, and the other risks described in this Annual Report.

Our variable rate indebtedness subjects us to interest rate risk.

Borrowings under our credit facility are at variable rates of interest and expose us to interest rate risk. If interest rates increase, our debt service obligations on the variable rate indebtedness will increase even if the amount borrowed remains the same, and our net income and cash flows, including cash available for servicing our indebtedness, will correspondingly decrease. Our weighted average interest rate on our variable rate debt for the year ended December 31, 2019 was 3.8%. The annual effect on our pretax earnings of a hypothetical 50 basis point increase or decrease in variable interest rates would be approximately \$6.7 million based on our December 31, 2019 balance of variable rate debt.

Additionally, to address the transition in financial markets away from the London Interest Bank Offered Rate (LIBOR) by the end of 2021, our senior secured credit facility agreement includes provisions related to the replacement of LIBOR with a LIBOR Successor Rate (as defined in the credit agreement for such facility). Changing to an alternative interest rate may lead to additional volatility in interest rates and could cause our debt service obligations to increase significantly. If no LIBOR Successor Rate has been determined at the time certain circumstances are present, the lenders' obligation to make or maintain loans based on a Eurocurrency rate could be suspended, and loans in U.S. dollars would default to the Base Rate (as described in *Senior Secured Credit Facility* within Note 8 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*) rather than a rate using the Eurocurrency Rate. If this were to occur, our available liquidity and cash flows could be negatively impacted.

We may be unable to compete for certain projects if we are not able to obtain surety bonds, letters of credit or bank guarantees.

A portion of our business depends on our ability to provide surety bonds, letters of credit, bank guarantees or other financial assurances. Current or future market conditions, including losses incurred in the construction industry or as a result of large corporate bankruptcies, as well as changes in our sureties' assessment of our operating and financial risk, could cause our surety providers and lenders to decline to issue or renew, or substantially reduce the amount of, bid or performance bonds for our work and could increase our costs associated with collateral. These actions could be taken on short notice. If our surety providers or lenders were to limit or eliminate our access to bonding, letters of credit or guarantees, our alternatives would include seeking capacity from other sureties and lenders or finding more business that does not require bonds or that allows for other forms of collateral for project performance, such as cash. We may be unable to secure these alternatives in a timely manner, on acceptable terms, or at all, which could affect our ability to bid for or work on future projects requiring financial assurances.

We have also granted security interests in certain assets to collateralize our obligations to our sureties and lenders. Furthermore, under standard terms in the surety market, sureties issue or continue bonds on a project-by-project basis and can decline to issue bonds at any time or require the posting of additional collateral as a condition to issuing or renewing bonds. If we were to experience an interruption or reduction in the availability of bonding capacity as a result of these or other reasons, we may be unable to compete for or work on certain projects that require bonding.

Our ability to access capital markets could be limited.

From time to time, we may need to access capital markets to obtain financing. Our ability to access capital markets for financing could be limited by, among other things, our existing capital structure, our credit ratings, the state of the economy, the health of our industries, and the liquidity of the capital markets. Many of the factors that affect our ability to access capital markets are outside of our control. No assurance can be given that we will be able to access capital markets on terms acceptable to us when required to do so, which could have a material adverse impact on our business, financial condition and results of operations.

Risks Related to Our Common Stock

Our sale or issuance of additional common stock or other equity-related securities could dilute each stockholder's ownership interest or adversely affect the market price of our common stock.

We often fund a significant portion of the consideration paid in connection with our acquisitions with the issuance of additional equity securities, including contingent consideration amounts payable if acquired businesses achieve certain performance objectives during specified post-acquisition periods. We also utilize stock-based compensation as a key component of our compensation program. We expect to issue additional equity securities in the future in connection with these and other practices. Our Restated Certificate of Incorporation provides that we may issue up to 600,000,000 shares of common stock, of which 142,324,318 shares were outstanding as of December 31, 2019. Any additional issuances of common stock would have the effect of diluting our earnings per share and our existing stockholders' individual ownership percentages and lead to volatility in the market price of our common stock. We cannot predict the effect that future issuances of our common stock or other equity-related securities would have on the market price of our common stock.

There can be no assurance that we will declare or pay future dividends on our common stock.

The declaration, amount and timing of future dividends are subject to capital availability and determinations by our Board of Directors that cash dividends are in the best interest of our stockholders and are in compliance with all respective laws and applicable agreements. Our ability to declare and pay dividends will depend upon, among other factors, our financial condition, results of operations, cash flows, current and anticipated expansion plans, requirements under Delaware law and other factors that our Board of Directors may deem relevant. A reduction in or elimination of our dividend payments could have a material negative effect on our stock price.

Certain provisions of our corporate governing documents could make an acquisition of our company more difficult.

The following provisions of our charter documents, as currently in effect, and Delaware law could discourage potential proposals to acquire us, delay or prevent a change in control of us or limit the price that investors may be willing to pay in the future for shares of our common stock:

- our certificate of incorporation permits our Board of Directors to issue “blank check” preferred stock and to adopt amendments to our bylaws;
- our bylaws contain restrictions regarding the right of stockholders to nominate directors and to submit proposals to be considered at stockholder meetings;
- our certificate of incorporation and bylaws restrict the right of stockholders to call a special meeting of stockholders and to act by written consent; and
- we are subject to provisions of Delaware law which restrict us from engaging in any of a broad range of business transactions with an “interested stockholder” for a period of three years following the date such stockholder became classified as an interested stockholder.

ITEM 1B. *Unresolved Staff Comments*

None.

ITEM 2. *Properties*

Facilities

We lease our corporate headquarters in Houston, Texas and own and lease other facilities throughout the United States, Canada and other foreign locations where we conduct business. Our facilities are utilized for operations in both of our reportable segments and include offices, equipment yards, warehouses, storage, maintenance shops and training and educational facilities. As of December 31, 2019, we owned 62 of our facilities and leased the remainder. We believe that our existing facilities are sufficient for our current needs.

Equipment

We operate a fleet of owned and leased trucks and trailers, support vehicles and specialty construction equipment, such as backhoes, excavators, trenchers, generators, boring machines, cranes, robotic arms, wire pullers, tensioners and helicopters. Our owned equipment and the leasehold interests in our leased equipment are encumbered by a security interest granted under our credit agreement. As of December 31, 2019, the total size of the rolling-stock fleet was approximately 49,700 units. Most of our fleet is serviced by our own mechanics who work at various maintenance sites and facilities. We believe that our equipment is generally well maintained and adequate for our present operations.

ITEM 3. *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, negligence or gross negligence and/or property damages, wage and hour claims and other 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 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*, which are incorporated by reference in this Item 3, for additional information regarding litigation, claims and other legal proceedings.

ITEM 4. *Mine Safety Disclosures*

Not applicable.

PART II

ITEM 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Our common stock is listed on the New York Stock Exchange (NYSE) under the symbol “PWR.”

On February 25, 2020, there were approximately 590 holders of record of our common stock. See Note 11 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for additional discussion of our equity securities.

Unregistered Sales of Securities During the Fourth Quarter of 2019

None.

Subsequent to December 31, 2019, we issued 36,183 shares of our common stock to the former owners of an acquired business in exchange, on a one-for-one basis, for exchangeable shares in a Canadian subsidiary of Quanta that were held by the former owners. The former owners originally received the exchangeable shares as partial consideration for the sale of the acquired business. The shares of common stock issued in these transactions were issued in reliance upon the exemption from registration provided by Section 4(a)(2) of the Securities Act of 1933, as amended, as the shares were issued to the owners of the business acquired in a privately negotiated transaction not involving any public offering or solicitation.

Issuer Purchases of Equity Securities During the Fourth Quarter of 2019

The following table contains information about our purchases of equity securities during the three months ended December 31, 2019.

Period	Total Number of Shares Purchased	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⁾
October 1 - 31, 2019				
Open Market Stock Repurchases ⁽¹⁾	—	\$ —	—	\$ 286,756,122
Tax Withholdings ⁽²⁾	5,185	\$ 36.50	—	
November 1 - 30, 2019				
Open Market Stock Repurchases ⁽¹⁾	—	\$ —	—	\$ 286,756,122
Tax Withholdings ⁽²⁾	12,905	\$ 42.25	—	
December 1 - 31, 2019				
Open Market Stock Repurchases ⁽¹⁾	—	\$ —	—	\$ 286,756,122
Tax Withholdings ⁽²⁾	5	\$ 37.07	—	
Total	18,095		—	\$ 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. 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 stock units or the settlement of previously vested but deferred restricted stock unit awards.

Dividends

We have declared a quarterly dividend during each quarter beginning in the fourth quarter of 2018. The declaration, payment and amount of future cash dividends 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, income tax laws then in effect and the requirements of Delaware law. In addition, as discussed in *Liquidity and Capital Resources — Debt Instruments — Senior Secured Credit Facility* in Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*, the credit agreement restricts the payment of cash dividends unless certain conditions are met.

Performance Graph

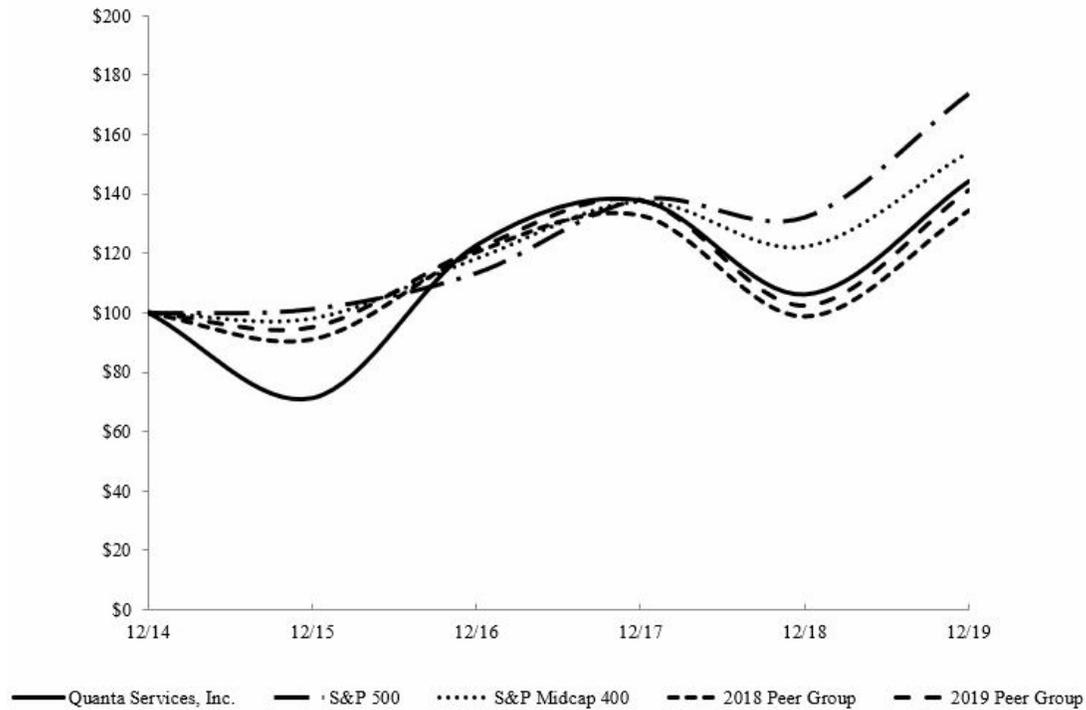
The following Performance Graph and related information shall not be deemed "soliciting material" or to be "filed" with the Securities and Exchange Commission, nor shall such information be incorporated by reference into any future filing under the Securities Act of 1933 or Securities Exchange Act of 1934, each as amended, except to the extent that we specifically incorporate it by reference into such filing.

The following graph compares, for the period from December 31, 2014 to December 31, 2019, the cumulative stockholder return on our common stock with the cumulative total return of the S&P 500 Index (the S&P 500), the S&P MidCap 400 Index (the S&P 400) and two peer groups selected by our management that include public companies within our industries. The companies in the peer groups were selected to represent a broad group of publicly held corporations with operations similar to ours. The current peer group (the 2019 Peer Group) includes AECOM, Dycom Industries, Inc., EMCOR Group Inc., Fluor Corporation, Jacobs Engineering Group Inc., KBR, Inc., MasTec, Inc., MYR Group Inc. and Primoris Services Corporation. The peer group used in the previous year (the 2018 Peer Group) included each of the foregoing companies, as well as McDermott International, Inc., but did not include Dycom Industries, Inc. We determined that McDermott International, Inc. should be excluded due to dissimilarities with respect to its financial condition and end markets and that Dycom Industries, Inc. should be added due to its similarities with respect to market capitalization, lines of business and end markets.

The graph below assumes an investment of \$100 (with reinvestment of all dividends) in our common stock, the S&P 500, the S&P MidCap 400, the 2018 Peer Group and the 2019 Peer Group on December 31, 2014 and tracks their relative performance through December 31, 2019. The returns of each company in the Peer Group are weighted based on the market capitalization of that company at the beginning of the measurement period. The stock price performance reflected in the following graph is not necessarily indicative of future stock price performance.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN

Among Quanta Services, Inc., the S&P 500, the S&P MidCap 400, the 2018 Peer Group and the 2019 Peer Group



	December 31,					
	2014	2015	2016	2017	2018	2019
Quanta Services, Inc.	\$ 100.00	\$ 71.33	\$ 122.75	\$ 137.76	\$ 106.16	\$ 144.21
S&P 500	\$ 100.00	\$ 101.38	\$ 113.51	\$ 138.29	\$ 132.23	\$ 173.86
S&P MidCap 400	\$ 100.00	\$ 97.82	\$ 118.11	\$ 137.30	\$ 122.08	\$ 154.07
2018 Peer Group	\$ 100.00	\$ 91.21	\$ 120.39	\$ 132.69	\$ 98.83	\$ 134.34
2019 Peer Group	\$ 100.00	\$ 94.95	\$ 121.47	\$ 137.81	\$ 102.22	\$ 141.28

ITEM 6. Selected Financial Data

The following historical selected financial data has been derived from our consolidated financial statements. See Note 4 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for information regarding certain acquisitions and the related impact on our results of operations as these acquisitions may affect the comparability of such results. Additionally, on August 4, 2015, we sold our fiber optic licensing operations. We have presented the results of operations, financial position and cash flows of such fiber optic licensing subsidiaries as discontinued operations for all applicable periods presented in this Annual Report. The historical selected financial data should be read in conjunction with our consolidated financial statements and related notes thereto included in Item 8. *Financial Statements and Supplementary Data* and Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations* (in thousands, except share information).

	Year Ended December 31,				
	2019	2018	2017	2016	2015
Consolidated Statements of Operations Data:					
Revenues	\$ 12,112,153	\$ 11,171,423	\$ 9,466,478	\$ 7,651,319	\$ 7,572,436
Cost of services (including depreciation)	10,511,901	9,691,459	8,224,618	6,637,519	6,648,771
Gross profit	1,600,252	1,479,964	1,241,860	1,013,800	923,665
Selling, general and administrative expenses	955,991	857,574	777,920	653,338	592,863
Amortization of intangible assets	62,091	43,994	32,205	31,685	34,848
Asset impairment charges (a)	13,892	49,375	58,057	7,964	58,451
Change in fair value of contingent consideration liabilities	13,404	(11,248)	(5,171)	—	—
Operating income	554,874	540,269	378,849	320,813	237,503
Interest expense	(66,890)	(36,945)	(20,946)	(14,887)	(8,024)
Interest income	927	1,555	832	2,423	1,493
Other income (expense), net (b)	83,376	(47,213)	(4,978)	(663)	(2,297)
Income from continuing operations before income taxes	572,287	457,666	353,757	307,686	228,675
Provision for income taxes (c)	165,472	161,659	35,532	107,246	97,472
Net income from continuing operations	406,815	296,007	318,225	200,440	131,203
Net income (loss) from discontinued operations	—	—	—	(342)	190,621
Net income	406,815	296,007	318,225	200,098	321,824
Less: Net income attributable to non-controlling interests	4,771	2,661	3,247	1,715	10,917
Net income attributable to common stock	\$ 402,044	\$ 293,346	\$ 314,978	\$ 198,383	\$ 310,907
Amounts attributable to common stock:					
Net income from continuing operations	\$ 402,044	\$ 293,346	\$ 314,978	\$ 198,725	\$ 120,286
Net income (loss) from discontinued operations	—	—	—	(342)	190,621
Net income attributable to common stock	\$ 402,044	\$ 293,346	\$ 314,978	\$ 198,383	\$ 310,907
Basic earnings per share attributable to common stock from continuing operations	\$ 2.76	\$ 1.92	\$ 2.02	\$ 1.26	\$ 0.62
Diluted earnings per share attributable to common stock from continuing operations	\$ 2.73	\$ 1.90	\$ 2.00	\$ 1.26	\$ 0.62
Cash dividends declared per share	\$ 0.17	\$ 0.04	\$ —	\$ —	\$ —

- (a) In 2019, 2018, 2017, 2016 and 2015, we recorded asset impairment charges of \$13.9 million (\$10.5 million net of tax), \$49.4 million (\$36.5 million net of tax), \$58.1 million (\$36.6 million net of tax), \$8.0 million (\$7.1 million net of tax) and \$58.5 million (\$44.6 million net of tax). The charges recorded in 2019 related to the winding down and exit of certain oil-influenced operations and assets, the replacement of an internally-developed software application and the planned sale of certain foreign operations and assets. The charges recorded in 2018 primarily related to the winding down of certain oil-influenced operations and assets. The charges recorded in 2017 related to goodwill and intangible assets, including a \$57.0 million goodwill impairment and a \$1.1 million impairment of a customer relationship intangible asset. The goodwill impairment was associated with two reporting units within our Pipeline and Industrial Infrastructure Services Division. The charges recorded in 2016 primarily related to a pending disposition of certain international renewable energy services operations, which was completed in 2017. The charges recorded in 2015 related to goodwill, intangible

assets and property and equipment, including a \$39.8 million goodwill impairment and a \$12.1 million impairment to customer relationship, trade name and non-compete agreement intangible assets.

- (b) In 2019, we recognized \$60.3 million of earnings that were previously deferred in prior periods 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. The majority of these deferred profits were attributable to profit earned and deferred in the years ended December 31, 2018 and 2017. We also recognized a gain of \$13.0 million from the sale of this equity investment during the three months ended December 31, 2019.
- (c) The effective tax rates in 2019, 2018 and 2017 were impacted by the enactment of the Tax Cuts and Jobs Act of 2017 (Tax Act), which, among other things, lowered the U.S. federal corporate tax rate from 35% to 21% as of January 1, 2018. For more information regarding the Tax Act, refer to Note 10 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*. For information on additional items that impacted the effective tax rates in 2019 and 2018, refer to *Results of Operations — Consolidated Results — Provision for income taxes* included in Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*. The effective tax rate in 2016 was impacted by a \$20.5 million tax benefit related to decreases in reserves for uncertain tax positions, which resulted from the expiration of certain federal and state statute of limitations periods.

	December 31,				
	2019	2018	2017	2016	2015
Balance Sheet Data:					
Working capital	\$ 1,567,937	\$ 1,519,977	\$ 1,377,840	\$ 1,083,517	\$ 1,073,775
Goodwill	\$ 2,022,675	\$ 1,899,879	\$ 1,868,600	\$ 1,603,169	\$ 1,552,658
Total assets	\$ 8,331,682	\$ 7,075,787	\$ 6,480,154	\$ 5,354,059	\$ 5,213,543
Long-term debt, net of current maturities	\$ 1,292,195	\$ 1,040,532	\$ 670,721	\$ 353,562	\$ 475,364
Total stockholders' equity	\$ 4,050,292	\$ 3,604,159	\$ 3,791,571	\$ 3,339,427	\$ 3,085,494

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our historical consolidated financial statements and related notes in Item 8. *Financial Statements and Supplementary Data*. 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 and Item 1A. *Risk Factors*.

Overview

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 and select other international markets. The performance of our business generally depends on our ability to obtain contracts with customers and to effectively deliver the services provided under those contracts. 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, and we endeavor to develop and maintain strategic alliances and preferred service provider status with 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, as further described in Item 1. *Business – Reportable Segments*. This structure is generally focused on broad end-user markets for our services. Included within the Electric Power Infrastructure Services segment are the results related to our telecommunications infrastructure services.

Current Year Financial Results and Significant Operational Trends and Events

Key financial results for the year ended December 31, 2019 included:

- Consolidated revenues increased 8.4% to \$12.11 billion as compared to \$11.17 billion for the year ended December 31, 2018, of which 59% was attributable to the Electric Power Infrastructure Services segment and 41% was attributable to the Pipeline and Industrial Infrastructure Services segment;
- Operating income increased 2.7%, or \$14.6 million, to \$554.9 million as compared to \$540.3 million for the year ended December 31, 2018;
- Net income attributable to common stock increased 37.1%, or \$108.7 million, to \$402.0 million as compared to \$293.3 million for the year ended December 31, 2018;
- Diluted earnings per share increased 43.7%, or \$0.83, to \$2.73 as compared to \$1.90 for the year ended December 31, 2018;
- Net cash provided by operating activities increased 46.8%, or \$167.8 million, to \$526.6 million as compared to \$358.8 million for the year ended December 31, 2018;
- Remaining performance obligations increased 13.3%, or \$621.0 million, to \$5.30 billion as of December 31, 2019 as compared to \$4.68 billion as of December 31, 2018; and
- Total backlog (a non-GAAP measure) increased 21.6%, or \$2.66 billion, to \$15.00 billion as of December 31, 2019 as compared to \$12.34 billion as of December 31, 2018. For a reconciliation of backlog to remaining performance obligations, its most comparable GAAP measure, see *Remaining Performance Obligations and Backlog* below.

During 2019, our Electric Power Infrastructure Services segment was impacted by the following significant operational trends and events:

- Increased customer spending on smaller electric transmission and distribution services projects, including increased revenues in the western United States associated with grid modernization and accelerated fire hardening programs, which are services we generally consider to be base business operations;
 - Decreased revenues on larger transmission projects primarily due to the completion of a larger transmission project in Canada in the first quarter of 2019 as compared to full construction on the project throughout 2018;
 - Delays on other larger transmission projects in Canada, which shifted expected revenues from 2019 to 2020 and beyond;
- and

- Recognition of a \$79.2 million charge related to the termination of a large telecommunications project in Peru.

During 2019, our Pipeline and Industrial Infrastructure Services segment was impacted by the following significant operational trends and events:

- Increased customer spending on gas utility infrastructure replacement and modernization initiatives, pipeline integrity work, industrial services and other services that we generally consider to be base business operations;
- Improved operating income margins across our transmission, distribution and industrial services operations resulting from improved execution and utilization;
- Decreased revenues from larger pipeline projects as compared to 2018, the timing of which is highly variable due to potential permitting delays, worksite access limitations related to environmental regulations and seasonal weather patterns; and
- Recognition of a \$28.3 million project loss associated with engineering and production delays on a substantially complete processing facility project, which negatively impacted operating income and was partially offset by favorable change orders and insurance settlements on other projects during 2019.

During 2019, our results were also impacted by the following significant events, the gross amounts related to which are recorded as equity in earnings of unconsolidated affiliates included in “Other income (expense), net” in our consolidated statements of operations:

- Recognition of \$60.3 million (\$43.9 million net of tax) of previously deferred earnings as a result of the completion of the larger transmission project in Canada referenced above; and
- Recognition of a \$13.0 million gain (\$20.7 million with favorable tax benefits) related to the sale of our interest in the same large electric transmission project in Canada.

We also continue to selectively evaluate acquisitions as part of our overall business strategy and acquired seven businesses in 2019, including The Hallen Construction Co., Inc. (Hallen), a business that specializes in above-ground and underground gas distribution and transmission services in the northeastern United States. During 2019, revenues were positively impacted by approximately \$305 million from acquired businesses.

Business Environment

We believe there are growth opportunities across the industries we serve and continue to have a positive long-term outlook. Although not without risks and challenges, including those discussed below and in *Uncertainty of Forward-Looking Statements and Information* and included in Item 1A. *Risk Factors*, 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 our industries.

Electric Power Infrastructure Services Segment. Utilities are investing significant capital in their electric power delivery systems, particularly transmission, substation and distribution infrastructure, through multi-year, multi-billion dollar grid modernization and reliability programs, which have provided, and are expected to continue to provide, demand for our services. Utilities are accommodating a changing fuel generation mix that is moving toward more sustainable sources such as natural gas and renewables and replacing aging infrastructure to support long-term economic growth. In order to reliably and efficiently deliver power, and in response to federal reliability standards, utilities are also integrating smart grid technologies into distribution systems in order to improve grid management and create efficiencies, and in preparation for emerging technologies such as electric vehicles. A number of utilities are also implementing system upgrades or hardening programs in response to recurring severe weather events, such as hurricanes and wildfires. In particular, current system resiliency initiatives in California and other regions in the western U.S. are designed to prevent and manage the impact of wildfires. However, while these resiliency initiatives also provide opportunities for our services, they also increase our potential exposure to significant liabilities attributable to those events.

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. As demand for power increases, we also expect an increase in new power generation facilities powered by certain traditional energy sources (e.g., natural gas) and renewable energy sources (e.g., solar and wind). To the extent this dynamic continues, we expect continued demand for new or expanded transmission and substation infrastructure to transport power and interconnect new generation facilities and the modification and reengineering of existing infrastructure as existing coal and nuclear generation facilities are retired or shut down.

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, communications providers in North America are 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. As a result of these industry trends, we believe there will be meaningful demand for our services in that market. While we continue to perform certain electric power and communications services in Latin America, we have completed a strategic review of those operations, and due to circumstances experienced in connection with the termination of the large telecommunications project in Peru during 2019 and political volatility in other areas of the region, have concluded to pursue an orderly exit of our Latin American operations. While we expect additional costs in the near-term related to exiting these operations, we anticipate this decision will result in improved profitability of our overall services offerings.

Pipeline and Industrial Infrastructure Services Segment. We have experienced an increase in demand for our gas utility distribution services as a result of improved economic conditions, lower natural gas prices, regulatory requirements and customer desire to upgrade and replace aging infrastructure. We believe there are also growth opportunities for our pipeline integrity, rehabilitation and replacement services, as regulatory measures have increased the frequency or stringency of pipeline integrity testing requirements.

We provide critical path solutions and related specialty services to refinery and chemical processing facilities, primarily along the Gulf Coast of the United States and in other select markets in North America. Trends and estimates for process facility utilization rates and overall refining capacity show North America as the largest downstream maintenance market in the world over the next several years, and we believe processing facilities located along the U.S. Gulf Coast region should have certain strategic advantages due to their proximity to affordable hydrocarbon resources. While our high-pressure and critical-path turnaround services can be negatively impacted in the short term by severe weather events, such as hurricanes, tropical storms and floods, we expect these favorable industry dynamics to provide near-term and longer-term opportunities for 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.

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 be delayed, we believe many of our customers remain committed to them given the cost and time required to move from conception to construction. The larger pipeline market is cyclical and the contribution of these projects to our revenues has declined over the last few years. We currently expect a further reduction in revenues from larger pipeline projects in 2020; however, we are pursuing various opportunities that, if successful, could cause our current expectations to increase. Due to its abundant supply and current low price, we also believe natural gas will remain a fuel of choice for both primary power generation and backup power generation for renewable-driven power plants in North America. The favorable characteristics of natural gas also position the United States as a leading competitor in the global LNG export market, which has the potential to continue to grow over the coming years as approved and proposed LNG export facilities are developed. In certain areas, the existing pipeline system infrastructure is insufficient to support these expected future developments, which could provide additional opportunities for our services.

Although much of our pipeline and industrial infrastructure 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 price volatility, which can impact demand for our services. For example, certain of our end markets where the price of oil is influential, such as Australia, the Canadian Oil Sands and certain oil-driven U.S. shale formations, have been materially impacted and remain challenged, as the broader energy market has not fully recovered from the significant decline in oil prices that occurred in 2014 and 2015.

Regulatory Challenges and Opportunities. The regulatory environment creates both challenges and opportunities for our business. Certain regulatory and environmental permitting processes continue to create uncertainty for projects and negatively impact customer spending. In recent years, electric power and pipeline infrastructure services margins have been impacted by regulatory and permitting delays, particularly with respect to larger electric transmission and larger pipeline projects. We believe that several existing, pending or proposed legislative or regulatory actions may alleviate certain of these issues and positively impact long-term demand, particularly in connection with electric power infrastructure and renewable energy spending. For example, regulatory changes affecting siting and right-of-way processes could potentially accelerate construction for transmission projects, and state and federal reliability standards are creating 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 some of these projects remains subject to the continued availability of tax incentive programs.

Labor Resource Availability. Our customers are 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 their capital programs. We believe these trends will continue, possibly to the point where demand for labor resources will outpace supply. Furthermore, the cyclical nature of the natural gas and oil industry can create shortages of qualified labor in those markets during periods of high demand. Our ability to capitalize on available opportunities is limited by our ability to employ, train and retain the necessary skilled personnel, and we are taking proactive steps to develop our workforce, including through

strategic relationships with universities, the military and unions and the expansion and development of our training facility and postsecondary educational institution. Although we believe these initiatives will help address workforce needs, meeting our customers' demand for labor resources could remain challenging.

Acquisitions and Investments. We believe potential acquisition and investment opportunities exist in our industries and adjacent industries, primarily due to the highly fragmented and evolving nature of those industries and inability of many companies to expand and modernize due to capital or liquidity constraints. We continue to evaluate opportunities that are expected to, among other things, broaden our customer base, expand our geographic area of operations, and grow and diversify our portfolio of services.

Significant Factors Impacting Results

Our revenues, margins and other results of operations can be influenced by a variety of factors in any given period, including those described in Item 1A *Risk Factors* and in *Results of Operations and Uncertainty of Forward Looking Statements and Information*, and those factors have caused fluctuations in our results in the past and are expected to cause fluctuations in our results in the future. Additional information with respect to certain of those factors is provided below.

Seasonality. Typically, our revenues are lowest in the first quarter of the year because cold, snowy or wet conditions can create challenging working environments that are more costly for our customers or cause delays on projects. In addition, infrastructure projects often do not begin in a meaningful way until our customers finalize their capital budgets, which typically occurs during the first quarter. 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 productivity. Third quarter revenues are typically the highest of the year, as a greater number of projects are underway and operating conditions, including weather, are normally more accommodating. Generally, revenues during the fourth quarter are lower than the third quarter but higher than the second quarter, as many projects are completed and customers often seek to spend their capital budgets before year end. However, the holiday season and inclement weather can sometimes cause delays during the fourth quarter, reducing revenues and increasing costs. These seasonal impacts are typical for our U.S. operations, but seasonality for our international operations may differ. 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 warmer months.

Weather and Natural Disasters. The results of our business in a given period can be impacted by adverse weather conditions, severe weather events or natural disasters, which include, among other things, heavy or prolonged snowfall or rainfall, hurricanes, tropical storms, tornadoes, floods, blizzards, extreme temperatures, wildfires, pandemics and earthquakes. These conditions and events can negatively impact our financial results due to the termination, deferral or delay of projects, reduced productivity and exposure to significant liabilities. However, in some cases, severe weather events can increase our emergency restoration services, which typically yield higher margins due in part to higher equipment utilization and absorption of fixed costs.

Cyclical demand for services. 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 also fluctuate, particularly in connection with larger, more complex or longer-term projects, which can affect the amount of work performed in a given period. For example, the timing of obtaining permits and other approvals on a larger project 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 the project when it moves forward. Examples of other items that may cause demand for our services to fluctuate materially from quarter to quarter include: the financial condition of our customers and their access to capital; economic and political conditions on a regional, national or global scale, including changes in U.S. and global trade relationships and interest rates; our customers' capital spending, including on larger pipeline and electrical infrastructure projects; commodity and material prices; and project cancellations.

Revenue mix. The mix of revenues based on the types of services we provide in a given period will impact margins, as certain industries and services provide higher-margin opportunities. For example, 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 varies by project but can be higher than maintenance work due to higher risk. We have historically derived approximately 30% to 35% of our annual revenues from maintenance work, but a higher portion of maintenance work in any given period may affect our gross margins for that period. Additionally, the areas in which we operate during a given period can impact margins. Some areas offer the opportunity for higher margins due to their more difficult geographic characteristics, such as urban settings or mountainous and other difficult terrain. However, margins may also be negatively impacted by unexpected difficulties that can arise due to those same characteristics, as well as unexpected site conditions.

Size, scope and complexity of projects. Larger or more complex 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. Furthermore, smaller or less complex projects typically have a greater number of companies competing for them, and competitors at times may more aggressively pursue available work. A greater percentage of smaller scale or less complex work also could negatively impact margins due to the inefficiency of

transitioning between a larger number of smaller projects versus continuous production on fewer larger projects. 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 projects when they move forward.

Project variability and performance. Margins for a single project may fluctuate period to period due to changes in the volume or type of work performed, the pricing structure under the project contract or job productivity. Additionally, our productivity and performance on a project can vary period to period based on a number of 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.

Subcontract work and provision of materials. Work that is subcontracted to other service providers generally yields lower margins, and therefore an increase in subcontract work in a given period can decrease margins. In recent years, we have subcontracted approximately 15% to 20% of our work to other service providers. Our customers are usually responsible for supplying the materials for their projects; however, under some contracts we 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 procure, including as a result of changes in U.S. or global trade relationships 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.

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, can materially impact margins and comparisons of our results of operations between periods.

Results of Operations

The results of acquired businesses have been included in the following results of operations beginning on their respective acquisition dates. A discussion of results of operations changes between the years ended December 31, 2018 and 2017 is included in Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations* of our Annual Report on Form 10-K for the year ended December 31, 2018, which was filed with the SEC on February 28, 2019. The following table sets forth selected statements of operations data, such data as a percentage of revenues for the years indicated as well as the dollar and percentage change from the prior year (dollars in thousands):

Consolidated Results

	Year Ended December 31,				Change	
	2019		2018		\$	%
Revenues	\$ 12,112,153	100.0 %	\$ 11,171,423	100.0 %	\$ 940,730	8.4 %
Cost of services (including depreciation)	10,511,901	86.8	9,691,459	86.8	820,442	8.5 %
Gross profit	1,600,252	13.2	1,479,964	13.2	120,288	8.1 %
Selling, general and administrative expenses	955,991	7.9	857,574	7.7	98,417	11.5 %
Amortization of intangible assets	62,091	0.5	43,994	0.4	18,097	41.1 %
Asset impairment charges	13,892	0.1	49,375	0.4	(35,483)	(71.9)%
Change in fair value of contingent consideration liabilities	13,404	0.1	(11,248)	(0.1)	24,652	*
Operating income	554,874	4.6	540,269	4.8	14,605	2.7 %
Interest expense	(66,890)	(0.6)	(36,945)	(0.3)	(29,945)	81.1 %
Interest income	927	—	1,555	—	(628)	(40.4)%
Other income (expense), net	83,376	0.7	(47,213)	(0.4)	130,589	*
Income before income taxes	572,287	4.7	457,666	4.1	114,621	25.0 %
Provision for income taxes	165,472	1.3	161,659	1.5	3,813	2.4 %
Net income	406,815	3.4	296,007	2.6	110,808	37.4 %
Less: Net income attributable to non-controlling interests	4,771	0.1	2,661	—	2,110	79.3 %
Net income attributable to common stock	\$ 402,044	3.3 %	\$ 293,346	2.6 %	\$ 108,698	37.1 %

* The percentage change is not meaningful.

Revenues. Contributing to the increase were incremental revenues of \$706.3 million from electric power infrastructure services and \$234.5 million from pipeline and industrial infrastructure services. See *Segment Results* below for additional information and discussion related to segment revenues.

Gross profit. The increase in gross profit was primarily due to the overall increase in revenues described above and margin improvement in pipeline and industrial infrastructure services, partially offset by a decline in margins for electric power infrastructure services. See *Segment Results* below for additional information and discussion related to segment operating income (loss).

Selling, general and administrative expenses. The increase was primarily attributable to a \$29.9 million increase in compensation expenses, largely associated with higher salaries due to increased personnel to support business growth and annual compensation increases; a \$23.4 million increase in expenses associated with acquired businesses, including incremental acquisition and integration costs of \$7.5 million; and a \$15.6 million increase in professional fees. Also contributing to the increase were a \$9.6 million increase in information systems-related expenses to support business growth; a \$9.3 million increase in deferred compensation expense, which was primarily associated with market value changes; a \$7.7 million increase in travel expenses and a \$4.1 million increase in bad debt expense. These increases were partially offset by a \$9.1 million increase in net gains on the sale of property and equipment.

Amortization of intangible assets. The 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 those assets became fully amortized.

Asset impairment charges. During the fourth quarters of 2019 and 2018, we recognized \$13.9 million and \$49.4 million of asset impairment charges. The 2019 charges primarily related to the winding down and exit of certain oil-influenced operations

and assets, the replacement of an internally-developed software application and the planned sale of certain foreign operations and assets, while the 2018 charges primarily related to the winding down of certain oil-influenced operations and assets.

Change in fair value of contingent consideration liabilities. The overall change was primarily due to changes in performance in post-acquisition periods for certain acquired businesses and the effect of present value accretion on fair value calculations. Further changes in fair value are expected to be recorded periodically until contingent consideration liabilities are settled. See *Contractual Obligations — Contingent Consideration Liabilities* for more information.

Interest expense. Interest expense increased primarily due to increased borrowing activity and a higher weighted average interest rate.

Other income (expense), net. The change was primarily related to our equity investment in a limited partnership that built, owned and operated the 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 majority of which were deferred in the years ended December 31, 2018 and 2017. Additionally, during the three months ended December 31, 2019, we recognized a gain of \$13.0 million related to the sale of our interest in this limited partnership. The net expense recognized in the year ended December 31, 2018 was primarily related to the deferral of earnings on the same project.

Provision for income taxes. The effective tax rates for the years ended December 31, 2019 and 2018 were 28.9% and 35.3%. The higher effective tax rate for the year ended December 31, 2018 was primarily due to the impact of tax reform regulations issued during 2018, which resulted in a \$37.2 million valuation allowance against certain tax benefits recognized during 2017 associated with the Tax Act and other entity restructuring and recapitalization efforts. The effective tax rate for the year ended December 31, 2019 includes the impact of a \$79.2 million charge associated with the termination of a large telecommunications project in Peru, for which no income tax benefit was recognized, partially offset by \$7.8 million of favorable tax benefits associated with the sale of our interest in the limited partnership referenced above. We expect our effective tax rate to be approximately 29.8% to 30.3% for 2020. For additional information regarding the Tax Act, refer to Note 10 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data.*

Other comprehensive income (loss), net of taxes. The gain in the year ended December 31, 2019 resulted from the translation of the balance sheet positions of our international operations, primarily in Canada and Australia, as of December 31, 2019 as compared to December 31, 2018, and the impact of the strengthening of those foreign currencies against the U.S. dollar as of December 31, 2019. The loss in the year ended December 31, 2018 resulted from the translation of the balance sheet positions of our international operations, primarily in Canada and Australia, as of December 31, 2018 as compared to December 31, 2017, and the impact of the strengthening of the U.S. dollar against those foreign currencies as of December 31, 2018.

Segment Results

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. 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, amortization related to intangible assets, asset impairment related to goodwill and intangible assets and change in fair value of contingent consideration liabilities.

The following table sets forth segment revenues, segment operating income (loss) for the years indicated, as well as the dollar and percentage change from the prior year (dollars in thousands):

	Year Ended December 31,				Change	
	2019		2018		\$	%
Revenues:						
Electric Power Infrastructure Services excluding Latin America	\$ 7,058,611	58.3 %	\$ 6,319,436	56.5 %	\$ 739,175	11.7 %
Latin America	63,226	0.5	96,126	0.9	(32,900)	(34.2)%
Electric Power Infrastructure Services	7,121,837	58.8	6,415,562	57.4	706,275	11.0 %
Pipeline and Industrial Infrastructure Services	4,990,316	41.2	4,755,861	42.6	234,455	4.9 %
Consolidated revenues from external customers	\$ 12,112,153	100.0 %	\$ 11,171,423	100.0 %	\$ 940,730	8.4 %
Operating income (loss):						
Electric Power Infrastructure Services excluding Latin America	\$ 676,926	9.6 %	\$ 636,403	10.1 %	\$ 40,523	6.4 %
Latin America	(85,749)	(135.6)%	(8,117)	(8.4)%	(77,632)	956.4 %
Electric Power Infrastructure Services	591,177	8.3 %	628,286	9.8 %	(37,109)	(5.9)%
Pipeline and Industrial Infrastructure Services	332,011	6.7 %	204,178	4.3 %	127,833	62.6 %
Corporate and non-allocated costs	(368,314)	N/A	(292,195)	N/A	(76,119)	26.1 %
Consolidated operating income	\$ 554,874	4.6 %	\$ 540,269	4.8 %	\$ 14,605	2.7 %

Electric Power Infrastructure Services Segment Results

The increase in revenues was primarily due to increased customer spending on smaller transmission and distribution services, including increased revenues in the western United States associated with grid modernization and accelerated fire hardening programs. Revenues also increased due to growth in our communications operations and \$140 million was attributable to acquired businesses. These increases were partially offset by lower revenues on the larger transmission project in Canada that was substantially completed during the three months ended March 31, 2019 but was in full construction throughout 2018; a \$51 million decrease in emergency restoration services revenues; and less favorable foreign currency exchange rates, which negatively impacted revenues by approximately \$32 million and were primarily attributable to the relationship between the U.S. dollar and the Canadian and Australian dollars.

As referenced in *Current Year Financial Results and Significant Operational Trends and Events*, during the year ended December 31, 2019, we recognized a \$79.2 million charge associated with the termination of a telecommunications project in Peru, which included a \$48.8 million reversal of revenues and a \$30.4 million increase in cost of services. The charge included a reduction of previously recognized earnings on the project, a reserve against a portion of alleged liquidated damages and recognition of estimated costs to complete the project turnover and close out the project. As a result of the contract termination and other factors, we have concluded to pursue an orderly exit of our operations in Latin America and have modified our segment disclosures in the above table to separately identify the Latin American results. We believe that providing visibility into these results is beneficial to understanding the performance of our ongoing operations. See *Legal Proceedings* in Note 14 below for additional information involving the termination of the telecommunications project in Peru.

The increase in segment operating income excluding Latin America was primarily attributable to the increase in revenues from smaller transmission and distribution services described above, including increased customer spending on fire hardening programs, as well as growth in our communications operations. The decrease in operating income as a percentage of revenues excluding Latin America was primarily attributable to higher operating income for the year ended December 31, 2018 related to successful execution of the larger transmission project in Canada described above and increased revenues from emergency restorations services, which typically yield higher margins due in part to higher equipment utilization and absorption of fixed costs. Additionally, operating income for the year ended December 31, 2019 was negatively impacted due to an increase in unabsorbed costs in Canada related to permitting and other delays to the commencement of construction for certain larger transmission projects.

Pipeline and Industrial Infrastructure Services Segment Results

The increase in revenues was primarily due to approximately \$165 million in revenues from acquired businesses. Also contributing to the increase were increased revenues from smaller pipeline transmission, gas distribution and industrial services,

which resulted from increased capital spending by our customers. Partially offsetting these increases was a decrease in revenues from larger pipeline transmission projects, the timing of which is highly variable due to potential permitting delays, worksite access limitations related to environmental regulations and seasonal weather patterns. Also partially offsetting these increases were less favorable foreign currency exchange rates during the year ended December 31, 2019, which negatively impacted revenues by approximately \$25 million and were primarily attributable to the relationship between the U.S. dollar and the Canadian and Australian dollars.

The increases in operating income and operating income as a percentage of revenues were primarily due to improved margins across our transmission, distribution and industrial services operations resulting from improved execution and utilization, including successful execution on a larger gas transmission project that resulted in lower project costs and higher earnings. Additionally, operating income and operating income as a percentage of segment revenues in 2018 were negatively impacted by the recognition of \$52.7 million of asset impairment and other charges primarily related to the winding down of certain oil-influenced operations and assets, as compared to \$10.2 million of asset impairment charges in 2019 primarily related to the winding down and exit of certain additional oil-influenced operations and assets. The year ended December 31, 2018 was also negatively impacted by \$17.3 million of project losses associated with production issues and severe weather conditions on a gas transmission project. Additionally, the years ended December 31, 2019 and 2018 were negatively impacted by \$28.3 million and \$32.5 million of project losses associated with engineering and production delays on a processing facility project, which was substantially complete as of December 31, 2019.

Corporate and Non-allocated Costs

The increase in corporate and non-allocated costs was partially due to a \$13.4 million increase in the fair value of contingent consideration liabilities in the year ended December 31, 2019, as compared to an \$11.2 million decrease in the fair value of contingent consideration liabilities recognized during the year ended December 31, 2018 based on performance of certain acquired businesses. Also contributing to the increase was an \$18.1 million increase in intangible amortization due to an increase in intangible assets associated primarily with 2019 acquisitions, an \$11.1 million increase in deferred compensation expense primarily associated with increases in the market value of participants' investment elections, a \$7.2 million increase in professional fees and a \$7.5 million increase in acquisition-related costs. Partially offsetting these increases was a \$6.8 million decrease in incentive and stock-based compensation, primarily attributable to lower performance against incentive compensation metrics in 2019 as compared to 2018.

Remaining Performance Obligations and Backlog

A performance obligation is a promise in a contract with a customer to transfer a distinct good or service. 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, which includes estimated revenues attributable to consolidated joint ventures and variable interest entities (VIEs), 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 they will be earned and are probable of collection.

We have also historically disclosed our backlog, a measure commonly used in our industry but not recognized under generally accepted accounting principles in the United States (GAAP). We believe this measure enables management to more effectively forecast our future capital needs and results and better identify future operating trends that may not otherwise be apparent. We believe this measure is also useful for investors in forecasting our future results and comparing us to our competitors. Our remaining performance obligations are a component of backlog, 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.

As of December 31, 2019 and 2018, MSAs accounted for 53% and 53% of our estimated 12-month backlog and 61% and 60% of total backlog. Generally, our customers are not contractually committed to specific volumes of services under our MSAs, and most of our contracts can be terminated on short notice even if we are not in default. We determine the estimated backlog for these MSAs using recurring historical trends, factoring in seasonal demand and projected customer needs based upon ongoing communications. In addition, many of our MSAs are subject to renewal, and these potential renewals are considered in determining estimated backlog. As a result, estimates for remaining performance obligations and backlog are subject to change based on, among other things, project accelerations; project cancellations or delays, including but not limited to those caused by commercial issues, regulatory requirements, natural disasters and adverse weather conditions; and final acceptance of change orders by customers. These factors can cause revenues to be realized in periods and at levels that are 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):

	December 31, 2019		December 31, 2018	
	12 Month	Total	12 Month	Total
Electric Power Infrastructure Services				
Remaining performance obligations	\$ 2,483,109	\$ 3,957,710	\$ 2,093,461	\$ 3,045,553
Estimated orders under MSAs and short-term, non-fixed price contracts	2,873,446	5,864,527	2,467,654	5,499,887
Backlog	5,356,555	9,822,237	4,561,115	8,545,440
Pipeline and Industrial Infrastructure Services				
Remaining performance obligations	670,707	1,344,741	1,003,543	1,635,918
Estimated orders under MSAs and short-term, non-fixed price contracts	1,919,791	3,837,923	1,411,329	2,161,275
Backlog	2,590,498	5,182,664	2,414,872	3,797,193
Total				
Remaining performance obligations	3,153,816	5,302,451	3,097,004	4,681,471
Estimated orders under MSAs and short-term, non-fixed price contracts	4,793,237	9,702,450	3,878,983	7,661,162
Backlog	\$ 7,947,053	\$ 15,004,901	\$ 6,975,987	\$ 12,342,633

Liquidity and Capital Resources

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. 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, facilitate our ability to pay any future dividends we declare, grow through acquisitions or strategic investments, and fund planned capital expenditures during 2020. However, our liquidity and capital resources, as well as our access to these sources of funds, can be influenced by adverse conditions in financial markets and economic trends and conditions that impact our results of operations.

Cash Requirements

Our available commitments and cash and cash equivalents at December 31, 2019 were as follows (in thousands):

	December 31, 2019
Total capacity available for revolving loans and letters of credit	\$ 2,135,000
Less:	
Borrowings of revolving loans under our senior secured credit facility	104,885
Letters of credit outstanding under our senior secured credit facility	383,800
Available commitments under senior secured credit facility for issuing revolving loans or new letters of credit	1,646,315
Plus:	
Cash and cash equivalents	164,798
Total available commitments under senior secured credit facility and cash and cash equivalents	\$ 1,811,113

We also had borrowings of term loans under our senior secured credit facility of \$1.24 billion as of December 31, 2019, and we are required to make quarterly principal payments of \$16.1 million on these loans.

Our industry is capital intensive, and we expect substantial capital expenditures and commitments under equipment lease and rental arrangements to be needed into the foreseeable future in order to meet anticipated demand for our services. Total capital

expenditures are expected to be approximately \$300 million for the year ended December 31, 2020. We also continue to evaluate opportunities for stock repurchases under our authorized stock repurchase programs.

Refer to *Contractual Obligations* below for a summary of our future contractual obligations as of December 31, 2019 and *Off-Balance Sheet Transactions* and *Contingencies* below for a description of certain contingent obligations. Although some of these contingent obligations could require the use of cash in future periods, they are excluded from the Contractual Obligations table because we are unable to accurately predict the timing and amount of any such obligations as of December 31, 2019.

Sources and Uses of Cash

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

	Year Ended December 31,	
	2019	2018
Net cash provided by operating activities	\$ 526,551	\$ 358,789
Net cash used in investing activities	(617,596)	(402,670)
Net cash provided by (used in) financing activities	177,687	(16,570)

Operating Activities

Cash flow from operating activities is primarily influenced by demand for our services and operating margins but is also influenced by working capital needs associated with the various types of services that we provide. Our 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 provided by operating activities during 2019 was favorably impacted by a decrease in cash used for operating assets and liabilities as compared to 2018, including as a result of the timing and number of contracts that include advance billing terms and/or retention balances. Net cash used in operating activities during 2019 included our 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 in Peru, which is described in further detail in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*.

Days sales outstanding (DSO) represents the average number of days it takes revenues to be converted into cash, which management believes is an important metric for assessing liquidity. A decrease in DSO has a favorable impact on cash flow from operating activities, while an increase in DSO has a negative impact on cash flow from operating activities. 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. DSO as of December 31, 2019 was 81 days, as compared to 74 days as of December 31, 2018. The increase in DSO was primarily due to the timing of work on larger pipeline transmission projects and the related billing and collection cycles. During the fourth quarter of 2018, we had higher revenues on larger pipeline transmission projects with relatively lower receivable balances as compared to lower revenues and relatively higher receivable balances on larger pipeline transmission projects during the fourth quarter of 2019.

Investing Activities

Net cash used in investing activities during 2019 included \$388.0 million used for acquisitions, \$261.8 million used for capital expenditures and \$47.1 million of cash paid for investments in unconsolidated affiliates and other entities. These items were partially offset by \$46.6 million of cash received from investments in unconsolidated affiliates and other entities related to the sale of our equity interest in the limited partnership that built, owned and operated the large electric transmission project in Canada and \$31.1 million of proceeds from the sale of property and equipment.

Net cash used in investing activities during 2018 included \$293.6 million used for capital expenditures; \$94.9 million used for acquisitions; \$36.9 million of cash paid for investments in unconsolidated affiliates and other entities, including \$18.5 million for our acquisition of a 30% interest in a water and gas pipeline infrastructure contractor located in Australia and \$14.9 million related to the limited partnership for the large electric transmission project in Canada; and \$14.4 million of cash paid for intangible assets. These items were partially offset by \$31.8 million of proceeds from the sale of property and equipment.

Our industry is capital intensive, and we expect substantial capital expenditures and commitments under equipment lease and rental arrangements to be needed into the foreseeable future. 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 amount of the cash needed for these initiatives.

Financing Activities

Net cash provided by financing activities during 2019 included \$272.5 million of net borrowings under our senior secured credit facility. These borrowings were primarily utilized to fund operating and investing activities, including capital expenditures, the cash portion of acquisitions, payments in connection with the exercise of on-demand advance payment and performance bonds described above and working capital requirements. Additional financing activities during 2019 included \$28.3 million of net short-term debt repayments, \$20.1 million of common stock repurchases under our stock repurchase program, \$23.2 million of cash payments of dividends and cash dividend equivalents and \$16.1 million of payments to satisfy tax withholding obligations associated with stock-based compensation.

Net cash used in financing activities during 2018 included \$443.2 million of common stock repurchases under our stock repurchase programs and \$15.2 million of payments to satisfy tax withholding obligations associated with stock-based compensation. These items were mostly offset by \$415.3 million of net borrowings under our senior secured credit facility and \$33.8 million of net short-term debt borrowings.

Contingent Consideration Liabilities

Certain of our acquisitions include the potential payment of contingent consideration, payable in the event certain performance objectives are achieved by the acquired businesses during designated post-acquisition periods. The majority of these contingent consideration liabilities are subject to a maximum payment amount, which totaled \$157.2 million as of December 31, 2019. Included within this maximum amount is approximately \$18.0 million related to certain acquisitions completed in 2018, payable based on performance 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 based on performance over a three-year post-acquisition period. The aggregate fair value of all of our contingent consideration liabilities was \$84.2 million as of December 31, 2019, of which \$77.6 million is included in "Accounts payable and accrued expenses" and \$6.5 million is included in "Insurance and other non-current liabilities." The significant majority of these liabilities would be paid at least 70% to 85% in cash. Cash payments for these liabilities up to the amount recognized at the respective acquisition dates, including measurement-period adjustments, will be classified as financing activities in our consolidated statements of cash flows. Any cash payments in excess of the amount of contingent consideration liabilities recognized at the respective acquisition dates will be classified as operating activities in our consolidated statements of cash flows.

Stock Repurchases

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

Year ended:	Shares	Amount
December 31, 2019	376	\$ 11,953
December 31, 2018	13,917	\$ 451,290
December 31, 2017	1,382	\$ 50,000

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 years ended December 31, 2019, 2018 and 2017, cash payments related to stock repurchases were \$20.1 million, \$443.2 million and \$50.0 million.

As of December 31, 2019, \$286.8 million remained authorized under our existing repurchase program, which authorizes us to repurchase outstanding common stock from time to time through June 30, 2021 (the 2018 Repurchase Program). Repurchases under the 2018 Repurchase Program may be implemented through open market 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 11 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*.

Dividends

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

Declaration Date	Record Date	Payment Date	Dividend Per Share	Dividends Declared
December 11, 2019	January 2, 2020	January 16, 2020	\$ 0.05	\$ 7,371
August 28, 2019	October 1, 2019	October 15, 2019	\$ 0.04	\$ 5,564
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. Holders of exchangeable shares of certain Canadian subsidiaries of Quanta were paid a cash dividend per exchangeable share equal to the cash dividend per share paid to Quanta common shareholders on the payment dates. 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) awarded under the 2011 Plan and the 2019 Plan 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 stock-based 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.

Debt Instruments

Senior Secured Credit Facility

We have a credit agreement with various lenders that provides for (i) a \$2.14 billion revolving credit facility and (ii) a term loan facility with term loans in the aggregate initial principal amount of \$1.29 billion. 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, from time to time, upon receipt of additional commitments from new or existing lenders by up to an additional (i) \$400.0 million plus (ii) an additional amount that is unlimited so long as the Incremental Leverage Ratio Requirement (as defined in the credit agreement) is satisfied at the time of such increase. The Incremental Leverage Ratio Requirement requires, among other things, after giving pro forma effect to such increase and the use of proceeds therefrom, compliance with the credit agreement's financial covenants as of the most recent fiscal quarter end for which financial statements were required to be delivered and that our Consolidated Leverage Ratio (as defined below) does not exceed 2.5 to 1.0, subject to the conditions specified in the credit agreement.

Borrowings under the credit agreement are to be used to refinance existing indebtedness and for working capital, capital expenditures, acquisitions and other general corporate purposes. The maturity date for both the revolving credit facility and the term loan facility is October 31, 2022; however, we may voluntarily prepay the term loans from time to time in whole or in part, without premium or penalty. We are required to make quarterly principal payments of \$16.1 million on the term loan facility. During the years ended December 31, 2019 and 2018, our weighted average interest rates associated with our senior secured credit facility were 3.8% and 3.6%.

We borrowed \$600.0 million under the term loan facility in October 2018 and borrowed an additional \$687.5 million under the term loan facility in September 2019 and used the majority of such proceeds to repay outstanding revolving loans under the credit agreement. As of December 31, 2019, we had \$1.35 billion of borrowings outstanding under the credit agreement, which included \$1.24 billion borrowed under the term loan facility and \$104.9 million of outstanding revolving loans. We also had \$383.8 million of letters of credit issued under our revolving credit facility. The remaining \$1.65 billion of available commitments under the revolving credit facility was available for additional revolving loans or letters of credit in U.S. dollars and certain alternative currencies.

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 December 31, 2019, we were in compliance with all of the financial covenants under the credit agreement. 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. 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 provides for customary events of default and generally contains cross-default provisions with other debt instruments exceeding \$150.0 million in borrowings or availability. Additionally, subject to certain exceptions, (i) all borrowings are secured by substantially all the assets of Quanta and its 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. 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 (including 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.

Contractual Obligations and Contingencies

The following table summarizes our future contractual obligations as of December 31, 2019, excluding certain amounts discussed below (in thousands):

	Total	2020	2021	2022	2023	2024	Thereafter
Long-term debt - principal ⁽¹⁾	\$ 1,359,565	\$ 67,887	\$ 66,345	\$ 1,219,512	\$ 1,971	\$ 1,971	\$ 1,879
Long-term debt - cash interest ⁽²⁾	545	545	—	—	—	—	—
Short-term debt ⁽³⁾	6,542	6,542	—	—	—	—	—
Operating lease obligations ⁽⁴⁾	317,249	102,848	75,982	51,295	34,153	17,952	35,019
Operating lease obligations that have not yet commenced ⁽⁵⁾	12,893	1,805	2,451	2,352	2,140	2,145	2,000
Finance lease obligations ⁽⁶⁾	1,010	469	325	127	60	21	8
Short-term lease obligations ⁽⁷⁾	19,930	19,930	—	—	—	—	—
Equipment purchase commitments ⁽⁸⁾	30,459	30,459	—	—	—	—	—
Capital commitment related to investments in unconsolidated affiliates ⁽⁹⁾	1,686	1,686	—	—	—	—	—
Total contractual obligations	\$ 1,749,879	\$ 232,171	\$ 145,103	\$ 1,273,286	\$ 38,324	\$ 22,089	\$ 38,906

- (1) We had \$1.35 billion of outstanding borrowings under our senior secured credit facility, which included \$1.24 billion borrowed under the term loan facility and \$104.9 million of outstanding revolving loans, both of which bear interest at variable market rates. Assuming the principal amount outstanding at December 31, 2019 remained outstanding and the interest rate in effect at December 31, 2019 remained the same, the annual cash interest expense would be approximately \$43.9 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 \$16.1 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 represents short-term borrowings recorded on our December 31, 2019 consolidated balance sheet.
- (4) Amounts represent undiscounted operating lease obligations at December 31, 2019. The operating lease obligations recorded on our December 31, 2019 consolidated balance sheet represent the present value of these amounts.
- (5) Amounts represent undiscounted operating leases obligations that had not commenced as of December 31, 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 December 31, 2019. The finance lease obligations recorded on our December 31, 2019 consolidated balance sheet represent the present value of these amounts.
- (7) Amounts represent short-term lease obligations that are not recorded on our December 31, 2019 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. 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.
- (9) Amount represents outstanding capital commitments associated with investments in unconsolidated affiliates. As of December 31, 2019, we had outstanding capital commitments associated with investments in unconsolidated affiliates.

As discussed in Notes 2, 10, 13 and 14 of the Notes to Consolidated Financial Statements in Item 8 *Financial Statements and Supplementary Data*, we have various contingencies and commitments that may require the use of cash in future periods. The Contractual Obligations table excludes the contingencies described below, as we are unable to accurately predict the timing and amount of any of the following contingent obligations.

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 business, economic and financial market conditions that affect these locations. 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.

For example, on January 29, 2019, PG&E Corporation and its primary operating subsidiary, Pacific Gas and Electric Company (collectively 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 \$165 million of billed and unbilled receivables. Subsequent to the bankruptcy filing, the bankruptcy court approved the assumption by PG&E of certain contracts with our subsidiaries, pursuant to which PG&E had paid \$122 million of our pre-petition receivables as of December 31, 2019. We also sold \$36 million of our pre-petition receivables to a third party during the three months ended December 31, 2019 in exchange for cash consideration of \$34 million, subject to certain claim disallowance provisions, the occurrence of which could result in our obligation to repurchase some or all of the pre-petition receivables sold. We expect the remaining \$7 million of pre-petition receivables to be sold or ultimately collected in the bankruptcy proceeding. However, the ultimate outcome of the bankruptcy proceeding is uncertain, and our belief regarding any future sale or 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 these assumptions change, the amount collected could be 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.

No customer represented 10% or more of our consolidated revenues for the years ended December 31, 2019, 2018 or 2017, and no customer represented 10% or more of our consolidated net receivable position at December 31, 2019 or 2018.

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, negligence or gross negligence and/or property damages, wage and hour claims and other employment-related damages, punitive and consequential 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 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for additional information regarding litigation, claims and other legal proceedings.

Multiemployer Pension Plans

Certain of our operating units are parties to collective bargaining agreements with unions that represent certain of their employees, which 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. Special funding and operational rules are generally applicable to certain of these multiemployer plans that are classified as “endangered,” “seriously endangered” or “critical” status based on multiple factors. The amount, if any, that we may be obligated to contribute to these plans cannot be reasonably estimated and is not included in the above table due to uncertainty regarding the amount of future work involving covered union employees, future contribution levels and possible surcharges on plan contributions.

Furthermore, we may be subject to additional liabilities imposed by law as a result of our participation in multiemployer defined benefit pension plans, including in connection with a withdrawal or deemed withdrawal from a plan or a plan being terminated or experiencing 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 currently aware of any material withdrawal liabilities that have been incurred or asserted

and that remain outstanding. However, we have been subject to significant withdrawal liabilities in the past, including in connection with our withdrawal from the Central States, Southeast and Southwest Areas Pension Plan, and may be subject to material withdrawal liabilities in the future, which could adversely affect our business, financial condition, results of operations or cash flows.

Performance Bonds and Parent Guarantees

Many customers, particularly in connection with new construction, require us to post performance and payment bonds. These bonds provide a guarantee 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, and we must reimburse the surety for any expenses or outlays it incurs. Under our underwriting, continuing indemnity and security agreement with our sureties, 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 in connection with the exercise of approximately \$112 million of advance payment and performance bonds related to the terminated telecommunications project in Peru, which is described further in *Legal Proceedings* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*. 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. As of December 31, 2019, we are not aware of any outstanding material obligations for payments related to bond obligations.

Performance bonds expire at various times ranging from mechanical completion of a project 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 December 31, 2019, the total amount of the outstanding performance bonds was estimated to be approximately \$2.9 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 \$1.1 billion as of December 31, 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 contractor 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, or indemnity claims. We are not aware of any claims under any of these guarantees that are material, except as set forth in *Legal Proceedings* within Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*. 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 a guarantee could adversely affect our consolidated business, financial condition, results of operations and cash flows.

Insurance

Insurance Coverage. Losses under our 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 December 31, 2019 and 2018, the gross amount accrued for insurance claims totaled \$287.6 million and \$272.9 million, with \$212.9 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 December 31, 2019 and 2018 were \$35.1 million and \$56.5 million, of which \$0.3 million and \$0.3 million are included in "Prepaid expenses and other current assets" and \$34.8 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, or coverage may not be available at reasonable and competitive rates. In any such event, our overall risk exposure would increase, which could negatively affect our results of operations, financial condition and cash flows. For example, due to the increased occurrence in recent years and future risk of wildfires in California and other areas in the western United States, Australia and other locations, insurers have reduced coverage limits and increased the cost of insurance coverage for those events.

As a result, we expect our level of insurance coverage for wildfire events will decrease at the time of our annual insurance renewal in the spring of 2020, and such level may not be sufficient to cover potential losses. Our third party insurers could also decide to further reduce or exclude coverage for wildfires in the future.

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 worked with our customer to mitigate the impact of the incident and to complete the project. As required by the contract, the customer procured certain insurance coverage for the project, with our subsidiaries as additional insureds, and we worked collaboratively with our customer to pursue insurance claims with the customer's insurance carriers. In December 2019 and January 2020, we reached settlement and release agreements with the insurers and the customer, respectively, resulting in total insurance recoveries related to this matter of \$95.5 million. We expect to receive the remaining insurance proceeds in the first quarter of 2020.

Hallen Acquisition Assumed Liability. As discussed in further detail in *Legal Proceedings* within Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*, we assumed certain contingent liabilities in connection with the acquisition of Hallen. Hallen's liabilities associated with this matter are expected to be covered under applicable insurance policies or contractual remedies negotiated by us with the former owners of Hallen. As of December 31, 2019, we had not recorded an accrual for any probable and estimable loss related to this matter. However, the ultimate amount of liability in connection with this matter remains subject to uncertainties associated with pending litigation, including, among other things, the apportionment of liability among the defendants and the likelihood and amount of potential damages claims. As a result, this matter could result in a loss that is in excess of, or not covered by, such insurance or contractual remedies, which could have a material adverse effect on our consolidated results of operations and cash flows.

Contingent Consideration Liabilities

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. 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.

Aggregate fair values of these outstanding and unearned contingent consideration liabilities and their classification in the Consolidated Balance Sheets in Item 1. *Financial Statements* were as follows (in thousands):

	December 31, 2019	December 31, 2018
Accounts payable and accrued expenses	\$ 77,618	\$ —
Insurance and other non-current liabilities	6,542	70,756
Total contingent consideration liabilities	\$ 84,160	\$ 70,756

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 factor ranged from 20.4% 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 1.6% 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 Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*. 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 \$157.2 million as of December 31, 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 December 31, 2019.

Our 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 performance in post-acquisition periods and accretion in present value. During the year ended December 31, 2019, we recognized a net increase of the fair value of our aggregate contingent consideration liabilities of \$13.4 million. During the years ended December 31, 2018 and 2017, we recognized net decreases in the fair value of our aggregate contingent consideration liabilities of \$11.2 million and \$5.2 million. These changes are reflected in "Change in fair value of contingent consideration liabilities" in our consolidated statements of operations.

Undistributed Earnings of Foreign Subsidiaries and Unrecognized Tax Benefits

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.

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 \$6.3 million as a result of settlement of these examinations or the expiration of certain statute of limitations periods.

Letters of Credit Fees and Commitment Fees

The Contractual Obligations table excludes letters of credit and commitment fees under our senior secured credit facility because the amount of outstanding letters of credit, availability and applicable fees are all variable. Assuming that the amount of letters of credit outstanding and the fees as of December 31, 2019 remained the same, the annual cash expense for our letters of credit would be approximately \$5.4 million. For additional information regarding our letters of credit and the associated fees and our borrowings under our senior secured credit facility, see *Liquidity and Capital Resources — Debt Instruments* above.

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; short-term, non-cancelable leases; letters of credit obligations; surety guarantees related to performance bonds; committed expenditures for the purchase of equipment; and certain multiemployer pension plan liabilities. See *Contractual Obligations* above and Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for a description of these arrangements.

Critical Accounting Estimates

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 the reported amounts of assets and liabilities, disclosures of contingent assets and liabilities known to exist as of the date the consolidated financial statements are published and the reported amounts of revenues and expenses recognized during the periods presented. We review all significant estimates affecting our consolidated financial statements on a recurring basis and record the effect of any necessary adjustments prior to their publication. Judgments and estimates are based on our 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. There can be no assurance that actual results will not differ from those estimates. Management has reviewed its development and selection of critical accounting estimates with the audit committee of our Board of Directors. Our accounting policies are primarily described in Note 2 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* and should be read in conjunction with the following accounting policies identified below that we believe affect our more significant judgments and estimates used in the preparation of our consolidated financial statements:

Revenue Recognition - the estimation of contract revenues and costs, progress on construction projects, variable consideration and collectability of accounts receivables, long-term accounts receivable, unbilled receivables, retainage and contract assets, including amounts related to unapproved change orders in the process of being negotiated;

Property and Equipment - the valuation methods and assumptions used in assessing impairment, useful life determination and the related timing of depreciation and the determination of asset groupings;

Goodwill - the valuation methods and assumptions used in assessing impairment, including determination of whether to perform a qualitative assessment on some or all of the reporting units, weighting of various methods of determining the fair value of each reporting unit, number of years of cash flows utilized before applying a terminal value, the weighted average cost of capital, transaction multiples, guideline public company multiples and five-year compounded annual growth rates;

Other Intangible Assets - the valuation methods and assumptions used in assessing impairment;

Income Taxes - the identification and measurement of deferred tax assets and liabilities; the measurement of valuation allowances on deferred tax assets including estimates of future taxable income; estimates associated with tax liabilities in that tax laws and regulations are voluminous and often ambiguous; and benefits from uncertain tax positions (also refer to Note 10 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*);

Insurance - the estimation of liabilities and related recoveries;

Litigation Costs and Reserves and Loss Contingencies - the estimation of when a loss is probable or reasonably possible and whether any such loss is reasonably estimable or any range of possible loss is estimable, as well as uncertainties related to the outcome of litigation or other legal proceedings (also refer to Notes 13 and 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*);

Contingent Consideration Liabilities - the valuation methods and assumptions used in assessing the fair values of future amounts payable to the former owners of certain acquired businesses; and

Acquisitions - the assumptions used to determine the fair value of consideration transferred and to allocate this consideration to assets acquired and liabilities assumed in connection with our acquisitions, including the estimated useful lives of other intangible assets subject to amortization (also refer to Note 4 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*).

Uncertainty of Forward-Looking Statements and Information

This Annual 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 and opportunities, trends or economic and regulatory conditions in particular markets or industries;
- Expectations regarding our plans and strategies, including plans, effects and other matters relating to our exit from our Latin American operations;
- The expected value of contracts or intended contracts with customers, as well as the scope, services, term or results of any awarded or expected projects;
- 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; and
- Possible recovery of pending or contemplated insurance claims, change orders and claims asserted against customers or third parties.

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 are 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, 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, including our ability to obtain future project awards;
- The time and costs required to exit our Latin American operations and our ability to effect related transactions on acceptable terms, as well as the business and political climate in Latin America;
- 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;
- Risks associated with operational hazards that arise due to the nature of the services we provide and the conditions in which we operate, including, among others, wildfires and explosions;
- Unexpected costs, liabilities, fines or penalties that may arise from legal proceedings, indemnity obligations, reimbursement obligations associated with letters of credit or bonds, multiemployer pension plans (e.g., underfunding of liabilities, termination or withdrawal liability) or other claims or actions asserted against us, including amounts that are not covered by, or are in excess of, our third-party insurance;
- Potential unavailability or cancellation of third-party insurance coverage, as well as the exclusion of coverage for certain losses, potential increases in premiums for coverage deemed beneficial to us, or the unavailability of coverage deemed beneficial to us at reasonable and competitive rates;
- Damage to our brands or reputation arising as a result of cyber-security breaches, environmental and occupational health and safety matters, corporate scandal, failure to successfully perform a high-profile project, involvement in a catastrophic event (e.g., fire, explosion) or other negative incidents;
- Our dependence on suppliers, subcontractors, equipment manufacturers and other third-party contractors;
- Estimates and assumptions related to our financial results, remaining performance obligations and backlog;
- 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 natural disasters, including wildfires, pandemics, hurricanes, tropical storms, floods, earthquakes and other geological- and weather-related hazards;
- 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 increased 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;
- 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 or third-party contractors to pay for services, including failure to collect our outstanding receivables, failure to recover amounts billed to customers in bankruptcy, or failure to recover on change orders or contract claims;
- Budgetary or other constraints that may reduce or eliminate tax incentives or government funding for projects, which may result in project delays or cancellations;
- 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, including the ability to retain key personnel from acquired businesses;
- The potential adverse impact resulting from uncertainty surrounding acquisitions and investments, including 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;
- Inability to enforce our intellectual property rights or the obsolescence of such rights;
- The impact of our unionized workforce on our operations, including labor stoppages or interruptions due to strikes or lockouts;
- The ability to access sufficient funding to finance desired growth and operations, including our ability to access capital markets on favorable terms, as well as 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;
- 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 and the U.S. Investment Advisers Act of 1940;
- Rapid technological and other structural changes that could reduce the demand for our services;
- Risks related to the implementation of new information technology systems;
- New or changed tax laws, treaties or regulations;

- Our ability to realize deferred tax assets;
- 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* in this 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 7A. Quantitative and Qualitative Disclosures about Market Risk

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 largest customers, PG&E, filed for bankruptcy protection under Chapter 11 of the U.S. Bankruptcy Code, as amended. See Item 7. *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 December 31, 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 December 31, 2019, the fair value of our variable rate debt of \$1.35 billion approximated book value. Our weighted average interest rate on our variable rate debt for the year ended December 31, 2019 was 3.8%. The annual effect on our pretax earnings of a hypothetical 50 basis point increase or decrease in variable interest rates would be approximately \$6.7 million based on our December 31, 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 and Australia, 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 2019, revenues from our foreign operations accounted for 15.9% of our consolidated revenues. Fluctuations in foreign exchange rates during the year ended December 31, 2019 caused a decrease of approximately \$57 million in foreign revenues compared to the year ended December 31, 2018. Fluctuations in foreign exchange rates during the year ended December 31, 2018 caused a decrease of approximately \$18 million in foreign revenues compared to the year ended December 31, 2017.

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 December 31, 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 \$34.0 million as of December 31, 2019, an assumed 5% adverse change to foreign exchange rates would result in a decline in cash of \$1.5 million.

INDEX TO QUANTA SERVICES, INC.'S CONSOLIDATED FINANCIAL STATEMENTS

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REPORT OF MANAGEMENT

Management's Report on Financial Information and Procedures

The accompanying financial statements of Quanta Services, Inc. and its subsidiaries were prepared by management. These financial statements were prepared in accordance with accounting principles generally accepted in the United States, applying certain estimates and judgments as required.

Our management, including our Chief Executive Officer and Chief Financial Officer, does not expect that our disclosure controls 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 that breakdowns can occur because of simple errors or mistakes. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is 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.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rule 13a-15(f) under the Securities Exchange Act of 1934. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of our consolidated financial statements for external purposes in accordance with U.S. generally accepted accounting principles. Internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the company's assets that could have a material effect on the financial statements.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we have conducted an evaluation of the effectiveness of our internal control over financial reporting based upon the criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, our management has concluded that our internal control over financial reporting was effective as of December 31, 2019 to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external reporting purposes in accordance with U.S. generally accepted accounting principles.

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

The effectiveness of Quanta Services, Inc.'s internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in its report which appears herein.

Management's assessment of the effectiveness of our internal control over financial reporting as of December 31, 2019 excluded the seven businesses we acquired in 2019. Such exclusion was in accordance with SEC guidance that an assessment of recently acquired businesses may be omitted in management's report on internal control over financial reporting, provided the acquisition took place within twelve months of management's evaluation. These acquisitions comprised approximately 2.1% and 1.8% of our consolidated assets and revenues as of and for the year ended December 31, 2019.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Quanta Services, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

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

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

Change in Accounting Principle

As discussed in Note 3 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

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

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

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

As described in Management’s Report on Internal Control Over Financial Reporting, management has excluded seven acquired businesses from its assessment of internal control over financial reporting as of December 31, 2019 because they were acquired by the Company in purchase business combinations during 2019. We have also excluded these seven acquired businesses from our audit of internal control over financial reporting. These acquired businesses, each of which is wholly-owned, comprised, in the aggregate, total assets and total revenues excluded from management’s assessment and our audit of internal control over financial reporting of approximately 2.1% and 1.8% of consolidated total assets and consolidated total revenues, respectively, as of and for the year ended December 31, 2019.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (i) pertain

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

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

Critical Audit Matters

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

Revenue Recognition - Determination of Total Estimated Contract Costs for Contracts Recognized Over Time

As described in Note 2 to the consolidated financial statements, the Company 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 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 the total estimated costs for such performance obligation. During the year ended December 31, 2019, approximately 50% of the Company's revenue recognized were associated with this revenue recognition method. 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. As described by management, 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 project estimators, project managers and finance professionals. Some of the factors that may lead to changes in estimates include concealed or unknown site 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; adverse weather conditions and natural disasters; changes in estimates related to the length of time to complete a performance obligation; and performance and quality issues requiring rework or replacement.

The principal considerations for our determination that performing procedures relating to revenue recognition for contracts recognized over time is a critical audit matter are that there was significant judgment by management when estimating the total contract costs. This in turn led to a high degree of auditor judgment, effort and subjectivity in performing procedures and evaluating audit evidence relating to management's estimate of the total costs of the contracts recognized over time.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the revenue recognition process including controls over the determination of total estimated contract cost for contracts recognized over time. These procedures also included, among others, (i) evaluating and testing management's process for determining the total estimated contract cost for a sample of contracts, which included evaluating the contracts and other documents that support those estimates, and testing of underlying contract costs; (ii) evaluating management's ability to reasonably estimate total contract costs by performing a comparison of the actual total estimated contract cost as compared with prior period estimates, including evaluating the timely identification of circumstances that may warrant a modification to the total estimated contract cost and (iii) evaluating management's methodologies and the consistency of management's methodologies over the life of the contract.

Acquisition of The Hallen Construction Co. - Fair Value of the Customer Relationships

As described in Notes 2 and 4 to the consolidated financial statements, the Company completed the acquisition of The Hallen Construction Co. ("Hallen") on August 30, 2019, which resulted in \$175 million of intangible assets recorded, principally the customer relationships. The fair 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 method 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 significant estimates used by management in determining the fair values of customer relationship intangible assets include future revenues, discount rates and customer attrition rates.

The principal considerations for our determination that performing procedures relating to the acquisition of Hallen is a critical audit matter are (i) there was a high degree of auditor judgment and subjectivity in applying procedures relating to the fair value measurement of the customer relationship intangible assets acquired due to the significant judgment by management when estimating the fair value of the customer relationship intangible assets, (ii) significant audit effort was required in evaluating the significant assumptions related to the fair value of the customer relationship intangible assets, such as the future revenues, the discount rates and customer attrition rate, and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the acquisition accounting, including controls over management's valuation of the customer relationship intangible assets and controls over development of significant assumptions, including future revenues, the discount rates and the customer attrition rate. These procedures also included, among others, (i) reading the purchase agreement, (ii) testing management's process for estimating the fair value of the customer relationship intangible assets, (iii) evaluating the appropriateness of the valuation method and the reasonableness of significant assumptions, including the future revenues, the discount rates and the customer attrition rate for the customer relationship intangible assets, and (iv) testing the completeness, accuracy, and relevance of underlying data used in the estimate. Evaluating the reasonableness of the future revenues and customer attrition rate assumptions involved considering the past performance of the acquired business, as well as economic forecasts. Professionals with specialized skill and knowledge were used to assist in the evaluation of the Company's valuation method and significant assumptions, including the discount rates and customer attrition rate.

/s/ PricewaterhouseCoopers LLP

Houston, Texas
February 28, 2020

We have served as the Company's auditor since 2002.

QUANTA SERVICES, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS
 (In thousands, except share information)

	December 31,	
	2019	2018
ASSETS		
Current Assets:		
Cash and cash equivalents	\$ 164,798	\$ 78,687
Accounts receivable, net of allowances of \$9,398 and \$5,839	2,747,911	2,354,737
Contract assets	601,268	576,891
Inventories	55,719	107,732
Prepaid expenses and other current assets	261,290	208,057
Total current assets	3,830,986	3,326,104
Property and equipment, net of accumulated depreciation of \$1,250,197 and \$1,092,440	1,386,654	1,276,032
Operating lease right-of-use assets	284,369	—
Other assets, net	393,264	293,592
Other intangible assets, net of accumulated amortization of \$437,886 and \$372,081	413,734	280,180
Goodwill	2,022,675	1,899,879
Total assets	\$ 8,331,682	\$ 7,075,787
LIABILITIES AND EQUITY		
Current Liabilities:		
Current maturities of long-term debt and short-term debt	\$ 74,869	\$ 65,646
Current portion of operating lease liabilities	92,475	—
Accounts payable and accrued expenses	1,489,559	1,314,520
Contract liabilities	606,146	425,961
Total current liabilities	2,263,049	1,806,127
Long-term debt, net of current maturities	1,292,195	1,040,532
Operating lease liabilities, net of current portion	196,521	—
Deferred income taxes	214,779	219,115
Insurance and other non-current liabilities	311,307	404,560
Total liabilities	4,277,851	3,470,334
Commitments and Contingencies		
Equity:		
Common stock, \$.00001 par value, 600,000,000 shares authorized, 159,415,540 and 157,333,046 shares issued, and 142,324,318 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	2,024,610	1,967,354
Retained earnings	2,854,271	2,477,291
Accumulated other comprehensive loss	(241,818)	(286,048)
Treasury stock, 17,091,222 and 16,229,146 common shares	(586,773)	(554,440)
Total stockholders' equity	4,050,292	3,604,159
Non-controlling interests	3,539	1,294
Total equity	4,053,831	3,605,453
Total liabilities and equity	\$ 8,331,682	\$ 7,075,787

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

QUANTA SERVICES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share information)

	Year Ended December 31,		
	2019	2018	2017
Revenues	\$ 12,112,153	\$ 11,171,423	\$ 9,466,478
Cost of services (including depreciation)	10,511,901	9,691,459	8,224,618
Gross profit	1,600,252	1,479,964	1,241,860
Selling, general and administrative expenses	955,991	857,574	777,920
Amortization of intangible assets	62,091	43,994	32,205
Asset impairment charges	13,892	49,375	58,057
Change in fair value of contingent consideration liabilities	13,404	(11,248)	(5,171)
Operating income	554,874	540,269	378,849
Interest expense	(66,890)	(36,945)	(20,946)
Interest income	927	1,555	832
Other income (expense), net	83,376	(47,213)	(4,978)
Income before income taxes	572,287	457,666	353,757
Provision for income taxes	165,472	161,659	35,532
Net income	406,815	296,007	318,225
Less: Net income attributable to non-controlling interests	4,771	2,661	3,247
Net income attributable to common stock	\$ 402,044	\$ 293,346	\$ 314,978
Earnings per share attributable to common stock:			
Basic	\$ 2.76	\$ 1.92	\$ 2.02
Diluted	\$ 2.73	\$ 1.90	\$ 2.00
Shares used in computing earnings per share:			
Weighted average basic shares outstanding	145,710	152,963	156,124
Weighted average diluted shares outstanding	147,534	154,226	157,155
Cash dividends declared per share	\$ 0.17	\$ 0.04	\$ —

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

QUANTA SERVICES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)

	Year Ended December 31,		
	2019	2018	2017
Net income	\$ 406,815	\$ 296,007	\$ 318,225
Other comprehensive income (loss), net of taxes:			
Foreign currency translation adjustment, net of tax of \$0, \$0 and \$0	43,535	(84,484)	67,404
Other, net of tax of \$(200), \$(677) and \$(347)	695	1,831	874
Other comprehensive income (loss), net of taxes	44,230	(82,653)	68,278
Comprehensive income	451,045	213,354	386,503
Less: Comprehensive income attributable to non-controlling interests	4,771	2,661	3,247
Total comprehensive income attributable to Quanta stockholders	\$ 446,274	\$ 210,693	\$ 383,256

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

QUANTA SERVICES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Year Ended December 31,		
	2019	2018	2017
Cash Flows from Operating Activities:			
Net income	\$ 406,815	\$ 296,007	\$ 318,225
Adjustments to reconcile net income to net cash provided by operating activities —			
Depreciation	218,107	202,519	183,808
Amortization of intangible assets	62,091	43,994	32,205
Asset impairment charges	13,892	49,375	58,057
Change in fair value of contingent consideration liabilities	13,404	(11,248)	(5,171)
Equity in (earnings) losses of unconsolidated affiliates	(76,801)	52,867	10,945
Amortization of debt issuance costs	1,870	1,270	1,321
(Gain) loss on sale of property and equipment	(5,797)	3,296	(549)
Provision for doubtful accounts	11,249	7,169	87
Deferred income tax expense (benefit)	(7,919)	61,974	(32,130)
Non-cash stock-based compensation	52,013	52,484	46,448
Foreign currency and other (gain) loss	(5,568)	(385)	409
Changes in operating assets and liabilities, net of non-cash transactions	(156,805)	(400,533)	(241,764)
Net cash provided by operating activities	526,551	358,789	371,891
Cash Flows from Investing Activities:			
Capital expenditures	(261,762)	(293,595)	(244,651)
Proceeds from sale of property and equipment	31,142	31,780	23,348
Proceeds from insurance settlements related to property and equipment	1,964	714	1,175
Cash paid for acquisitions, net of cash, cash equivalents and restricted cash acquired	(387,966)	(94,917)	(361,217)
Investments in unconsolidated affiliates and other entities	(47,056)	(36,909)	(56,528)
Cash received from investments in unconsolidated affiliates and other entities	46,590	4,705	65,789
Cash paid for intangible assets	(508)	(14,448)	—
Net cash used in investing activities	(617,596)	(402,670)	(572,084)
Cash Flows from Financing Activities:			
Borrowings under credit facility	6,175,558	4,491,782	2,932,338
Payments under credit facility	(5,903,069)	(4,076,460)	(2,624,404)
Payments on other long-term debt	(2,203)	(1,298)	(5,361)
Net borrowings (repayments) of short-term debt	(28,292)	33,790	(2,783)
Debt issuance and amendment costs	(2,309)	(1,976)	(1,507)
Distributions to non-controlling interests, net of contributions received	(2,526)	(4,038)	(2,001)
Payments related to tax withholding for share-based compensation	(16,144)	(15,218)	(18,543)
Exercise of stock options	—	—	25
Payments of dividends	(23,236)	—	—
Repurchase of common stock	(20,092)	(443,152)	(50,000)
Net cash provided by (used in) financing activities	177,687	(16,570)	227,764
Effect of foreign exchange rate changes on cash, cash equivalents and restricted cash	(153)	(68)	1,794
Net increase (decrease) in cash, cash equivalents and restricted cash	86,489	(60,519)	29,365
Cash, cash equivalents and restricted cash, beginning of year	83,256	143,775	114,410
Cash, cash equivalents and restricted cash, end of year	\$ 169,745	\$ 83,256	\$ 143,775

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

QUANTA SERVICES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF EQUITY
(In thousands, except share information)

	Common Stock		Exchangeable		Series F		Series G		Additional	Accumulated		Total		Non-	Total
	Shares	Amount	Shares		Preferred Stock		Preferred Stock		Paid-In Capital	Retained Earnings	Other Comprehensive Loss	Treasury Stock	Stockholders' Equity	controlling Interests	Equity
			Shares	Amount	Shares	Amount									
Balance at December 31, 2016	144,710,773	\$ 1	6,515,453	\$ —	1	\$ —	1	\$ —	\$ 1,749,306	\$ 1,876,081	\$ (271,673)	\$ (14,288)	\$ 3,339,427	\$ 3,275	\$ 3,342,702
Other comprehensive income	—	—	—	—	—	—	—	—	—	—	68,278	—	68,278	—	68,278
Acquisitions	2,982,346	—	—	—	—	—	—	—	89,604	—	—	—	89,604	—	89,604
Stock-based compensation activity	1,000,935	1	—	—	—	—	—	—	50,421	—	—	(21,163)	29,259	—	29,259
Stock options exercised	1,223	—	—	—	—	—	—	—	25	—	—	—	25	—	25
Exchange of exchangeable shares	6,029,341	—	(6,029,341)	—	—	—	—	—	—	—	—	—	—	—	—
Common stock repurchases	(1,382,292)	—	—	—	—	—	—	—	—	—	—	(50,000)	(50,000)	—	(50,000)
Retirement of preferred stock	—	—	—	—	(1)	—	—	—	—	—	—	—	—	—	—
Distributions to non-controlling interests	—	—	—	—	—	—	—	—	—	—	—	—	—	(2,001)	(2,001)
Buyout of non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	—	—	(463)	(463)
Net income	—	—	—	—	—	—	—	—	—	314,978	—	—	314,978	3,247	318,225
Balance at 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
Revenue recognition cumulative effect adjustment	—	—	—	—	—	—	—	—	—	(1,276)	—	—	(1,276)	—	(1,276)
Other comprehensive loss	—	—	—	—	—	—	—	—	—	—	(82,653)	—	(82,653)	—	(82,653)
Acquisitions	679,668	—	—	—	—	—	—	—	22,882	—	—	—	22,882	—	22,882
Stock-based compensation activity	998,631	—	—	—	—	—	—	—	55,116	—	—	(17,699)	37,417	—	37,417
Common stock repurchases	(13,916,725)	—	—	—	—	—	—	—	—	—	—	(451,290)	(451,290)	—	(451,290)
Dividends declared	—	—	—	—	—	—	—	—	—	(5,838)	—	—	(5,838)	—	(5,838)
Distributions to non-controlling interests	—	—	—	—	—	—	—	—	—	—	—	—	—	(4,038)	(4,038)
Buyout of a non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	—	—	(1,387)	(1,387)
Net income	—	—	—	—	—	—	—	—	—	293,346	—	—	293,346	2,661	296,007
Balance at 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	—	—	—	—	—	—	—	—	—	—	44,230	—	44,230	—	44,230
Acquisitions	60,860	—	—	—	—	—	—	—	1,791	—	—	—	1,791	—	1,791
Stock-based compensation activity	1,085,165	—	—	—	—	—	—	—	55,465	—	—	(20,379)	35,086	—	35,086
Exchange of exchangeable shares	449,929	—	(449,929)	—	—	—	—	—	—	—	—	—	—	—	—
Retirement of preferred stock	—	—	—	—	—	—	(1)	—	—	—	—	—	—	—	—
Common stock repurchases	(375,536)	—	—	—	—	—	—	—	—	—	—	(11,954)	(11,954)	—	(11,954)
Dividends declared	—	—	—	—	—	—	—	—	—	(25,064)	—	—	(25,064)	—	(25,064)
Distributions to non-controlling interests	—	—	—	—	—	—	—	—	—	—	—	—	—	(2,526)	(2,526)
Net income	—	—	—	—	—	—	—	—	—	402,044	—	—	402,044	4,771	406,815
Balance at December 31, 2019	142,324,318	\$ 2	36,183	\$ —	—	\$ —	—	\$ —	\$ 2,024,610	\$ 2,854,271	\$ (241,818)	\$ (586,773)	\$ 4,050,292	\$ 3,539	\$ 4,053,831

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

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO 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 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 techniques, 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, hydro power and backup 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 (including services in connection with 5G wireless deployment); 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 a majority of Quanta's postsecondary educational institution's financial results, which specializes in pre-apprenticeship training, apprenticeship training and specialized utility task training for electric workers, as well as training for the pipeline and industrial 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, distribution, 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, upgrade, 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 energy market and designs, installs and maintains fueling systems and water and sewer infrastructure.

Acquisitions

During the year ended December 31, 2019, Quanta acquired The Hallen Construction Co., Inc. (Hallen), a pipeline and industrial services business located in the United States that specializes in gas distribution and transmission services, and to a lesser extent, underground electric distribution and transmission services. During the year ended December 31, 2019, Quanta also acquired two specialty utility foundation and pole-setting contractors serving the southeast United States; an electric power specialty contracting business located in the United States that provides aerial power line and construction support services; a business located in the United States that provides technical training materials to electric utility workers; an electric power company specializing in project management and, to a lesser extent, water and wastewater projects located in the United States; and an electrical infrastructure services business located in Canada. Beginning on the respective acquisition dates, the results of the acquired businesses have been included in Quanta's consolidated financial statements, with the results of Hallen generally included in the Pipeline and Industrial Infrastructure Services segment and the other acquired businesses generally included in the Electric Power Infrastructure Services segment.

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. Beginning on the respective acquisition dates, the results of the acquired businesses have been included in Quanta's consolidated financial statements, generally within the Electric Power Infrastructure Services segment.

On July 20, 2017, Quanta acquired Stronghold, Ltd. and Stronghold Specialty, Ltd. (collectively Stronghold), a specialized services business located in the United States that provides high-pressure and critical-path solutions to the downstream and midstream energy markets. During the year ended December 31, 2017, Quanta also acquired a communications infrastructure services contractor and an electrical and communications contractor, both of which are located in the United States. Beginning on the respective acquisition dates, the results of the acquired businesses have been included in Quanta's consolidated financial statements, with the results of Stronghold generally included in Quanta's Pipeline and Industrial Infrastructure Services segment and the results of the other acquired businesses generally included in Quanta's Electric Power Infrastructure Services segment.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

Principles of Consolidation

The 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 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.

Use of Estimates and Assumptions

The preparation of financial statements in conformity with generally accepted accounting principles in the United States 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, provision for income taxes and 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 a 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. Standalone selling price is estimated using the expected costs plus a margin.

At December 31, 2019 and 2018, the aggregate transaction price allocated to unsatisfied or partially satisfied performance obligations was approximately \$5.30 billion and \$4.68 billion, of which 59.5% and 66.2% were expected to be recognized in the subsequent twelve months. These amounts represent management's estimate of the consolidated revenues that are expected to be

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

realized from the remaining portion of firm orders under fixed price contracts not yet completed or for which work had 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 years ended December 31, 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 project estimators, project managers and finance professionals. Some of the factors that may lead to changes in estimates include concealed or unknown site 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; adverse weather conditions and natural disasters; 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 they 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 can 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 and 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 December 31, 2019 and 2018, Quanta had recognized revenues of \$170.0 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 consolidated balance sheets, represent management's estimates of additional contract revenues that have been earned and are probable of collection. However,

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Quanta's estimates could change, 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.

Operating results for the years ended December 31, 2019 and 2018 were impacted by less than 5% as a result of aggregate changes in contract estimates related to projects that were in progress at December 31, 2018 and 2017.

Certain projects were materially impacted by changes to estimated contract revenues and/or project costs during the year ended December 31, 2019. The following amounts were recorded during the year ended December 31, 2019 but were related to prior periods. Quanta successfully completed an electric transmission project in Canada ahead of schedule during the three months ended March 31, 2019, which resulted in a reduction in estimated project costs and positively impacted gross profit related to work performed in prior periods by \$30.1 million. Quanta also successfully executed through project risks on a larger pipeline transmission project, which resulted in a reduction of estimated project costs and positively impacted gross profit related to work performed in prior periods by \$22.9 million. Quanta also settled claims related to a larger natural gas transmission project that experienced losses in 2018, which increased revenues and gross profit related to work performed in prior periods by \$16.2 million. Additionally, Quanta experienced rework and start-up delays on a processing facility construction project, which resulted in additional estimated project costs and liquidated damages payable to the customer and negatively impacted gross profit related to work performed in prior periods by \$29.4 million. As of December 31, 2019, this project had a contract value of approximately \$144 million and was approximately 98% complete. Quanta also experienced unfavorable weather and labor-related impacts, as well as a project scope reduction, on an electric transmission project in southern California, which resulted in an increase in estimated project costs and a reduction in expected project earnings. These changes negatively impacted gross profit related to work performed in prior periods by \$21.1 million. As of December 31, 2019, this project had a contract value of approximately \$400 million and was approximately 73% complete. Additionally, the changes in contract estimates include the negative impact of the correction of \$9.6 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 during 2019.

Certain projects were materially impacted by changes to estimated contract revenues and/or project costs during the year ended December 31, 2018. The following amounts were recorded during the year ended December 31, 2018 but were related to prior periods. Quanta experienced engineering and production delays on the processing facility construction project discussed above, which resulted in additional estimated construction costs. These changes in estimates negatively impacted gross profit related to work performed in prior periods by \$34.2 million. Quanta also experienced unexpected site conditions, adverse weather conditions and material delivery delays on a renewable energy power project in Australia that negatively impacted gross profit related to work performed in prior periods by \$22.3 million. Additionally, a natural gas pipeline construction project in the northeast United States experienced weather delays and project performance issues resulting in additional estimated construction costs that negatively impacted gross profit related to work performed in prior periods by \$17.3 million. Quanta also successfully executed through project procurement, winter schedule challenges and productivity risks on the electrical transmission project in Canada mentioned 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 \$52.2 million.

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Revenues by Category. The following tables present Quanta's revenue disaggregated by geographic location, as determined by the job location, and contract type (in thousands):

	Year Ended December 31,				
	2019		2018		
By primary geographic location:					
United States	\$	10,190,684	84.0%	\$ 8,575,341	78.6%
Canada		1,436,720	11.9%	1,984,214	16.4%
Australia		187,915	1.6%	377,453	3.1%
Latin America and Other		296,834	2.5%	234,415	1.9%
Total revenues	\$	12,112,153	100.0%	\$ 11,171,423	100.0%

	Year Ended December 31,				
	2019		2018		
By contract type:					
Unit-price contracts	\$	4,193,295	34.6%	\$ 3,828,997	39.4%
Cost-plus contracts		3,304,161	27.3%	2,507,025	20.7%
Fixed price contracts		4,614,697	38.1%	4,835,401	39.9%
Total revenues	\$	12,112,153	100.0%	\$ 11,171,423	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 50.0% and 57.7% of Quanta's revenues recognized during the years ended December 31, 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):

	December 31, 2019	December 31, 2018	December 31, 2017
Contract assets	\$ 601,268	\$ 576,891	\$ 497,292
Contract liabilities	\$ 606,146	\$ 425,961	\$ 433,387

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 December 31, 2019 was partially due to billing process changes for certain customers that impacted Quanta's ability to timely invoice and collect for services performed. Offsetting these increases was a contract asset impairment of \$29.4 million that was recognized during the year ended December 31, 2019 in connection with a charge to earnings on the large telecommunications project in Peru that was terminated during the period. The increase in contract assets from December 31, 2017 to December 31,

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2018 was primarily due to an increase in the volume of fixed price contracts in process. The increase in contract liabilities from December 31, 2018 to December 31, 2019 was primarily due to the timing and number of contracts that include advance billing terms.

Revenues were positively impacted by \$60.2 million during the year ended December 31, 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 year ended December 31, 2019, Quanta recognized revenue of approximately \$370 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. The assessment of the allowance for doubtful accounts involves 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 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 December 31, 2019 and 2018, Quanta had allowances for doubtful accounts on current receivables of \$9.4 million and \$5.8 million. See Note 14 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.

Long-term accounts receivable are included within "Other assets, net" in the accompanying consolidated balance sheets. As of December 31, 2019 and 2018, long-term accounts receivable were \$12.6 million and \$25.9 million.

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 of the project by the customer. Based on Quanta's experience in recent years, the majority of these retainage balances are expected to be collected within approximately twelve months. Current retainage balances as of December 31, 2019 and 2018 were \$299.6 million and \$337.1 million and are included in "Accounts receivable." Retainage balances with expected settlement dates beyond the next twelve months are included in "Other assets, net," and as of December 31, 2019 and 2018 were \$54.2 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 December 31, 2019 and 2018, unbilled receivables included in "Accounts receivable" were \$524.3 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 \$33.2 million, \$40.1 million and \$16.0 million at December 31, 2019, 2018 and 2017.

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):

	December 31,	
	2019	2018
Cash and cash equivalents held in domestic bank accounts	\$ 130,771	\$ 62,495
Cash and cash equivalents held in foreign bank accounts	34,027	16,192
Total cash and cash equivalents	\$ 164,798	\$ 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 December 31, 2019 and 2018, cash equivalents were \$37.8 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.

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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):

	December 31,	
	2019	2018
Cash and cash equivalents held by domestic joint ventures	\$ 6,518	\$ 8,544
Cash and cash equivalents held by foreign joint ventures	16	441
Total cash and cash equivalents held by joint ventures	6,534	8,985
Cash and cash equivalents not held by joint ventures	158,264	69,702
Total cash and cash equivalents	<u>\$ 164,798</u>	<u>\$ 78,687</u>

Inventories

Inventories consist primarily of parts and supplies held for use in the ordinary course of business, which are valued by Quanta at the lower of cost or net realizable value. Cost is determined by using either the first-in, first-out (FIFO) method or the average costing method. Inventories also include certain job specific materials not yet installed, which are valued using the specific identification method.

Property and Equipment

Property and equipment are stated at cost, and depreciation is computed using the straight-line method, net of estimated salvage values, over the estimated useful lives of the assets. Leasehold improvements are capitalized and amortized over the lesser of the life of the lease or the estimated useful life of the asset. Depreciation expense related to property and equipment is recognized on a straight-line basis over the estimated useful lives of the assets and was \$218.1 million, \$202.5 million and \$183.8 million for the years ended December 31, 2019, 2018 and 2017.

Accrued capital expenditures were \$10.0 million and \$2.7 million as of December 31, 2019 and 2018. The impact of these items has been excluded from Quanta's capital expenditures in the accompanying consolidated statements of cash flows due to their non-cash nature.

Expenditures for repairs and maintenance are charged to expense when incurred. Expenditures for major renewals and betterments, which extend the useful lives of existing equipment, are capitalized and depreciated over the adjusted remaining useful lives of the assets. Upon retirement or disposition of property and equipment, the cost and related accumulated depreciation are removed from the accounts and any resulting gain or loss is reflected in selling, general and administrative expenses.

Management reviews long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount may not be realizable. When an evaluation is required, the estimated future undiscounted cash flows associated with the asset group are compared to the asset group's carrying amount to determine if an impairment is necessary. The effect of any impairment involves expensing the difference between the fair value of the asset group and its carrying amount in the period incurred.

Quanta recorded asset impairments of \$13.9 million during the year ended December 31, 2019 related to the winding down and exit of certain oil-influenced operations and assets, the replacement of an internally-developed software application and the planned sale and exit of certain foreign operations and assets. Quanta also recorded asset impairments of \$49.4 million during the year ended December 31, 2018 primarily related to the winding down of certain oil-influenced operations and assets. The long-lived assets related to the December 31, 2018 impairment were written down to their estimated fair value of \$14.0 million and were classified as assets held for sale and recorded in "Prepaid expenses and other current assets" in the accompanying December 31, 2018 consolidated balance sheet, \$6.3 million of which remains in the accompanying December 31, 2019 consolidated balance sheet.

Other Assets, Net

Other assets, net consists primarily of long-term receivables, long-term retainage, deferred tax assets, debt issuance costs, equity and other investments, refundable security deposits for leased properties and insurance claims in excess of deductibles that are due from Quanta's insurers.

Debt Issuance and Amendment Costs

Capitalized debt issuance and amendment costs related to Quanta's senior secured credit facility are included in "Other assets, net" in the accompanying consolidated balance sheets and are amortized to interest expense on a straight-line basis over the terms of the respective agreements giving rise to the costs, which Quanta believes approximates the effective interest rate method. During 2019, 2018 and 2017, Quanta incurred \$2.3 million, \$2.0 million and \$1.5 million of debt issuance and amendment costs related to amendments and a restatement of its credit agreement. As of December 31, 2019 and 2018, capitalized debt issuance costs were \$17.2 million and \$14.9 million, with accumulated amortization of \$10.5 million and \$8.6 million. For the years ended December 31, 2019, 2018 and 2017, amortization expense related to capitalized debt issuance and amendment costs was \$1.9 million, \$1.3 million and \$1.3 million.

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. 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.

Goodwill is not amortized but is tested for impairment annually 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, an interim impairment test of an operating unit may be triggered by a significant change in market, management, business strategy or 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.

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 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,

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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.

The following table presents the significant estimates used by management in determining the fair values of Quanta's reporting units for which a quantitative assessment was performed at December 31, 2019, 2018 and 2017:

	2019	2018	2017
Years of cash flows before terminal value	5 years	5 years	5 years
Weighted average cost of capital	12.5%	12.0% to 15.0%	12.0% to 14.0%
Transaction multiple(s) applied to EBITDA	6.0	6.5 to 9.0	5.5 to 7.0
Guideline public company multiple(s) applied to EBITDA	6.5	6.5 to 9.5	6.5 to 8.0
Five-year revenue compounded annual growth rate(s)	-9%	-14% to 8%	-14% to 17%
Weighting of three methods:			
Discounted cash flows	70%	70%	70%
Market multiple	15%	15%	15%
Market capitalization	15%	15%	15%

For Quanta's annual goodwill impairment assessment performed during the fourth quarter of 2019, Quanta assessed qualitative factors to determine whether it was necessary to perform a quantitative fair value impairment analysis and identified one reporting unit for which a quantitative goodwill impairment assessment was deemed appropriate based on financial performance indicators. The subsequent quantitative analysis indicated that the fair value of the reporting unit was in excess of its carrying amount. Accordingly, Quanta did not record any impairment charges related to goodwill during the fourth quarter of 2019. In connection with the 2018 annual goodwill assessment, there were certain reporting units for which a quantitative goodwill impairment assessment was determined appropriate based on either changes in market conditions or specific performance indicators. No impairment charges resulted from the 2018 assessment. In connection with the 2017 annual goodwill assessment, Quanta recorded a \$57.0 million impairment associated with two reporting units. Specifically, a reporting unit that provides material handling services had experienced lower operating margins and was expected to continue to face a highly competitive environment in its select markets, and a reporting unit that provides marine and offshore services had experienced prolonged periods of reduced revenues and operating margins and was expected to continue to experience lower levels of activity in the U.S. Gulf of Mexico and other offshore markets.

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 unit for which a quantitative impairment test was performed, the reporting unit's fair value exceeded its carrying amount.

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 unit referenced above, for which a quantitative goodwill impairment assessment was performed in the fourth quarter of 2019, experienced declines over the short-term primarily due to losses attributable to a project which are not expected to recur.

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 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, Quanta's future estimates of fair value may not support the carrying amount of one or more of its 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 fair 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 method 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 significant estimates used by management in determining the fair values of

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customer relationship intangible assets include future revenues, discount rates and customer attrition rates. The following table presents the range of rates used for acquisitions in the years ended December 31, 2019, 2018 and 2017:

	2019	2018	2017
Discount rates	19% to 24%	20% to 27%	17% to 25%
Customer attrition rates	5% to 37%	20% to 33%	15% to 78%

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 or 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 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 recognition of 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 beginning on or 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 at the commencement date whether the lease is an operating or finance 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 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 and penalties 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

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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 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 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 specified 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 December 31, 2019, Quanta had contributed \$20.0 million to this partnership in connection with certain investments. However, in October 2019, due to certain management changes at the registered investment adviser, the partnership entered into a 180-day period during which the investors and Quanta will evaluate the partnership. During this period, the partnership may make additional investments with the consent of the investors, and, at the end of the period, the investors or Quanta may elect to end the investment period for any future investments or dissolve the partnership.

Quanta had 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 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 was 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 consolidated statements of operations. During the three months ended March 31, 2019,

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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 December 31, 2019, Quanta sold its minority ownership interest in the limited partnership and recognized a gain of \$13.0 million related to the sale. The gain was recorded in equity in earnings (losses) of unconsolidated affiliates, which is included in "Other income (expense), net" in the accompanying consolidated statements of operations.

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 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 investee's equity. Earnings on this investment are recognized as dividends are received and are reported in "Other income (expense), net" in the accompanying consolidated statements of operations. Quanta recognized \$1.1 million and \$3.9 million in cash dividends from this investment during 2019 and 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 11 and 14 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 December 31, 2019, the total amount of unrecognized tax benefits relating to uncertain tax positions was \$40.9 million, a \$0.2 million decrease from December 31, 2018. This decrease resulted primarily from a favorable settlement of \$9.1 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 \$7.7 million increase in reserves for uncertain tax positions expected to be taken in 2019 and a \$1.2 million increase in reserves for uncertain tax positions taken in prior years. 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 \$6.3 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 (the Tax Act) 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. For additional information on the Tax Act, refer to Note 10.

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 11), 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

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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 these 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, which insures all claims up to the amount of the applicable deductible of its third-party insurance programs. In connection with Quanta's casualty insurance programs, Quanta is required to issue letters of credit to secure its obligations. 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 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 12.

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 and Australia, 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

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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 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 14 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 December 31, 2019 and 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 designated 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. Quanta expects a significant portion of these liabilities to be settled by late 2020 or early 2021.

Aggregate fair values of these outstanding and unearned contingent consideration liabilities and their classification in the accompanying consolidated balance sheets were as follows (in thousands):

	December 31, 2019	December 31, 2018
Accounts payable and accrued expenses	\$ 77,618	\$ —
Insurance and other non-current liabilities	6,542	70,756
Total contingent consideration liabilities	\$ 84,160	\$ 70,756

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 factor ranged from 20.4% 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 and ranged from 1.6% 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 \$157.2 million as of December 31, 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 December 31, 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 performance in post-acquisition periods and accretion in present value. During the year ended December 31, 2019, Quanta recognized a net increase in the fair value of its aggregate contingent consideration liabilities of \$13.4 million, while during the years ended December 31, 2018 and 2017, Quanta recognized

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net decreases of \$11.2 million and \$5.2 million. These changes are reflected in “Change in fair value of contingent consideration liabilities” in the accompanying 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 December 31, 2019 and 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 allowed the recognition of 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 beginning on or 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, 9 and 16. Quanta implemented new internal controls related to the preparation of financial information necessary for adoption of the new standard.

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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 December 31, 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 anticipates this guidance will not have a material impact 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 anticipates this guidance will not have a material impact on its consolidated financial statements and will adopt the guidance effective January 1, 2020.

In December 2019, the FASB issued an update that, among other things, amends the guidance related to accounting for tax law changes when an entity has a year-to-date loss in an interim period and provides guidance on how to evaluate whether a step-up in tax basis of goodwill relates to a business combination or a separate transaction. This update is effective for interim and annual periods beginning after December 15, 2020, and certain amendments should be applied prospectively, while other amendments should be applied on a modified retrospective basis. Quanta is evaluating the potential impact of this guidance on its consolidated financial statements and will adopt the guidance effective January 1, 2021.

In January 2020, the FASB issued an update that clarified the interactions between accounting guidance to account for certain equity securities relating to increasing or decreasing ownership or degree of influence and forward contracts and purchased options. This update is effective for interim and annual periods beginning after December 15, 2020, and it will be applied prospectively. Quanta is evaluating the potential impact of this guidance on its consolidated financial statements and will adopt the guidance effective January 1, 2021.

4. ACQUISITIONS:

On August 30, 2019, Quanta acquired Hallen, a pipeline and industrial services business located in the United States that specializes in gas distribution and transmission services, and to a lesser extent, underground electric distribution and transmission services. During the year ended December 31, 2019, Quanta also acquired two specialty utility foundation and pole-setting contractors serving the southeast United States; an electric power specialty contracting business located in the United States that provides aerial power line and construction support services; a business located in the United States that provides technical training materials to electric utility workers; an electric power company specializing in project management and, to a lesser extent, water and wastewater projects located in the United States; and an electrical infrastructure services business located in Canada. The aggregate consideration for these acquisitions was \$399.3 million paid or payable in cash, subject to certain adjustments, and 60,860 shares of Quanta common stock, which had a fair value of \$1.8 million as of the respective acquisition date. A portion of the cash consideration in connection with the Hallen acquisition was placed in an escrow account, which, subject to certain conditions, could be utilized to reimburse Quanta for obligations associated with certain contingent liabilities assumed by Quanta in the transaction. See *Legal Proceedings — Hallen Acquisition Assumed Liability* in Note 14 for additional information related to these liabilities. Beginning on the respective acquisition dates, the results of the acquired businesses have been included in Quanta's consolidated financial statements, with the results of Hallen generally included in the Pipeline and Industrial Infrastructure Services segment and the other acquired businesses generally included in the Electric Power Infrastructure Services segment.

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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 \$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. Beginning on the respective acquisition dates, the results of the acquired businesses have been included in Quanta's consolidated financial statements, generally within the Electric Power Infrastructure Services segment.

On July 20, 2017, Quanta acquired Stronghold, a specialized services business located in the United States that provides high-pressure and critical-path solutions to the downstream and midstream energy markets. The aggregate consideration included \$351.0 million in cash, subject to certain adjustments, and 2,693,680 shares of Quanta common stock, which had a fair value of \$81.3 million as of the acquisition date. Additionally, the acquisition includes the potential payment of up to \$100.0 million of contingent consideration, payable if the acquired business achieves certain performance objectives over a three-year post-acquisition period. Based on the estimated fair value of the contingent consideration, Quanta recorded a \$51.1 million liability as of the acquisition date. During the year ended December 31, 2017, Quanta also acquired a communications infrastructure services business and an electrical and communications business, both of which are located in the United States. The aggregate consideration for these acquisitions consisted of \$12.0 million paid or payable in cash, subject to certain adjustments, and 288,666 shares of Quanta common stock, which had a fair value of \$8.3 million as of the respective acquisition date of the applicable acquired business. Beginning on the respective acquisition dates, the results of the acquired businesses have been included in Quanta's consolidated financial statements, with the results of Stronghold generally included in Quanta's Pipeline and Industrial Infrastructure Services segment and the results of the other acquired businesses generally included in Quanta's Electric Power Infrastructure Services segment.

The following table summarizes the aggregate consideration paid or payable as of December 31, 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.

QUANTA SERVICES, INC. AND SUBSIDIARIES
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Quanta is finalizing its fair value assessments for the acquired assets and assumed liabilities related to businesses acquired during 2019, and further adjustments to the purchase price allocations may occur. As of December 31, 2019, the estimated fair values of the net assets acquired were preliminary, with possible updates primarily related to pre-acquisition contingent liabilities, as further described in *Legal Proceedings — Hallen Acquisition Assumed Liability* in Note 14 and tax estimates. Consideration amounts are also subject to the finalization of closing working capital adjustments. The aggregate consideration paid or payable for businesses acquired during 2019 was allocated to acquired assets and assumed liabilities, which resulted in an allocation of \$101.0 million to net tangible assets, \$192.8 million to identifiable intangible assets, \$110.4 million to goodwill and \$3.1 million to bargain purchase gain (in thousands).

	2019	2018
Consideration:		
Cash paid or payable	\$ 399,275	\$ 108,307
Value of Quanta common stock issued	1,791	22,882
Contingent consideration	—	16,471
Fair value of total consideration transferred or estimated to be transferred	<u>\$ 401,066</u>	<u>\$ 147,660</u>
Accounts receivable	\$ 112,142	\$ 18,405
Contract assets	11,869	1,905
Other current assets	14,290	8,484
Property and equipment	60,133	23,674
Other assets	149	576
Identifiable intangible assets	192,786	52,364
Contract liabilities	(11,856)	(175)
Other current liabilities	(73,948)	(11,205)
Deferred tax liabilities, net	(6,398)	(4,208)
Other long-term liabilities	(5,345)	—
Total identifiable net assets	293,822	89,820
Goodwill	110,383	57,840
Fair value of net assets acquired	404,205	147,660
Bargain purchase gain	(3,139)	—
Fair value of total consideration transferred or estimated to be transferred	<u>\$ 401,066</u>	<u>\$ 147,660</u>

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, and a bargain purchase gain results 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 of \$3.1 million, which was recorded in “Other income (expense), net” in the accompanying consolidated statements of operations.

The acquisitions completed in 2019, 2018 and 2017 strategically expanded Quanta’s domestic pipeline and industrial and domestic and international electric power and communications service offerings, which Quanta believes contributes to the recognition of the goodwill. Approximately \$90.6 million, \$21.6 million and \$251.4 million of goodwill is expected to be deductible for income tax purposes related to acquisitions completed in 2019, 2018 and 2017.

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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	\$ 167,262	7.9
Backlog	8,278	1.0
Trade names	11,752	15.0
Non-compete agreements	3,712	4.3
Curriculum	1,782	10.0
Total intangible assets subject to amortization related to acquisitions completed in 2019	<u>\$ 192,786</u>	<u>8.0</u>

Total intangible assets subject to amortization includes \$175.0 million related to Quanta's acquisition of Hallen in 2019.

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):

	Year Ended December 31,		
	2019	2018	2017
Revenues	\$ 12,574,771	\$ 11,894,866	\$ 9,848,386
Gross profit	\$ 1,699,924	\$ 1,635,777	\$ 1,356,515
Selling, general and administrative expenses	\$ 989,555	\$ 913,392	\$ 842,996
Amortization of intangible assets	\$ 78,320	\$ 79,454	\$ 49,918
Net income	\$ 437,399	\$ 332,973	\$ 333,386
Net income attributable to common stock	\$ 432,628	\$ 330,312	\$ 330,139
Earnings per share:			
Basic	\$ 2.97	\$ 2.16	\$ 2.08
Diluted	\$ 2.93	\$ 2.14	\$ 2.07

The pro forma combined results of operations 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 historical results of the acquisitions completed in 2018 as if they occurred January 1, 2017 and the historical results of the acquisitions completed in 2017 as if they occurred January 1, 2016. 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 \$223.3 million and income before income taxes of approximately \$7.5 million, which included \$22.1 million of acquisition-related costs, are included in Quanta's consolidated results of operations for the year ended December 31, 2019 related to the acquisitions completed in 2019. Revenues of approximately \$71.1 million and a loss before income taxes of approximately \$8.9 million, which included \$11.0 million of acquisition-related costs, are included in Quanta's consolidated results of operations for the year ended December 31, 2018 related to the acquisitions completed in 2018. Revenues of approximately \$207.4 million and a loss before income taxes of approximately \$8.1 million, which included \$5.4 million of acquisition-related costs, are included in Quanta's consolidated results of operations for the year ended December 31, 2017 related to the acquisitions completed in 2017.

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

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, 2016:			
Goodwill	\$ 1,253,979	\$ 388,923	\$ 1,642,902
Accumulated impairment	—	(39,733)	(39,733)
	<u>1,253,979</u>	<u>349,190</u>	<u>1,603,169</u>
Goodwill related to acquisitions completed in 2017	5,866	296,542	302,408
Purchase price allocation adjustments	(619)	(659)	(1,278)
Goodwill impaired during 2017	—	(57,011)	(57,011)
Foreign currency translation adjustments	13,301	8,011	21,312
Balance at December 31, 2017:			
Goodwill	1,272,527	693,905	1,966,432
Accumulated impairment	—	(97,832)	(97,832)
	<u>1,272,527</u>	<u>596,073</u>	<u>1,868,600</u>
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)
	<u>1,313,078</u>	<u>586,801</u>	<u>1,899,879</u>
Goodwill related to acquisitions completed in 2019	43,183	67,200	110,383
Purchase price allocation adjustments	1,503	—	1,503
Foreign currency translation adjustments	7,399	3,511	10,910
Balance at December 31, 2019:			
Goodwill	1,365,163	753,938	2,119,101
Accumulated impairment	—	(96,426)	(96,426)
	<u>\$ 1,365,163</u>	<u>\$ 657,512</u>	<u>\$ 2,022,675</u>

Adjustments primarily represent changes in deferred tax liability estimates and would not have had a material impact on Quanta's consolidated financial statements in prior periods had these adjustments been booked at the respective acquisition dates.

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The goodwill impairment in the year ended December 31, 2017 was associated with two reporting units within the Pipeline and Industrial Infrastructure Services Division. Specifically, a reporting unit that provides material handling services had experienced lower operating margins and was expected to continue to face a highly competitive environment in its select markets, and a reporting unit that provides marine and offshore services had experienced prolonged periods of reduced revenues and operating margins and was expected to continue to experience lower levels of activity in the U.S. Gulf of Mexico and other offshore markets.

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 December 31, 2019			As of December 31, 2018			As of December 31, 2019
	Intangible Assets	Accumulated Amortization	Intangible Assets, Net	Intangible Assets	Accumulated Amortization	Intangible Assets, Net	Remaining Weighted Average Amortization Period in Years
Customer relationships	\$ 532,808	\$ (213,915)	\$ 318,893	\$ 359,967	\$ (165,715)	\$ 194,252	6.5
Backlog	144,704	(141,580)	3,124	135,578	(134,592)	986	2.8
Trade names	93,396	(26,145)	67,251	81,058	(21,559)	59,499	14.6
Non-compete agreements	43,281	(32,868)	10,413	40,728	(30,168)	10,560	3.1
Patented rights and developed technology	22,719	(20,682)	2,037	22,482	(19,175)	3,307	2.2
Curriculum	11,712	(2,696)	9,016	9,448	(872)	8,576	8.3
Total intangible assets subject to amortization	848,620	(437,886)	410,734	649,261	(372,081)	277,180	7.7
Engineering license	3,000	—	3,000	3,000	—	3,000	
Total intangible assets	<u>\$ 851,620</u>	<u>\$ (437,886)</u>	<u>\$ 413,734</u>	<u>\$ 652,261</u>	<u>\$ (372,081)</u>	<u>\$ 280,180</u>	

Amortization expense for intangible assets was \$62.1 million, \$44.0 million and \$32.2 million for the years ended December 31, 2019, 2018 and 2017.

The estimated future aggregate amortization expense of intangible assets subject to amortization as of December 31, 2019 is set forth below (in thousands):

Year Ending December 31:

2020	\$ 70,455
2021	67,804
2022	62,848
2023	54,421
2024	41,437
Thereafter	113,769
Total	<u>\$ 410,734</u>

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

6. PER SHARE INFORMATION:

The amounts used to compute basic and diluted earnings per share attributable to common stock for the years ended December 31, 2019, 2018 and 2017 consisted of the following (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Amounts attributable to common stock:			
Net income attributable to common stock	\$ 402,044	\$ 293,346	\$ 314,978
Weighted average shares:			
Weighted average shares outstanding for basic earnings per share attributable to common stock	145,710	152,963	156,124
Effect of dilutive unvested non-participating stock-based awards	1,824	1,263	1,031
Weighted average shares outstanding for diluted earnings per share attributable to common stock	147,534	154,226	157,155

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 11), 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 the years ended December 31, 2019, 2018 and 2017 included 2.8 million, 2.6 million and 2.3 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. DETAIL OF CERTAIN BALANCE SHEET ACCOUNTS:

Activity in Quanta's allowance for doubtful accounts consisted of the following (in thousands):

	December 31,	
	2019	2018
Balance at beginning of year	\$ 5,839	\$ 4,465
Charges to bad debt expense	11,249	7,169
Direct write-offs charged against the allowance	(7,690)	(5,795)
Balance at end of year	\$ 9,398	\$ 5,839

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Property and equipment consisted of the following (in thousands):

	Estimated Useful Lives in Years	December 31,	
		2019	2018
Land	N/A	\$ 67,560	\$ 61,305
Buildings and leasehold improvements	5-30	231,920	208,974
Operating equipment and vehicles	1-25	2,068,644	1,865,917
Office equipment, furniture and fixtures and information technology systems	3-10	228,329	212,769
Construction work in progress	N/A	26,236	19,507
Finance lease assets and rental purchase options (see Note 9)	5-20	14,162	—
Property and equipment, gross		2,636,851	2,368,472
Less — Accumulated depreciation and amortization		(1,250,197)	(1,092,440)
Property and equipment, net of accumulated depreciation		\$ 1,386,654	\$ 1,276,032

Accounts payable and accrued expenses consisted of the following (in thousands):

	December 31,	
	2019	2018
Accounts payable, trade	\$ 798,718	\$ 786,546
Accrued compensation and related expenses	316,237	279,107
Contingent consideration liabilities, current portion	77,618	—
Accrued insurance, current portion	69,307	56,552
Income and franchise taxes payable	58,353	13,094
Unearned revenues, current portion	33,192	40,083
Sales and use taxes payable	28,721	35,736
Other accrued expenses	107,413	103,402
Accounts payable and accrued expenses	\$ 1,489,559	\$ 1,314,520

8. DEBT OBLIGATIONS:

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

	December 31,	
	2019	2018
Borrowings under senior secured credit facility	\$ 1,346,290	\$ 1,070,299
Other long-term debt	13,275	1,523
Finance leases	957	934
Total long-term debt obligations	1,360,522	1,072,756
Less — Current maturities of long-term debt	68,327	32,224
Total long-term debt obligations, net of current maturities	\$ 1,292,195	\$ 1,040,532

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

	December 31,	
	2019	2018
Short-term debt	\$ 6,542	\$ 33,422
Current maturities of long-term debt	68,327	32,224
Current maturities of long-term debt and short-term debt	\$ 74,869	\$ 65,646

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Senior Secured Credit Facility

Quanta has a credit agreement with various lenders that provides for (i) a \$2.14 billion revolving credit facility and (ii) a term loan facility with term loans in the aggregate initial principal amount of \$1.29 billion. 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, from time to time, upon receipt of additional commitments from new or existing lenders by up to an additional (i) \$400.0 million plus (ii) an additional amount that is unlimited so long as the Incremental Leverage Ratio Requirement (as defined in the credit agreement) is satisfied at the time of such increase. The Incremental Leverage Ratio Requirement requires, among other things, after giving pro forma effect to such increase and the use of proceeds therefrom, compliance with the credit agreement's financial covenants as of the most recent fiscal quarter end for which financial statements were required to be delivered and that Quanta's Consolidated Leverage Ratio (as defined below) does not exceed 2.5 to 1.0, subject to the conditions specified in the credit agreement.

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 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 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, including 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.

Quanta borrowed \$600.0 million under the term loan facility in October 2018 and \$687.5 million under the term loan facility in September 2019 and used the majority of such proceeds to repay outstanding revolving loans under the credit agreement. As of December 31, 2019, Quanta had \$1.35 billion of borrowings outstanding under the credit agreement, which included \$1.24 billion borrowed under term loans and \$104.9 million of outstanding revolving loans. Of the total outstanding borrowings, \$1.25 billion were denominated in U.S. dollars, \$61.6 million were denominated in Canadian dollars and \$39.3 million were denominated in Australian dollars. Quanta also had \$383.8 million of letters of credit issued under the revolving credit facility, of which \$252.6 million were denominated in U.S. dollars and \$131.2 million were denominated in currencies other than the U.S. dollar, primarily Canadian and Australian dollars. The remaining \$1.65 billion of available commitments under the revolving credit facility was available for loans or issuing new letters of credit.

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

	Year Ended December 31,		
	2019	2018	2017
Maximum amount outstanding under the credit facility during the period	\$ 2,051,714	\$ 1,300,401	\$ 917,895
Average daily amount outstanding under the credit facility	\$ 1,553,499	\$ 914,012	\$ 613,130
Weighted-average interest rate	3.8%	3.6%	2.7%

Subsequent to November 19, 2017, 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, 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. From December 18, 2015 through November 19, 2017, interest rates for revolving loans and letter of credit fees were generally consistent with those set forth above, other than the maximum additional interest rates and fee percentages were 0.125% higher.

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 made quarterly principal payments of \$7.5 million on the term loan through September 2019 and, beginning in December 2019, was required to make quarterly principal payments of \$16.1 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

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

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 December 31, 2019, Quanta was in compliance with all of the financial 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 securing the obligations under the credit agreement 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 (including 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.

9. LEASES:

Effective January 1, 2019, Quanta adopted the new lease accounting standard utilizing the transition method that allows recognition of 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 beginning on or 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 SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Quanta primarily leases land, buildings, vehicles, construction equipment and office equipment. As of December 31, 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 to seven years and/or options to terminate. The components of lease costs in the accompanying consolidated statements of operations are as follows (in thousands):

Lease cost	Classification	Year Ended December 31, 2019
Finance lease cost:		
Amortization of lease assets	Depreciation ⁽¹⁾	\$ 1,393
Interest on lease liabilities	Interest expense	64
Operating lease cost	Cost of services and Selling, general and administrative expenses	121,767
Short-term and variable lease cost ⁽²⁾	Cost of services and Selling, general and administrative expenses	837,244
Total lease cost		<u>\$ 960,468</u>

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

⁽²⁾ Short-term lease cost includes both leases and rentals with initial terms of one year or less. Variable lease cost is insignificant and primarily relates to real estate leases and consists of common area maintenance charges, real estate taxes, insurance and other variable costs.

For the years ended December 31, 2018 and 2017, rent expense related to operating leases was \$309.7 million and \$276.2 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 and variable lease cost for the year ended December 31, 2019 in the table above.

Additionally, Quanta has entered into lease arrangements for real property and facilities with certain related parties, typically an employee of Quanta who is the former owner of a business acquired by Quanta that continues to utilize the leased premises. Lease amounts are analyzed by a third party at the time of acquisition to ensure they are at market rates. These lease agreements generally have remaining lease terms of up to five years and may include renewal options. Related party lease expense was \$16.7 million, \$14.0 million and \$12.3 million for the years ended December 31, 2019, 2018 and 2017.

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

Lease type	Classification	December 31, 2019
Assets:		
Operating lease right-of-use assets	Operating lease right-of-use assets	\$ 284,369
Finance lease assets	Property and equipment, net of accumulated depreciation	1,043
Total lease assets		<u>\$ 285,412</u>
Liabilities:		
Current:		
Operating	Current portion of operating lease liabilities	\$ 92,475
Finance	Current maturities of long-term debt and short-term debt	440
Non-current:		
Operating	Operating lease liabilities, net of current portion	196,521
Finance	Long-term debt, net of current maturities	517
Total lease liabilities		<u>\$ 289,953</u>

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. When rental purchase options are exercised and a substantive benefit is deemed to be transferred to a third-party lessor, the transaction is deemed to be a financing transaction for accounting purposes. This results in the recognition of an asset equal to the purchase price being recorded in "Property, plant and equipment, net of accumulated depreciation," and the recognition of a corresponding liability in "Current maturities of long-term debt and short-term debt" and "Long-term debt, net of current maturities." As of December 31, 2019, the assets recorded, net of accumulated depreciation, totaled \$11.8 million.

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

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

	As of December 31, 2019		
	Operating Leases	Finance Leases	Total
2020	\$ 102,848	\$ 469	\$ 103,317
2021	75,982	325	76,307
2022	51,295	127	51,422
2023	34,153	60	34,213
2024	17,952	21	17,973
Thereafter	35,019	8	35,027
Total future minimum operating and finance lease payments	317,249	1,010	318,259
Less imputed interest	(28,253)	(53)	(28,306)
Total lease liabilities	<u>\$ 288,996</u>	<u>\$ 957</u>	<u>\$ 289,953</u>

Future minimum lease payments for short-term leases, which are not recorded in the consolidated balance sheets due to our accounting policy election, were \$19.9 million as of December 31, 2019. Month-to-month rental expense associated primarily with certain equipment rentals is excluded from these amounts because Quanta is unable to accurately predict future rental amounts.

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 Under Prior Accounting Standard
2019	\$ 124,530
2020	81,189
2021	55,827
2022	34,337
2023	21,450
Thereafter	37,217
Total minimum lease payments	<u>\$ 354,550</u>

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

	As of December 31, 2019
Weighted average remaining lease term (in years):	
Operating leases	4.35
Finance leases	2.66
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 December 31, 2019, the maximum guaranteed residual value of this equipment was \$769.8 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 December 31, 2019, Quanta had additional operating lease obligations that had not yet commenced of \$10.3 million. These operating leases will commence in 2020 with lease terms of one year to seven years.

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

10. INCOME

TAXES:

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 its future consolidated balance sheets, statements of operations and statements of comprehensive income. For example, the Tax Act significantly revised the U.S. corporate tax regime, which, among other things, resulted in a reduction of Quanta's future effective tax rate and a remeasurement of its deferred tax assets and liabilities. Quanta completed its analysis of the Tax Act within the prescribed one-year measurement period, and adjustments during the measurement period were included within "Net income" as an adjustment to "Provision for income taxes" on Quanta's consolidated statement of operations. The measurement period adjustments are described in further detail below.

The Tax Act lowered the U.S. federal corporate income tax rate from 35% to 21% effective January 1, 2018, required companies to pay a one-time transition tax on earnings of certain foreign subsidiaries, limited and eliminated certain tax deductions and created new taxes on certain foreign-sourced earnings. Consequently, for the year ended December 31, 2017, Quanta recorded one-time net tax benefits of \$70.1 million, including \$85.3 million of tax benefits associated with the remeasurement of U.S. federal deferred tax assets and liabilities based on expected future rates (generally 21%), partially offset by an estimated \$15.2 million transition tax on post-1986 earnings and profits of certain foreign subsidiaries. This net tax benefit was Quanta's provisional estimate, utilizing the information that was available at the time. As permitted by and in accordance with the guidance issued by the SEC and codified by the FASB, during the year ended December 31, 2018, Quanta recorded \$6.3 million of additional benefit related to the remeasurement of U.S. federal deferred tax assets and liabilities, as the estimate of such amount was revised in connection with the preparation and filing of Quanta's 2017 income tax returns. Additionally, as a result of the tax reform regulations issued during 2018, Quanta recorded a valuation allowance of \$43.5 million against foreign tax credits. As of December 31, 2018, Quanta completed its accounting for the tax effects of the enactment of the Tax Act; however, additional regulations could have a material impact on Quanta's effective tax rate in future periods. Further, to the extent there are settlements of certain foreign unrecognized tax benefits in future periods, changes to the estimates associated with the transition tax may be required.

The Tax Act also imposed a tax on global intangible low-taxed income (GILTI). Quanta analyzed the impacts of GILTI and made an accounting policy election in the fourth quarter of 2018 whereby it determined that such income will be recognized in the period earned and deferred taxes for basis differences that may reverse as GILTI will not be recognized in future years.

For the year ended December 31, 2017, an additional one-time tax benefit of \$26.7 million was recorded in connection with entity restructuring and recapitalization transactions completed by Quanta, which was partially offset by an \$8.5 million decrease in the production activity-related tax benefit that resulted from acceleration of certain deductions into 2017. During the year ended December 31, 2018, the estimated benefit associated with entity restructuring and recapitalization transactions was decreased by \$1.8 million based on actual 2017 earnings and profit balances.

The components of income before income taxes were as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Income before income taxes:			
Domestic	\$ 550,676	\$ 318,635	\$ 291,031
Foreign	21,611	139,031	62,726
Total	<u>\$ 572,287</u>	<u>\$ 457,666</u>	<u>\$ 353,757</u>

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The components of the provision for income taxes were as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Current:			
Federal	\$ 121,214	\$ 50,306	\$ 44,695
State	35,329	26,170	301
Foreign	16,848	23,209	22,666
Total current tax provision	173,391	99,685	67,662
Deferred:			
Federal	7,379	62,482	(36,915)
State	(1,776)	(4,152)	14,951
Foreign	(13,522)	3,644	(10,166)
Total deferred tax provision (benefit)	(7,919)	61,974	(32,130)
Total provision for income taxes	\$ 165,472	\$ 161,659	\$ 35,532

The actual income tax provision differed from the income tax provision computed by applying the U.S. federal statutory corporate rate to income before provision for income taxes as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Provision at the statutory rate	\$ 120,180	\$ 96,110	\$ 123,815
Increases (decreases) resulting from —			
Valuation allowance on deferred tax assets	35,761	48,862	1,455
State taxes	23,399	18,504	17,920
Employee per diems, meals and entertainment	13,817	11,949	13,605
Foreign taxes	(21,565)	(2,621)	(18,413)
Contingency reserves, net	(3,173)	(2,619)	3,651
Stock-based compensation	(1,863)	(1,449)	(5,095)
Taxes on unincorporated joint ventures	(930)	(578)	(1,354)
Tax Cuts and Jobs Act	—	(6,295)	(70,129)
Entity restructuring and recapitalization efforts	—	(4,424)	(26,668)
Production activity deduction	—	—	(1,504)
Other	(154)	4,220	(1,751)
Total provision for income taxes	\$ 165,472	\$ 161,659	\$ 35,532

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Deferred income taxes result from temporary differences in the recognition of income and expenses for financial reporting purposes and tax purposes. The tax effects of these temporary differences, representing deferred tax assets and liabilities, result principally from the following (in thousands):

	December 31,	
	2019	2018
Deferred income tax liabilities:		
Property and equipment	\$ (208,751)	\$ (178,090)
Leased assets	(73,861)	—
Goodwill	(72,244)	(60,305)
Customer holdbacks	(11,882)	(44,173)
Other intangibles	(11,384)	(21,034)
Other book/tax accounting method differences	(1,801)	(7,247)
Total deferred income tax liabilities	<u>(379,923)</u>	<u>(310,849)</u>
Deferred income tax assets:		
Net operating loss carryforwards	78,310	52,406
Lease liabilities	74,044	—
Tax credits	46,621	43,572
Accruals and reserves	36,372	28,594
Stock and incentive compensation	26,045	20,627
Deferred profit on investment in unconsolidated affiliates	—	16,021
Deferred tax benefits on unrecognized tax positions	16,542	13,278
Other	3,933	1,776
Subtotal	<u>281,867</u>	<u>176,274</u>
Valuation allowance	(104,178)	(67,601)
Total deferred income tax assets	<u>177,689</u>	<u>108,673</u>
Total net deferred income tax liabilities	<u>\$ (202,234)</u>	<u>\$ (202,176)</u>

The net deferred income tax assets and liabilities were comprised of the following in the accompanying consolidated balance sheets (in thousands):

	December 31,	
	2019	2018
Deferred income taxes:		
Assets	\$ 12,545	\$ 16,939
Liabilities	(214,779)	(219,115)
Total net deferred income tax liabilities	<u>\$ (202,234)</u>	<u>\$ (202,176)</u>

The valuation allowance for deferred income tax assets at December 31, 2019, 2018 and 2017 was \$104.2 million, \$67.6 million and \$19.3 million. These valuation allowances relate to state and foreign net operating loss carryforwards and foreign tax credits. The net change in the total valuation allowance for each of the years ended December 31, 2019, 2018 and 2017 was an increase of \$36.6 million, an increase of \$48.3 million and an increase of \$4.3 million. The valuation allowance was established primarily as a result of uncertainty in Quanta's outlook as to the amount and character of future taxable income in particular tax jurisdictions. Quanta believes it is more likely than not that it will realize the benefit of its deferred tax assets net of existing valuation allowances.

At December 31, 2019, Quanta had state and foreign net operating loss carryforwards, the tax effect of which was \$83.6 million. These carryforwards will expire as follows: 2020, \$1.3 million; 2021, \$0.5 million; 2022, \$0.2 million; 2023, \$27.0 million; 2024, \$0.9 million; and \$53.7 million thereafter. A valuation allowance of \$52.0 million has been recorded against certain foreign and state net operating loss carryforwards.

Quanta generally does not provide for taxes related to undistributed earnings of its foreign subsidiaries because such earnings either would not be taxable when remitted or they are considered to be indefinitely reinvested. Quanta could also be subject to

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

additional foreign withholding taxes if it were to repatriate cash that is indefinitely reinvested outside the United States, but it does not expect such amount to be material.

A reconciliation of unrecognized tax benefit balances is as follows (in thousands):

	December 31,		
	2019	2018	2017
Balance at beginning of year	\$ 41,110	\$ 36,229	\$ 35,240
Additions based on tax positions related to the current year	7,708	6,231	7,040
Additions for tax positions of prior years	1,200	9,377	3,372
Reductions for tax positions of prior years	—	(2,870)	(1,171)
Reductions for audit settlements	(3,205)	—	—
Reductions resulting from a lapse of the applicable statute of limitations periods	(5,935)	(7,857)	(8,252)
Balance at end of year	<u>\$ 40,878</u>	<u>\$ 41,110</u>	<u>\$ 36,229</u>

For the year ended December 31, 2019, the \$9.1 million of aggregate reductions were primarily due to the favorable settlement of certain non-U.S. income tax obligations of an acquired business and the expiration of U.S. state income tax statute of limitations. For the year ended December 31, 2018, the \$7.9 million reduction was primarily due to the expiration of certain federal and state statute of limitations periods for the 2014 tax year. For the year ended December 31, 2017, the \$8.3 million reduction was primarily due to the expiration of certain federal and state statute of limitations periods for the 2010 through 2012 tax years.

The balances of unrecognized tax benefits, the amount of related interest and penalties and what Quanta believes to be the range of reasonably possible changes in the next 12 months are as follows (in thousands):

	December 31,		
	2019	2018	2017
Unrecognized tax benefits	\$ 40,878	\$ 41,110	\$ 36,229
Portion that, if recognized, would reduce tax expense and effective tax rate	40,695	40,977	35,561
Accrued interest on unrecognized tax benefits	6,240	5,459	5,368
Accrued penalties on unrecognized tax benefits	14	631	631
Reasonably possible reduction to the balance of unrecognized tax benefits in succeeding 12 months	\$0 to \$6,268	\$0 to \$9,541	\$0 to \$13,655
Portion that, if recognized, would reduce tax expense and effective tax rate	\$0 to \$5,693	\$0 to \$8,224	\$0 to \$12,483

Quanta classifies interest and penalties within the provision for income taxes. Quanta recognized interest expense of \$0.8 million, interest expense of \$0.1 million and interest income of \$0.2 million in the provision for income taxes for the years ended December 31, 2019, 2018 and 2017.

Quanta and certain subsidiaries remain under examination by various U.S. state and Canadian and other foreign tax authorities for multiple periods. Quanta does not consider any state in which it does business to be a major tax jurisdiction.

11. EQUITY:

Exchangeable Shares

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 could be exchanged at the option of the holders for Quanta common stock on a one-for-one basis. All holders of exchangeable shares had rights equivalent to Quanta common stockholders with respect to dividends and other economic rights. During 2019 and 2017, 0.4 million and 6.0 million exchangeable shares were exchanged for Quanta common stock. As of December 31, 2019, a nominal amount of exchangeable shares remained outstanding, and subsequent to December 31, 2019, all remaining exchangeable shares were exchanged for Quanta common stock.

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Treasury Stock

General

Treasury stock is recorded at cost. Under Delaware 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 0.5 million shares of Quanta common stock during the year ended December 31, 2019, which had a market value of \$17.4 million, 0.4 million shares of Quanta common stock during the year ended December 31, 2018, which had a market value of \$15.2 million, and 0.5 million shares of Quanta common stock during the year ended December 31, 2017, which had a market value of \$18.6 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 stock-based awards are not issued until settlement of the award. Upon settlement of the deferred stock-based 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 during the years ended December 31, 2019, 2018 and 2017 were \$3.0 million, \$2.5 million and \$2.6 million.

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):

Year ended:	Shares	Amount
December 31, 2019	376	\$ 11,954
December 31, 2018	13,917	\$ 451,290
December 31, 2017	1,382	\$ 50,000

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 years ended December 31, 2019, 2018 and 2017, cash payments related to stock repurchases were \$20.1 million, \$443.2 million and \$50.0 million.

As of December 31, 2019, \$286.8 million remained 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

QUANTA SERVICES, INC. AND SUBSIDIARIES
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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 consolidated balance sheets. Net income attributable to the other participants in the amounts of \$4.8 million, \$2.7 million and \$3.2 million for the years ended December 31, 2019, 2018 and 2017 have been accounted for as a reduction of net income in deriving "Net income attributable to common stock" in Quanta's consolidated statements of operations.

The carrying amount of the investments in VIEs held by Quanta was \$12.0 million and \$9.6 million at December 31, 2019 and 2018. The carrying amount of investments held by the non-controlling interests in these VIEs at December 31, 2019 and 2018 was \$3.5 million and \$1.3 million. During the years ended December 31, 2019, 2018 and 2017, net distributions to non-controlling interests were \$2.5 million, \$4.0 million and \$2.0 million. During the years ended December 31, 2018 and 2017, notes receivable of \$1.4 million and \$0.5 million were discharged for a joint venture partner, which were accounted for as a "Buyout of a non-controlling interest" in the accompanying consolidated statements of equity. There were no other changes in equity as a result of transfers to/from the non-controlling interests during the years ended December 31, 2019, 2018 or 2017. See Note 14 for further disclosures related to Quanta's joint venture arrangements.

Dividends

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

Declaration Date	Record Date	Payment Date	Dividend Per Share	Dividends Declared
December 11, 2019	January 2, 2020	January 16, 2020	\$ 0.05	\$ 7,371
August 28, 2019	October 1, 2019	October 15, 2019	\$ 0.04	\$ 5,564
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 that are equal to the cash dividend payable on account of the underlying Quanta common stock. Holders of exchangeable shares of certain Canadian subsidiaries of Quanta were paid a cash dividend per exchangeable share equal to the cash dividend per share paid to Quanta common shareholders on the payment dates. Holders of RSUs awarded under the Quanta Services, Inc. 2019 Omnibus Equity Incentive Plan (the 2019 Plan) and holders of unearned and unvested PSUs awarded under the 2011 Plan or the 2019 Plan receive cash dividend equivalent payments only to the extent such RSUs and PSUs become earned and/or vest. Additionally, cash dividend equivalent payments related to certain stock-based 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 8, Quanta's credit agreement restricts the payment of cash dividends unless certain conditions are met.

**12. STOCK-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. Subject to certain adjustments, the maximum number of shares available for issuance under the 2019 Plan is 7,466,592 shares, plus any shares underlying share-settling awards previously awarded pursuant to the 2011 Plan that are ultimately forfeited, canceled, expired or settled in cash after May 23, 2019. 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. 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.

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RSUs to be Settled in Common Stock

During the years ended December 31, 2019, 2018 and 2017, Quanta granted 2.1 million, 1.6 million and 1.5 million shares of RSUs to be settled in common stock under the 2011 Plan and the 2019 Plan, with weighted average grant date fair values of \$35.62, \$34.37 and \$37.06 per share, respectively. 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 equivalent payments in an amount equal to any cash dividend payable on account of the underlying Quanta common stock; however, payment of such amounts is not made until the RSUs vest, such that the dividend equivalent payments are subject to forfeiture.

During the years ended December 31, 2019, 2018 and 2017, vesting activity consisted of 1.3 million, 1.4 million and 1.5 million RSUs settled in common stock with an approximate fair value at the time of vesting of \$48.7 million, \$48.6 million and \$55.6 million, respectively.

A summary of the activity for RSUs to be settled in common stock for the year ended December 31, 2019 is as follows (shares in thousands):

	Shares	Weighted Average Grant Date Fair Value (Per share)
Unvested at December 31, 2018	2,634	\$33.50
Granted	2,142	\$35.62
Vested	(1,349)	\$32.22
Forfeited	(162)	\$35.20
Unvested at December 31, 2019	3,265	\$35.34

During the years ended December 31, 2019, 2018 and 2017, Quanta recognized \$45.5 million, \$43.9 million and \$41.0 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 December 31, 2019, there was \$63.7 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 2.61 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 the Compensation Committee of Quanta's Board of Directors, 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 the Compensation Committee of Quanta's Board of Directors. Holders of PSUs are entitled to cash dividend equivalent payments in an amount equal to any cash dividend payable on account of the underlying Quanta common stock; however, payment of such amounts is not made until the PSUs vest, such that the dividend equivalent payments are subject to forfeiture.

During the years ended December 31, 2019, 2018 and 2017, Quanta granted 0.4 million, 0.3 million and 0.3 million of PSUs to be settled in common stock under the 2011 Plan and the 2019 Plan, with a weighted average grant date fair value of \$15.49, \$12.24 and \$17.63 per unit. The grant date fair values for awards of PSUs granted in the years ended December 31, 2019, 2018 and 2017, which included market-based metrics, were determined using a Monte Carlo simulation valuation methodology using the following key inputs:

	2019	2018	2017
Valuation date price based on March 8, 2019, February 28, 2018 and March 22, 2017 closing stock prices of Quanta common stock	\$35.19	\$34.44	\$36.31
Expected volatility	25%	34%	36%
Risk-free interest rate	2.43%	2.39%	1.46%
Term in years	2.81	2.84	2.78

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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 completed portion of the three-year period 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 completed portion of the three-year period multiplied by the fair value of the total number of shares of common stock that Quanta anticipates will be issued. During the years ended December 31, 2019, 2018 and 2017, Quanta recognized \$6.5 million, \$8.6 million and \$5.4 million in compensation expense associated with PSUs. Such expense is recorded in "Selling, general and administrative expenses." During the year ended December 31, 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 each of the years ended December 31, 2018 and 2017, 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 stock 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 \$5.9 million, \$5.0 million and \$8.1 million for the years ended December 31, 2019, 2018 and 2017. 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 \$5.4 million, \$5.9 million and \$8.6 million to settle liabilities related to cash-settled RSUs in the years ended December 31, 2019, 2018 and 2017. Accrued liabilities for the estimated earned value of outstanding RSUs to be settled in cash were \$4.3 million and \$3.4 million at December 31, 2019 and 2018.

13. EMPLOYEE BENEFIT

PLANS:

Unions' Multiemployer Pension Plans

Quanta contributes to a number of multiemployer defined benefit pension plans under the terms of collective bargaining agreements with various unions that represent certain of Quanta's employees. Approximately 35% of our employees at December 31, 2019 were covered by collective bargaining agreements. Quanta's multiemployer pension plan contribution rates generally are specified in the collective bargaining agreements (usually on an annual basis), and contributions are made to the plans on a "pay-as-you-go" basis based on its union employee payrolls. Quanta may also have additional liabilities imposed by law as a result of its 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 pension plan if the employer withdraws or is deemed to have withdrawn from the plan or the plan is terminated or experiences a mass withdrawal.

The Pension Protection Act of 2006 (PPA) also added special funding and operational rules generally applicable to plan years beginning after 2007 for multiemployer plans in the United States that are classified as "endangered," "seriously endangered" or "critical" status based on multiple factors (including, for example, the plan's funded percentage, cash flow position and whether it 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 (which may take the form of 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 cannot be reasonably estimated due to uncertainty regarding the amount of future work involving covered union employees, future contribution levels and possible surcharges on plan contributions.

The following table summarizes plan information relating to Quanta's participation in multiemployer defined benefit pension plans, including company contributions for the last three years, the status under the PPA of the plans and whether the plans are subject to a funding improvement or rehabilitation plan or contribution surcharges. The most recent PPA zone status available in 2019 and 2018 relates to the plans' fiscal year-ends in 2018 and 2017. Forms 5500 were not yet available for the plan years ending in 2019. The PPA zone status is based on information that Quanta received from the respective plans, as well as publicly available information on the U.S. Department of Labor website, and is certified by the plan's actuary. Although multiple factors or tests may result in red zone or yellow zone status, plans in the red zone generally are less than 65 percent funded, plans in the yellow zone

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generally are less than 80 percent funded, and plans in the green zone generally are at least 80 percent funded. Under the PPA, red zone plans are classified as “critical” status, yellow zone plans are classified as “endangered” status and green zone plans are classified as neither “endangered” nor “critical” status. The “Subject to Financial Improvement/ Rehabilitation Plan” column indicates plans for which a financial improvement plan or a rehabilitation plan is either pending or has been implemented. The last column lists the expiration dates of Quanta’s collective-bargaining agreements to which the plans are subject. Total contributions to these plans correspond to the number of union employees employed at any given time and the plans in which they participate and vary depending upon the location and number of ongoing projects at a given time and the need for union resources in connection with such projects. Information has been presented separately for individually significant plans, based on PPA funding status classification, and in the aggregate for all other plans.

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Fund	Employee Identification Number/ Pension Plan Number	PPA Zone Status		Subject to Financial Improvement/ Rehabilitation Plan	Contributions (in thousands)			Sur-charge Imposed	Expiration Date of Collective Bargaining Agreement
		2019	2018		2019	2018	2017		
National Electrical Benefit Fund	53-0181657-001	Green	Green	No	\$ 44,414	\$ 35,399	\$ 29,161	No	Varies through May 2022
Central Pension Fund of the IUOE & Participating Employers	36-6052390-001	Green	Green	No	11,638	9,246	12,176	No	Varies through December 2020
Pipeline Industry Pension Fund	73-6146433-001	Green	Green	No	9,376	10,132	13,585	No	Varies through May 2020
Excavators Union Local 731 Pension Fund	13-1809825-001	Green	N/A	No	6,697	—	—	No	April 2022
Eighth District Electrical Pension Fund	84-6100393-001	Green	Green	No	5,939	3,332	3,208	No	Varies through December 2020
Operating Engineers Local 324 Pension Fund	38-1900637-001	Red	Red	Yes	4,315	2,310	1,969	Yes	Varies through December 2020
Local 697 IBEW and Electrical Industry Pension Fund	51-6133048-001	Green	Green	No	3,717	2,656	1,127	No	May 2020
Teamsters National Pipe Line Pension Plan	46-1102851-001	Green	Green	No	3,039	3,318	3,602	No	Varies through December 2020
Laborers Pension Trust Fund for Northern California	94-6277608-001	Green	Yellow	Yes	2,823	3,652	3,387	Yes	Varies through May 2020
Locals 302 & 612 of the IUOE-Employers Construction Industry Retirement Plan	91-6028571-001	Green	Green	No	2,392	2,620	2,194	No	May 2021
Laborers National Pension Fund	75-1280827-001	Red	Red	Yes	1,910	2,051	3,049	Yes	Varies through December 2020
West Virginia Laborers Pension Trust Fund	55-6026775-001	Green	Green	No	1,693	3,321	509	No	May 2020
Michigan Laborers' Pension Plan	38-6233976-001	Yellow	Yellow	No	1,491	1,061	—	No	May 2020
International Union of Operating Engineers Local 132 Pension Fund	55-6015364-001	Green	Green	No	1,289	3,367	222	No	May 2020
Laborers District Council of W PA Pension Fund	25-6135576-001	Yellow	Red	Yes	1,194	1,029	418	Yes	May 2020
Plumbers and Pipefitters National Pension Fund	52-6152779-001	Yellow	Yellow	No	1,162	2,734	1,273	No	Varies through March 2021
OE Pension Trust Fund	94-6090764-001	Yellow	Red	Yes	956	1,922	1,703	Yes	Varies through June 2020
Employer-Teamsters Local Nos 175 & 505 Pension Trust Fund	55-6021850-001	Red	Red	Yes	530	1,209	50	Yes	May 2020
Alaska Electrical Pension Plan	92-6005171-001	Green	Green	No	66	2,287	2,143	No	December 2019
All other plans - U.S.					23,105	26,027	21,029		
All other plans - Canada (1)					6,451	8,518	9,277		
Total contributions					<u>\$ 134,197</u>	<u>\$ 126,191</u>	<u>\$ 110,082</u>		

(1) Multiemployer defined benefit pension plans in Canada are not subject to the reporting requirements under the PPA. Accordingly, certain information was not publicly available.

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Quanta's contributions to the following individually significant plans were five percent or more of the total contributions to these plans for the periods indicated based on the Forms 5500 for these plans for the years ended December 31, 2018 and 2017. Forms 5500 were not yet available for these plans for the year ended December 31, 2019.

Pension Fund	Plan Years in which Quanta Contributions Were Five Percent or More of Total Plan Contributions
Pipeline Industry Pension Fund	2018 and 2017
Eighth District Electrical Pension Fund	2018 and 2017
Teamsters National Pipe Line Pension Plan	2018 and 2017
Local 697 I.B.E.W. and Electrical Industry Pension Fund	2018 and 2017
National Electrical Benefit Fund	2018 and 2017
West Virginia Laborers Pension Trust Fund	2018
I.B.E.W. Local 456 Pension Plan	2018
Local Union No. 9 I.B.E.W. and Outside Contractors Pension Fund	2018
International Union of Operating Engineers Local 132 Pension Fund	2018
Employer-Teamsters Local Nos 175 & 505 Pension Trust Fund	2018
Local Union 400 I.B.E.W. Pension Plan	2017
IBEW 648 Pension Plan	2017
Laborers Local 57 Industrial Pension Plan	2017

In addition to the contributions made to multiemployer defined benefit pension plans noted above, Quanta also contributed to multiemployer defined contribution or other benefit plans on behalf of certain union employees. Contributions to union multiemployer defined contribution or other benefit plans by Quanta were \$201.3 million, \$174.7 million and \$171.4 million for the years ended December 31, 2019, 2018 and 2017. Total contributions made to all of these multiemployer plans for the years ended December 31, 2019, 2018 and 2017 correspond to the number of union employees employed at any given time and the plans in which they participate and vary depending upon the location and number of ongoing projects at a given time and the need for union resources in connection with such projects.

Quanta 401(k) Plan

Quanta maintains a 401(k) plan pursuant to which employees who are not provided retirement benefits through a collective bargaining agreement may make contributions through a payroll deduction. Quanta makes matching cash contributions of 100% of each employee's contribution up to 3% of that employee's salary and 50% of each employee's contribution between 3% and 6% of such employee's salary, up to the maximum amount permitted by law. Contributions to the 401(k) plan by Quanta were \$41.4 million, \$33.4 million and \$26.3 million for the years ended December 31, 2019, 2018 and 2017.

Deferred Compensation Plans

Quanta maintains nonqualified deferred compensation plans pursuant to which non-employee directors and certain key employees, independent contractors and consultants may defer receipt of some or all of their cash compensation and/or settlement of their stock-based awards, subject to certain limitations. These plans are unfunded and unsecured compensation arrangements. Individuals participating in these plans may allocate deferred cash amounts among a group of notional accounts that mirror the gains and losses of various investment alternatives. Generally, participants receive distributions of deferred balances based on predetermined payout schedules or other events.

The plan covering key employees provides for employer matching contributions for certain officers and employees whose benefits under the 401(k) plan are limited by federal tax law. Quanta may also make discretionary employer contributions to that plan. Matching contributions vest immediately, and discretionary employer contributions are subject to a vesting schedule determined at the time of the contribution, provided that vesting accelerates upon a change in control or the participant's death or retirement. All matching and discretionary employer contributions, whether vested or not, are forfeited upon a participant's termination of employment for cause or upon the participant engaging in competition with Quanta or any of its affiliates.

Quanta made contributions to the eligible participants' accounts under the deferred compensation plans of \$1.1 million during each of the years ended December 31, 2019, 2018 and 2017. At December 31, 2019 and 2018, obligations under these plans, including amounts contributed by Quanta, were \$47.3 million and \$33.4 million and were included in "Insurance and other non-current liabilities" in the accompanying consolidated balance sheets. Quanta maintains investments to provide for future obligations

related to these deferred compensation plans. At December 31, 2019 and 2018, these investments were primarily comprised of company-owned life insurance policies, had fair market values of \$45.8 million and \$33.5 million and were included in "Other assets, net" in the accompanying consolidated balance sheets.

14. COMMITMENTS AND CONTINGENCIES:

Investments in Affiliates and Other Entities

As described in Notes 2 and 11, 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 December 31, 2019, Quanta had contributed \$20.0 million to this partnership in connection with certain investments. However, in October 2019, due to certain management changes at the registered investment adviser, the partnership entered into a 180-day period during which the investors and Quanta will evaluate the partnership. During this period, the partnership may make additional investments with the consent of the investors, and, at the end of the period, the investors or Quanta may elect to end the investment period for any future investments or dissolve the partnership. Quanta will continue to collect management fees during this period, and this event is not expected to materially affect Quanta's consolidated business, financial position, results of operations or cash flows.

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 December 31, 2019 and 2018, the estimated fair value of Quanta's contingent consideration liabilities totaled \$84.2 million and \$70.8 million.

Committed Expenditures

Quanta has capital commitments for the expansion of its equipment fleet in order to accommodate manufacturer lead times on certain types of vehicles. As of December 31, 2019, Quanta had \$30.5 million of production orders with expected delivery dates in 2020. 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, negligence or gross negligence and/or property damages, wage and hour and other 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

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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 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 its intention 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 to Redes.

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, wrongfully executed the advance payment bonds and the performance bonds, and 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 but not limited to (i) repayment of the amounts collected by PRONATEL under the advance payment bonds and the performance bonds; (ii) payment of amounts owed for work completed by Redes under the contracts; (iii) lost income in connection with Redes' future operation and maintenance of the networks; and (iv) 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 costs of 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 completion of the physical transfer of the networks (as completed at the time of the contract terminations) to PRONATEL, which is required upon termination of the contracts and commenced in October 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,

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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.

As of December 31, 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. The net receivable from PRONATEL is included in "Other assets, net" in the accompanying consolidated balance sheet as of December 31, 2019.

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 (now Energy Transfer LP), 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, which represents the maximum liability for liquidated damages pursuant to the contract terms. 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 damages related to the warranty defects and for a declaratory judgment related to the liquidated damages claim, subsequently claiming approximately \$59 million in damages related to a portion of the alleged warranty defects. Quanta is continuing to evaluate the claimed warranty defects and, if they exist, the appropriate remedy. At this time, Quanta disputes the extent of the alleged defects or has not been able to substantiate them.

As of December 31, 2019, Quanta had recorded an accrual with respect to this matter based on the current estimated amount of probable loss. However, based on the information currently available, Quanta cannot estimate the range of additional reasonably possible loss in connection with this matter. If, upon final resolution of this matter, Quanta is unsuccessful, any liquidated damages or warranty defect damages in excess of Quanta's current loss accrual 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

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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.

Hallen Acquisition Assumed Liability. In August 2019, in connection with the acquisition of Hallen, Quanta assumed certain contingent liabilities associated with a March 2014 natural gas-fed explosion and fire in the Manhattan borough of New York City, New York. The incident resulted in, among other things, loss of life, personal injury and the destruction of two buildings and other property damage. After investigation, the National Transportation Safety Board determined that the probable cause of the incident was the failure of certain natural gas infrastructure installed by Consolidated Edison, Inc. (Con Ed) and the failure of certain sewer infrastructure maintained by the City of New York. Pursuant to a contract with Con Ed, Hallen had performed certain work related to such natural gas infrastructure and agreed to indemnify Con Ed for certain claims, liabilities and costs associated with its work. Numerous lawsuits are pending in New York state courts related to the incident, which generally name Con Ed, the City of New York and Hallen as defendants. These lawsuits are at various preliminary stages and generally seek unspecified damages and, in some cases, punitive damages, for wrongful death, personal injury, property damage and business interruption.

Hallen's liabilities associated with this matter are expected to be covered under applicable insurance policies or contractual remedies negotiated by Quanta with the former owners of Hallen. As of December 31, 2019, Quanta had not recorded an accrual for any probable and estimable loss related to this matter. However, the ultimate amount of liability in connection with this matter remains subject to uncertainties associated with pending litigation, including, among other things, the apportionment of liability among the defendants and the likelihood and amount of potential damages claims. As a result, this matter could result in a loss that is in excess of, or not covered by, such insurance or contractual remedies, which could have a material adverse effect on Quanta's consolidated results of operations and cash flows.

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. 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. For example, 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 \$165 million of billed and unbilled receivables. Subsequent to the bankruptcy filing, the bankruptcy court approved the assumption by PG&E of certain contracts with subsidiaries of Quanta, pursuant to which PG&E had paid \$122 million of Quanta's pre-petition receivables as of December 31, 2019. Quanta also sold \$36 million of its pre-petition receivables to a third party during the three months ended December 31, 2019 in exchange for cash consideration of \$34 million, subject to certain claim disallowance provisions, the occurrence of which could result in Quanta's obligation to repurchase some or all of the pre-petition receivables sold. Quanta expects the remaining \$7 million of pre-petition receivables to be sold or ultimately collected in the bankruptcy proceeding. However, the ultimate outcome of the bankruptcy proceeding is uncertain, and our belief regarding any future sale or 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 these assumptions change, the amount collected could be 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.

No customer represented 10% or more of Quanta's consolidated revenues for the years ended December 31, 2019, 2018 or 2017, and no customer represented 10% or more of Quanta's consolidated net receivable position at December 31, 2019 or 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 December 31, 2019 and 2018, the gross amount accrued for insurance claims totaled \$287.6 million and \$272.9 million, with \$212.9 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 December 31, 2019 and 2018 were \$35.1 million and \$56.5 million, of which \$0.3 million and \$0.3 million are included in "Prepaid expenses and other current assets" and \$34.8 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 worked with its customer to mitigate the impact of the incident and to complete the project. As required by the contract, the customer procured certain insurance coverage for the project, with Quanta's subsidiaries as additional insureds, and Quanta worked collaboratively with the customer to pursue insurance claims with the customer's insurance carriers. In December 2019 and January 2020, Quanta reached settlement and release agreements with the insurers and the customer, respectively, resulting in total insurance recoveries related to this matter of \$95.5 million. Quanta expects to receive the remaining insurance proceeds in the first quarter of 2020.

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 December 31, 2019, Quanta had \$383.8 million in outstanding letters of credit 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 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. These bonds provide a guarantee 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, and Quanta must reimburse the surety for any expenses or outlays it incurs. Under Quanta's underwriting, continuing indemnity and security agreement with its sureties, 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 related to the exercise of certain advance payment and performance bonds in connection with a project located in Peru, as set forth in *Legal Proceedings* above. 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 a project 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 December 31, 2019, the total amount of the outstanding performance bonds was estimated to be approximately \$2.9 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

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

bond generally extinguishes concurrently with the expiration of its related contractual obligation. The estimated cost to complete these bonded projects was approximately \$1.1 billion as of December 31, 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 contractor 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, or indemnity claims. Quanta is not aware of any claims under any of these guarantees that are material, except as set forth in *Legal Proceedings* above. 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 stock-based 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 and arbitration 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 PPA 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, if any, that Quanta may be obligated to contribute to these plans cannot be reasonably estimated due to uncertainty regarding the amount of future work involving covered union employees, future contribution levels and possible surcharges on plan contributions.

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 or is deemed to have withdrawn 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, Quanta has been subject to significant withdrawal liabilities in the past, including in connection with its withdrawal from the Central States, Southeast and Southwest Areas Pension Plan, and may be subject to material withdrawal liabilities in the future, which could adversely affect its 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 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 business or consolidated financial condition, results of operations and cash flows. Quanta is currently in the process of pursuing indemnity for certain pre-acquisition obligations associated with non-U.S. payroll taxes of a business acquired by Quanta in 2013. As of December 31, 2019, Quanta had recorded a \$4.7 million payroll tax liability and a related indemnification asset.

Additionally, Quanta has obtained certain indemnification rights from the former owners of Hallen with respect to contingent liabilities that were assumed in connection with the acquisition, as set forth in *Legal Proceedings — Hallen Acquisition Assumed Liability* above.

15. 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.

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

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

	Year Ended December 31,		
	2019	2018	2017
Revenues:			
Electric Power Infrastructure Services	\$ 7,121,837	\$ 6,415,562	\$ 5,599,836
Pipeline and Industrial Infrastructure Services	4,990,316	4,755,861	3,866,642
Consolidated revenues	<u>\$ 12,112,153</u>	<u>\$ 11,171,423</u>	<u>\$ 9,466,478</u>
Operating income (loss):			
Electric Power Infrastructure Services	\$ 591,177	\$ 628,286	\$ 518,130
Pipeline and Industrial Infrastructure Services	332,011	204,178	184,083
Corporate and non-allocated costs	(368,314)	(292,195)	(323,364)
Consolidated operating income	<u>\$ 554,874</u>	<u>\$ 540,269</u>	<u>\$ 378,849</u>
Depreciation:			
Electric Power Infrastructure Services	\$ 108,295	\$ 96,300	\$ 91,708
Pipeline and Industrial Infrastructure Services	90,953	89,046	76,355
Corporate and non-allocated costs	18,859	17,173	15,745
Consolidated depreciation	<u>\$ 218,107</u>	<u>\$ 202,519</u>	<u>\$ 183,808</u>

Quanta has concluded to pursue an orderly exit of its operations in Latin America. Electric Power Infrastructure Services revenues for the years ended December 31, 2019, 2018 and 2017 included \$63.2 million, \$96.1 million and \$100.4 million related to Latin American operations. Electric Power Infrastructure Services operating income for the years ended December 31, 2019, 2018 and 2017 included \$(85.7) million, \$(8.1) million and \$1.9 million of operating income (loss) related to Latin American operations. Included in the Latin American results for the year ended December 31, 2019 was a \$79.2 million charge associated with the termination of the large telecommunications project in Peru. The charge consisted of a \$48.8 million decrease in revenues and a \$30.4 million increase in cost of services. See Note 14 for additional information involving this matter.

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 2019, 2018, and 2017, Quanta derived \$1.92 billion, \$2.60 billion and \$2.48 billion of its revenues from foreign operations. Of Quanta's foreign revenues, 75%, 76% and 79% were earned in Canada during the years ended December 31, 2019, 2018 and 2017. In addition, Quanta held property and equipment of \$314.1 million and \$304.0 million in foreign countries, primarily Canada, as of December 31, 2019 and 2018.

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

16. 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):

	Year Ended December 31,		
	2019	2018	2017
Accounts and notes receivable	\$ (214,580)	\$ (475,919)	\$ (425,313)
Contract assets	(12,317)	(92,838)	15,999
Inventories	52,168	(28,131)	14,110
Prepaid expenses and other current assets	(60,475)	(40,187)	(32,079)
Accounts payable and accrued expenses and other non-current liabilities	39,419	247,897	28,547
Contract liabilities	174,230	(23)	139,114
Other, net ⁽¹⁾	(135,250)	(11,332)	17,858
Net change in operating assets and liabilities, net of non-cash transactions	<u>\$ (156,805)</u>	<u>\$ (400,533)</u>	<u>\$ (241,764)</u>

⁽¹⁾The amount for the year ended December 31, 2019 includes 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 — Peru Project Dispute* in Note 14 for additional information on this matter.

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

	December 31,			
	2019	2018	2017	2016
Cash and cash equivalents	\$ 164,798	\$ 78,687	\$ 138,285	\$ 112,183
Restricted cash included in "Prepaid expenses and other current assets"	4,026	3,286	5,106	1,709
Restricted cash included in "Other assets, net"	921	1,283	384	518
Total cash, cash equivalents, and restricted cash reported in the statements of cash flows	<u>\$ 169,745</u>	<u>\$ 83,256</u>	<u>\$ 143,775</u>	<u>\$ 114,410</u>

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):

	Year Ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	\$ (119,357)
Operating cash flows from finance leases	\$ (64)
Financing cash flows from finance leases	\$ (1,835)
Lease assets obtained in exchange for lease liabilities:	
Operating leases	\$ 96,550
Finance leases	\$ 691

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

	Year Ended December 31,		
	2019	2018	2017
Cash (paid) received during the period for -			
Interest paid	\$ (64,805)	\$ (34,935)	\$ (19,373)
Income taxes paid	\$ (116,467)	\$ (112,895)	\$ (112,335)
Income tax refunds	\$ 7,174	\$ 5,209	\$ 9,845

QUANTA SERVICES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

During the year ended December 31, 2018, Quanta entered into a non-cash transaction whereby Quanta accepted title to a marine industrial property appraised at \$6.4 million in exchange for a construction barge. During the year ended December 31, 2017, Quanta entered into a non-cash transaction whereby Quanta accepted title to a construction barge in satisfaction and discharge of a \$7.1 million note receivable.

17. QUARTERLY FINANCIAL DATA
(UNAUDITED):

The table below sets forth the unaudited consolidated operating results by quarter for the years ended December 31, 2019 and 2018 (in thousands, except per share information).

	For the Three Months Ended			
	March 31,	June 30,	September 30,	December 31,
2019:				
Revenues	\$ 2,807,259	\$ 2,839,199	\$ 3,352,895	\$ 3,112,800
Gross profit	\$ 363,981	\$ 319,505	\$ 473,445	\$ 443,321
Net income	\$ 121,035	\$ 28,459	\$ 137,022	\$ 120,299
Net income attributable to common stock	\$ 120,488	\$ 27,344	\$ 136,068	\$ 118,144
Basic earnings per share attributable to common stock	\$ 0.83	\$ 0.19	\$ 0.93	\$ 0.81
Diluted earnings per share attributable to common stock	\$ 0.82	\$ 0.19	\$ 0.92	\$ 0.80
2018:				
Revenues	\$ 2,417,576	\$ 2,656,348	\$ 2,985,281	\$ 3,112,218
Gross profit	\$ 301,048	\$ 333,371	\$ 425,830	\$ 419,715
Net income	\$ 38,611	\$ 74,706	\$ 124,899	\$ 57,791
Net income attributable to common stock	\$ 37,614	\$ 74,365	\$ 124,551	\$ 56,816
Basic earnings per share attributable to common stock	\$ 0.24	\$ 0.49	\$ 0.82	\$ 0.38
Diluted earnings per share attributable to common stock	\$ 0.24	\$ 0.48	\$ 0.81	\$ 0.38

During the three months ended March 31, 2019, Quanta recorded deferred earnings of \$60.3 million (\$43.9 million after-tax) related to its interest in a limited partnership as further described in Note 2. During the three months ended June 30, 2019, Quanta recorded a \$79.2 million (\$79.2 million after-tax) charge associated with the termination of the telecommunications project in Peru as further described in Note 14. During the three months ended December 31, 2019, Quanta recognized a gain of \$13.0 million (\$20.7 million with associated tax benefits) related to the sale of its interest in the limited partnership described in Note 2.

During the fourth quarters of 2019 and 2018, Quanta recorded asset impairment charges of \$13.9 million (\$10.5 million net of tax) and \$49.4 million (\$36.5 million net of tax) primarily related to the winding down and exit of certain oil-influenced operations and assets. During the fourth quarter of 2018, Quanta also recorded net tax charges of \$36.0 million, as further described in Note 10 and primarily related to Quanta's final assessment of the Tax Act enacted on December 22, 2017 and for which regulations were issued during 2018.

The sum of the individual quarterly earnings per share amounts may not equal year-to-date earnings per share as each period's computation is based on the weighted average number of shares outstanding during the period.

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

There have been no changes in or disagreements with accountants on accounting and financial disclosure within the parameters of Item 304(b) of Regulation S-K.

ITEM 9A. *Controls and Procedures*

Attached as exhibits to this Annual Report on Form 10-K 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 9A. section 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 Annual Report on Form 10-K, 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 Annual 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 December 31, 2019, our disclosure controls and procedures were effective to provide reasonable assurance of achieving their objectives.

Evaluation of Internal Control over Financial Reporting

Management's report on internal control over financial reporting can be found in Item 8. *Financial Statements and Supplementary Data* under the heading *Report of Management* and is incorporated herein by reference. The report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, on the financial statements, and its opinion on the effectiveness of internal control over financial reporting, can also be found in Item 8. *Financial Statements and Supplementary Data* under the heading *Report of Independent Registered Public Accounting Firm* and is incorporated herein by reference.

There has been no change in our internal control over financial reporting that occurred during the quarter ended December 31, 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.

ITEM 9B. *Other Information*

None.

PART III

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

The information required by this Item 10 is incorporated by reference to our definitive proxy statement, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2019 fiscal year.

ITEM 11. *Executive Compensation*

The information required by this Item 11 is incorporated by reference to our definitive proxy statement, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2019 fiscal year.

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

The information required by this Item 12 is incorporated by reference to our definitive proxy statement, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2019 fiscal year.

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

The information required by this Item 13 is incorporated by reference to our definitive proxy statement, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2019 fiscal year.

ITEM 14. *Principal Accounting Fees and Services*

The information required by this Item 14 is incorporated by reference to our definitive proxy statement, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2019 fiscal year.

PART IV

ITEM 15. Exhibits and Financial Statement Schedules

The following financial statements, schedules and exhibits are filed as part of this Annual Report on Form 10-K:

(1) *Consolidated financial statements.* The consolidated financial statements are included in Item 8. *Financial Statements and Supplementary Data* of this Annual Report on Form 10-K.

(2) *Financial statement schedules.* All financial statement schedules are omitted because they are not applicable or the required information is shown in the consolidated financial statements or the notes to the consolidated financial statements in Item 8. *Financial Statements and Supplementary Data* of this Annual Report on Form 10-K.

(3) *Exhibits.*

EXHIBIT INDEX

Exhibit No.	Description
2.1	— Securities Purchase Agreement, dated as of July 20, 2017, by and among Quanta Services, Inc., certain subsidiaries of Quanta Services, Inc., as purchasers, and the General Partners and Limited Partners of Stronghold, Ltd. and Stronghold Specialty, Ltd. (previously filed as Exhibit 2.1 to the Company's Form 10-Q for the quarter ended September 30, 2017 filed November 9, 2017 and incorporated herein by reference)
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)
4.1 [^]	— Description of Quanta Services, Inc.'s Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934
4.2	— Form of Common Stock Certificate (previously filed as Exhibit 4.1 to the Company's Registration Statement on Form S-1/Amendment No. 2 filed February 9, 1998 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)
10.5*	— Quanta Services, Inc. 2011 Omnibus Equity Incentive Plan (previously filed as Exhibit 4.5 to the Company's Form S-8 filed May 20, 2011 and incorporated herein by reference)
10.6*	— Amendment No. 1 to the Quanta Services, Inc. 2011 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.4 to the Company's Form 10-Q for the quarter ended June 30, 2013 filed August 9, 2013 and incorporated herein by reference)
10.7*	— Amendment No. 2 to the Quanta Services, Inc. 2011 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.1 to the Company's Form 10-Q for the quarter ended June 30, 2016 filed August 8, 2016 and incorporated herein by reference)
10.8*	— Amendment No. 3 to the Quanta Services, Inc. 2011 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.4 to the Company's Form 8-K filed May 30, 2018 and incorporated herein by reference)
10.9*	— Amendment No. 4 to the Quanta Services, Inc. 2011 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.6 to the Company's Form 8-K filed March 14, 2019 and incorporated herein by reference)
10.10*	— Form of Restricted Stock Unit Award Agreement for awards to employees/consultants pursuant to the 2011 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.2 to the Company's Form 8-K filed March 8, 2013 and incorporated herein by reference)
10.11*	— Form of Restricted Stock Unit Award Agreement for awards to non-employee directors pursuant to the 2011 Omnibus Equity Incentive Plan (Settled in Stock Unless Cash Settlement Elected) (previously filed as Exhibit 10.1 to the Company's Form 10-Q for the quarter ended June 30, 2015 filed August 10, 2015 and incorporated herein by reference)
10.12*	— Form of Performance Unit Award Agreement for awards to employees/consultants pursuant to the 2011 Omnibus Equity Incentive Plan (previously filed as Exhibit 10.2 to the Company's Form 8-K filed March 7, 2014 and incorporated herein by reference)
10.13*	— Employment Agreement dated September 1, 2016, effective as of March 14, 2016, by and between Quanta Services, Inc. and Earl C. Austin, Jr. (previously filed as Exhibit 10.1 to the Company's Form 8-K filed September 8, 2016 and incorporated herein by reference)
10.14*	— Employment Agreement dated March 29, 2012, effective as of May 17, 2012, by and between Quanta Services, Inc. and Derrick A. Jensen (previously filed as Exhibit 10.2 to the Company's Form 8-K filed April 2, 2012 and incorporated herein by reference)

Exhibit No.	Description
10.15*	Employment Agreement dated September 12, 2017, effective as of January 1, 2017, by and between Quanta Services, Inc. and Paul C. Gregory (previously filed as Exhibit 10.1 to the Company's Form 10-Q for the quarter ended September 30, 2017 filed November 9, 2017 and incorporated herein by reference)
10.16*	Employment Agreement dated September 12, 2017, effective as of May 15, 2017, by and between Quanta Services, Inc. and Donald C. Wayne (previously filed as Exhibit 10.2 to the Company's Form 10-Q for the quarter ended September 30, 2017 filed November 9, 2017 and incorporated herein by reference)
10.17*	— Quanta Services, Inc. 2017 Annual Incentive Plan – Corporate Employees, Quanta Services, Inc. 2017 Senior Leadership Long-Term Incentive Plan and Quanta Services, Inc. 2017 Discretionary Plan – All Employees (previously filed as Exhibit 10.1 to the Company's Form 8-K filed May 26, 2017 and incorporated herein by reference)
10.18*	Quanta Services, Inc. Term Sheet for 2018 Annual Incentive Plan - Corporate Employees, Quanta Services, Inc. Terms Sheet for 2018 Senior Leadership Long-Term Incentive Plan and Quanta Services, Inc. Term Sheet for 2018 Discretionary Plan - All Employees (previously filed as Exhibit 10.1 to the Company's Form 8-K filed March 2, 2018 and incorporated herein by reference)
10.19*	— Quanta Services, Inc. Term Sheet for 2019 Annual Incentive Plan – Corporate Employees, Quanta Services, Inc. Term Sheet for 2019 Senior Leadership Long-Term Incentive Plan and Quanta Services, Inc. Term Sheet for 2019 Discretionary Plan – All Employees (previously filed as Exhibit 10.1 to the Company's Form 8-K filed March 14, 2019 and incorporated herein by reference)
10.20*	— Director Compensation Summary effective as of the 2017 Annual Meeting of the Board of Directors (previously filed as Exhibit 10.24 to the Company's Form 10-K for the year ended December 31, 2016 filed March 1, 2017 and incorporated herein by reference)
10.21*^	— Director Compensation Summary effective as of the 2020 Annual Meeting of the Board of Directors
10.22*	— Quanta Services, Inc. Non-Employee Director Deferred Compensation Plan dated effective January 1, 2017 (previously filed as Exhibit 10.25 to the Company's Form 10-K for the year ended December 31, 2016 filed March 1, 2017 and incorporated herein by reference)
10.23*	— Quanta Services, Inc. Nonqualified Deferred Compensation Plan, as restated effective January 1, 2017, including the Nonqualified Deferred Compensation Plan Adoption Agreement (previously filed as Exhibit 10.27 to the Company's Form 10-K for the year ended December 31, 2016 filed March 1, 2017 and incorporated herein by reference)
10.24*	— Form of Amended and Restated Indemnity Agreement (previously filed as Exhibit 10.1 to the Company's Form 8-K filed December 11, 2018 and incorporated herein by reference)
10.25	— Fourth Amended and Restated Credit Agreement, dated as of December 18, 2015, among Quanta Services, Inc. and certain subsidiaries of Quanta Services, Inc., as Borrowers, certain subsidiaries of Quanta Services, Inc. identified therein as Guarantors, Bank of America, N.A., as Administrative Agent, Domestic Swing Line Lender and an L/C Issuer, and the other Lenders party thereto (previously filed as Exhibit 99.1 to the Company's Form 8-K filed December 23, 2015 and incorporated herein by reference)
10.26	— First Amendment to Fourth Amended and Restated Credit Agreement dated as of June 27, 2016, among Quanta Services, Inc. and certain subsidiaries of Quanta Services, Inc., as Borrowers, certain subsidiaries of Quanta Services, Inc. identified therein as Guarantors, Bank of America, N.A., as Administrative Agent, Domestic Swing Line Lender and an L/C Issuer, and the other Lenders party thereto (previously filed as Exhibit 10.2 to the Company's Form 10-Q filed August 8, 2016 and incorporated herein by reference)
10.27	— Second Amendment to Fourth Amended and Restated Credit Agreement, dated as of October 31, 2017, among Quanta Services, Inc. and certain subsidiaries of Quanta Services, Inc., as Borrowers, certain subsidiaries of Quanta Services, Inc. identified therein as Guarantors, the lenders party thereto, Bank of America, N.A., as Administrative Agent, and the Swing Line Lenders and L/C Issuers party thereto (previously filed as Exhibit 10.1 to the Company's Form 8-K filed November 6, 2017 and incorporated herein by reference)
10.28	— Third Amendment to Fourth Amended and Restated Credit Agreement, dated as of August 24, 2018, among Quanta Services, Inc. and certain subsidiaries of Quanta Services, Inc., as Borrowers, certain subsidiaries of Quanta Services, Inc. identified therein as Guarantors, the lenders party thereto, Bank of America, N.A., as Administrative Agent, and the Swing Line Lenders and L/C Issuers party thereto (previously filed as Exhibit 10.1 to the Company's Form 8-K filed October 15, 2018 and incorporated herein by reference)
10.29	— Fourth Amendment to Fourth Amended and Restated Credit Agreement, dated as of October 10, 2018, among Quanta Services, Inc. and certain subsidiaries of Quanta Services, Inc., as Borrowers, certain subsidiaries of Quanta Services, Inc. identified therein as Guarantors, the lenders party thereto, Bank of America, N.A., as Administrative Agent, and the Swing Line Lenders and L/C Issuers party thereto (previously filed as Exhibit 10.2 to the Company's Form 8-K filed October 15, 2018 and incorporated herein by reference)

Exhibit No.	Description
10.30	— <u>Incremental Term Loan Amendment and Fifth Amendment to Fourth Amended and Restated Credit Agreement and Omnibus Amendment to Loan Documents, dated as of September 6, 2019, among Quanta Services, Inc. and certain subsidiaries of Quanta Services, Inc., as Borrowers, certain subsidiaries of Quanta Services, Inc. identified therein as Guarantors, the lenders party thereto, Bank of America, N.A., as Administrative Agent, and the L/C Issuers party thereto (previously filed as Exhibit 10.6 to the Company's Form 8-K filed September 9, 2019 and incorporated herein by reference)</u>
10.31	— <u>Incremental Revolving Credit Increase Agreement and Lender Joinder Agreement, dated as of September 12, 2019, among Quanta Services, Inc. and certain subsidiaries of Quanta Services, Inc., as Borrowers, certain subsidiaries of Quanta Services, Inc. identified therein as Guarantors, BNP Paribas, the Swing Line Lenders and L/C Issuers party thereto and Bank of America, N.A., as Administrative Agent (previously filed as Exhibit 10.4 to the Company's Form 10-Q filed November 1, 2019 and incorporated herein by reference)</u>
10.32	— <u>Fourth Amended and Restated Security Agreement, dated as of December 18, 2015, among Quanta Services, Inc., the other Debtors identified therein, and Bank of America, N.A., as Administrative Agent for the ratable benefit of the Secured Parties (previously filed as Exhibit 99.2 to the Company's Form 8-K filed December 23, 2015 and incorporated herein by reference)</u>
10.33	— <u>Fourth Amended and Restated Pledge Agreement, dated as of December 18, 2015, among Quanta Services, Inc., the other Pledgors identified therein, and Bank of America, N.A., as Administrative Agent for the ratable benefit of the Secured Parties (previously filed as Exhibit 99.3 to the Company's Form 8-K filed December 23, 2015 and incorporated herein by reference)</u>
10.34	— <u>Underwriting, Continuing Indemnity and Security Agreement dated as of March 14, 2005 by Quanta Services, Inc. and the subsidiaries and affiliates of Quanta Services, Inc. identified therein, in favor of Federal Insurance Company (previously filed as Exhibit 10.1 to the Company's Form 8-K filed March 16, 2005 and incorporated herein by reference)</u>
10.35	— <u>Intercreditor Agreement dated March 14, 2005 by and between Federal Insurance Company and Bank of America, N.A., as Lender Agent on behalf of the other Lender Parties (under the Company's Credit Agreement, as amended) and agreed to by Quanta Services, Inc. and the subsidiaries and affiliates of Quanta Services, Inc. identified therein (previously filed as Exhibit 10.2 to the Company's Form 8-K filed March 16, 2005 and incorporated herein by reference)</u>
10.36	— <u>First Amendment to Intercreditor Agreement dated December 3, 2012 by and between Federal Insurance Company and Bank of America, N.A., as Lender Agent on behalf of the other Lender Parties (under the Company's Credit Agreement, as amended) and agreed to by Quanta Services, Inc. and the subsidiaries and affiliates of Quanta Services, Inc. identified therein (previously filed as Exhibit 10.7 to the Company's Form 10-Q for the quarter ended June 30, 2013 filed August 9, 2013 and incorporated herein by reference)</u>
10.37	— <u>Second Amendment to Intercreditor Agreement dated August 4, 2015 by and between Federal Insurance Company; American Home Assurance Company, National Union Fire Insurance Company of Pittsburgh, PA and The Insurance Company of the State of Pennsylvania; Liberty Mutual Insurance Company, Liberty Mutual Fire Insurance Company and Safeco Insurance Company of America, and Bank of America, N.A., as Lender Agent on behalf of the other Lender Parties (under the Company's Credit Agreement, as amended), and agreed to by Quanta Services, Inc. and the subsidiaries and affiliates of Quanta Services, Inc. identified therein (previously filed as Exhibit 10.1 to the Company's Form 10-Q for the quarter ended June 30, 2018 filed August 7, 2018 and incorporated herein by reference)</u>
10.38	— <u>Joinder Agreement and Amendment to Underwriting, Continuing Indemnity and Security Agreement dated as of November 28, 2006, among American Home Assurance Company, National Union Fire Insurance Company of Pittsburgh, Pa., The Insurance Company of the State of Pennsylvania, Federal Insurance Company, Quanta Services, Inc., and the other Indemnitors identified therein (previously filed as Exhibit 99.1 to the Company's Form 8-K filed December 4, 2006 and incorporated herein by reference)</u>
10.39	— <u>Second Amendment to Underwriting, Continuing Indemnity and Security Agreement dated as of January 9, 2008, among American Home Assurance Company, National Union Fire Insurance Company of Pittsburgh, Pa., The Insurance Company of the State of Pennsylvania, Federal Insurance Company, Quanta Services, Inc., and the other Indemnitors identified therein (previously filed as Exhibit 10.34 to the Company's Form 10-K for the year ended December 31, 2007 filed February 29, 2008 and incorporated herein by reference)</u>

Exhibit No.	Description
10.40	— Joinder Agreement and Third Amendment to Underwriting, Continuing Indemnity and Security Agreement dated as of December 19, 2008, among American Home Assurance Company, National Union Fire Insurance Company of Pittsburgh, Pa., The Insurance Company of the State of Pennsylvania, Federal Insurance Company, Quanta Services, Inc., and the other Indemnitors identified therein (previously filed as Exhibit 10.30 to the Company's Form 10-K for the year ended December 31, 2011 filed February 29, 2012 and incorporated herein by reference)
10.41	— Joinder Agreement and Fourth Amendment to Underwriting, Continuing Indemnity and Security Agreement dated as of March 31, 2009, among American Home Assurance Company, National Union Fire Insurance Company of Pittsburgh, Pa., The Insurance Company of the State of Pennsylvania, Liberty Mutual Insurance Company, Liberty Mutual Fire Insurance Company, Safeco Insurance Company of America, Federal Insurance Company, Quanta Services, Inc., and the other Indemnitors identified therein (previously filed as Exhibit 99.1 to the Company's Form 8-K filed April 1, 2009 and incorporated herein by reference)
10.42	— Joinder Agreement and Fifth Amendment to Underwriting, Continuing Indemnity and Security Agreement dated as of May 17, 2012, among Federal Insurance Company, Liberty Mutual Insurance Company, Liberty Mutual Fire Insurance Company, Safeco Insurance Company of America, American Home Assurance Company, National Union Fire Insurance Company of Pittsburgh, PA, The Insurance Company of the State of Pennsylvania, Quanta Services, Inc., and the other Indemnitors identified therein (previously filed as Exhibit 10.2 to the Company's Form 10-Q for the quarter ended June 30, 2012 filed August 8, 2012 and incorporated herein by reference)
10.43	— Sixth Amendment to Underwriting, Continuing Indemnity and Security Agreement dated as of December 3, 2012, among Federal Insurance Company, American Home Assurance Company, National Union Fire Insurance Company of Pittsburgh, PA, The Insurance Company of the State of Pennsylvania, Liberty Mutual Insurance Company, Liberty Mutual Fire Insurance Company, Safeco Insurance Company of America, Quanta Services, Inc., and the other Indemnitors identified therein (previously filed as Exhibit 10.32 to the Company's Form 10-K for the year ended December 31, 2012 filed March 1, 2013 and incorporated herein by reference)
10.44	— Seventh Amendment to Underwriting, Continuing Indemnity and Security Agreement dated as of August 4, 2015, among Federal Insurance Company, American Home Assurance Company, National Union Fire Insurance Company of Pittsburgh, PA and The Insurance Company of the State of Pennsylvania; Liberty Mutual Insurance Company, Liberty Mutual Fire Insurance Company and Safeco Insurance Company of America; Quanta Services, Inc., the other Indemnitors identified therein; and the Stallone Companies (previously filed as Exhibit 10.2 to the Company's Form 10-O for the quarter ended June 30, 2018 filed August 7, 2018 and incorporated herein by reference)
21.1 [^]	— Subsidiaries
23.1 [^]	— Consent of PricewaterhouseCoopers LLP
31.1 [^]	— Certification of Chief Executive Officer pursuant to Rule 13a-14(a) of the Exchange Act, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2 [^]	— Certification of Chief Financial Officer pursuant to Rule 13a-14(a) of the Exchange Act, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1 [†]	— Certification of Chief Executive Officer and Chief Financial Officer pursuant to Rule 13a-14(b) of the Exchange Act and 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS [^]	— The following financial statements from the Company's Annual Report on Form 10-K for the year ended December 31, 2019, formatted in Inline XBRL: (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Operations, (iii) Consolidated Statements of Comprehensive Income, (iv) Consolidated Statements of Cash Flows, (v) Consolidated Statements of Equity and (vi) Notes to Consolidated Financial Statements, tagged as blocks of text and with detailed tags
104 [*]	— The cover page from the Company's Annual Report on Form 10-K for the year ended December 31, 2019, formatted in Inline XBRL (included as Exhibit 101)

* Management contracts or compensatory plans or arrangements

[^] Filed with this Annual Report on Form 10-K

[†] Furnished with this Annual Report on Form 10-K

ITEM 16. Form 10-K Summary.

Not applicable.

Signature	Title
/s/ EARL C. AUSTIN, JR. Earl C. Austin, Jr.	President, Chief Executive Officer, Chief Operating Officer and Director (Principal Executive Officer)
/s/ DERRICK A. JENSEN Derrick A. Jensen	Chief Financial Officer (Principal Financial Officer)
/s/ JERRY K. LEMON Jerry K. Lemon	Chief Accounting Officer (Principal Accounting Officer)
/s/ DOYLE N. BENEBY Doyle N. Beneby	Director
/s/ J. MICHAL CONAWAY J. Michal Conaway	Director
/s/ VINCENT D. FOSTER Vincent D. Foster	Director
/s/ BERNARD FRIED Bernard Fried	Director
/s/ WORTHING F. JACKMAN Worthing F. Jackman	Director
/s/ DAVID M. McCLANAHAN David M. McClanahan	Chairman of the Board of Directors
/s/ MARGARET B. SHANNON Margaret B. Shannon	Director
/s/ PAT WOOD, III Pat Wood, III	Director
/s/ MARTHA B. WYRSCH Martha B. Wyrsh	Director

Description of Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934

As of December 31, 2019, Quanta Services, Inc., a Delaware corporation (“Quanta,” “we,” “our” and “us”), had one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”): common stock, par value \$0.00001 per share (“common stock”). The following contains a description of our common stock, as well as certain related additional information. This description is a summary only and does not purport to be complete. We encourage you to read the complete text of Quanta’s restated certificate of incorporation (the “certificate of incorporation”) and amended and restated bylaws (the “bylaws”), which we have filed or incorporated by reference as exhibits to Quanta’s Annual Report on Form 10-K. References to “stockholders” refer to holders of our common stock, unless the context otherwise requires.

General

Under our certificate of incorporation, we have the authority to issue 610,000,000 shares of capital stock, consisting of 600,000,000 shares of our common stock and 10,000,000 shares of preferred stock, par value \$0.00001 per share (“preferred stock”). As of December 31, 2019, there were 142,324,318 shares of our common stock and no shares of our preferred stock issued and outstanding. All of the outstanding shares of common stock are fully paid and nonassessable.

Voting Rights

Our stockholders are entitled to one vote for each share of common stock held on all matters voted upon by stockholders, including the election of directors.

Under our bylaws, when a quorum is present at any meeting of our stockholders, the affirmative vote of a majority of the votes cast affirmatively or negatively on a matter will be the act of the stockholders, unless the question is one upon which by express provision of law, our certificate of incorporation, or our bylaws, a different vote is required or unless under the rules and regulations of any stock exchange applicable to us or pursuant to any regulation applicable to us or our securities, a different vote is provided, in which case such express provision will govern and control the decision of such question.

Under our bylaws, in connection with an election of directors, each nominee for election in an uncontested election is elected by the vote of the majority of votes cast with respect to such director at any meeting of our stockholders at which a quorum is present, meaning that the number of shares voted for such director must exceed the number of shares voted against such director; provided, however, that in all elections other than uncontested elections, directors will be elected by a plurality of the votes cast at any meeting of the stockholders. If directors are to be elected by a plurality of the votes cast, stockholders will not be permitted to vote against a nominee. Holders of our common stock have no right to cumulate their votes in an election of directors.

Dividend Rights

Subject to the preferred rights of the holders of shares of any class or series of our preferred stock, holders of our common stock are entitled to receive out of our funds legally available therefor, such dividends (payable in cash, stock or otherwise) as Quanta’s board of directors (the “board of directors”) may from time to time determine, payable to stockholders of record on such dates. The declaration and amount of future dividends is at the discretion of our board of directors and will depend on, among

other factors, our financial condition, results of operations, cash flows, current and anticipated expansion plans, requirements under Delaware law and other factors that our board of directors may deem relevant.

Liquidation Rights

Our stockholders are entitled to share equally and ratably in our net assets upon a liquidation or dissolution after the payment or provision for all liabilities, subject to any preferential liquidation rights of any preferred stock that at the time may be outstanding.

No Preemptive, Conversion or Redemption Rights

Our stockholders have no preemptive, subscription, conversion or redemption rights, and are not subject to further calls or assessments by us. There are no sinking fund provisions applicable to our common stock.

Listing

Our common stock is traded on the New York Stock Exchange under the symbol "PWR."

Effects of Certain Provisions of Our Certificate of Incorporation and Bylaws and Delaware Law

Our certificate of incorporation, our bylaws and Delaware law contain provisions that may deter or render more difficult proposals to acquire control of Quanta, including proposals a stockholder might consider to be in his or her best interest, impede or delay a change in membership of the board of directors and make removal of our management more difficult.

Action by Stockholders Without a Meeting

Our certificate of incorporation provides that any action to be taken by our stockholders must be effected at an annual or special meeting and may not be effected by any consent in writing of such stockholders.

Special Meetings of Stockholders

Our certificate of incorporation and bylaws provide that special meetings of stockholders may be called at any time only by the chairman of the board of directors and shall be called within ten days after receipt of the written request of the board of directors, pursuant to a resolution of a majority of the board of directors to call a special meeting. Holders of our common stock do not have the right to call a special meeting of stockholders. The business transacted at a special meeting of stockholders is confined to the purpose stated in the notice of the meeting.

Advance Notice Provisions

Our bylaws provide that proposals and director nominations made by a stockholder to be voted upon at any annual meeting or special meeting of the stockholders may be considered only if such proposal or director nomination is properly brought before such meeting. In order for any matter, to be considered properly brought before such meeting, a stockholder must comply with certain requirements regarding advance notice to us.

Generally, in the case of an annual meeting, stockholders must deliver to the Secretary of Quanta a written notice between 90 and 120 days before the anniversary date of our immediately preceding annual meeting of the stockholders. In the case of an

annual meeting that is more than 30 days before or more than 30 days after such anniversary date, or in the event that no annual meeting was held in the preceding year, stockholders must deliver such notice between 90 and 120 days prior to such annual meeting or within 10 days following the day on which public announcement of the date of such meeting is first made by us. In no event will the adjournment of an annual meeting, or postponement of an annual meeting for which notice was given, or the public announcement of such adjournment or postponement, commence a new time period for any stockholder to give notice.

To be in proper form, the notice must include, among other things, the name and address of the stockholder, certain information regarding the shares owned by the stockholder, a brief description of the business desired to be brought by the stockholder at the meeting, the text of the proposal or business, the reasons for conducting such business at the meeting and any material interest in such business of the stockholder and the beneficial owner, if any, on whose behalf the proposal is made. To nominate directors, the notice must include, as to each person whom the stockholder proposes to nominate for election or re-election as a director, all information relating to such person that would be required to be disclosed in solicitations of proxies for election of directors in an election contest, or is otherwise required, in each case pursuant to Regulation 14A under the Exchange Act, as well as representations regarding whether a director nominee is a party to any agreement with respect to voting or compensation or that might limit such director nominee's exercise of fiduciary duties, among other things. Additionally, the notice must include such other information about the stockholder, each proposal and nominee as required by the Securities and Exchange Commission.

Director nominations and stockholder proposals that are late or that do not include all required information may be rejected. This could prevent stockholders from bringing certain matters before a meeting, including making nominations for directors.

Vacancies on the Board of Directors

Our bylaws provide that, subject to the rights of the holders of any outstanding series of preferred stock and unless otherwise required by law or resolution of our board of directors, vacancies on the board of directors arising through death, resignation, retirement, disqualification or removal, an increase in the number of directors or otherwise may be filled by a majority of the directors then in office, though less than a quorum, or a successor or successors may be chosen at a special meeting of the stockholders called for that purpose.

Issuance of Preferred Stock

Our certificate of incorporation authorizes up to 10,000,000 shares of preferred stock. Preferred stock may be issued in one or more series as may be determined from time to time by the board of directors, and the board of directors, without further approval of the stockholders, is authorized to fix by resolution or resolutions providing for the issue of each such series the voting powers, designations, preferences, and relative, participating, optional, redemption, conversion, exchange or other special rights qualifications, limitations or restrictions of such series, and the number of shares in each series, to the fullest extent permitted by law. The purpose of authorizing the board of directors to determine these rights, preferences, privileges and restrictions is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, adversely affect the voting power of our then-existing stockholders and, under certain circumstances, make it more difficult for a third party to gain control of Quanta.

Delaware Business Combination Statute

We are a Delaware corporation and are subject to Section 203 of the General Corporation Law of the State of Delaware (the “DGCL”). Section 203 of the DGCL prohibits a “business combination” between a corporation and an “interested stockholder” within three years of the time the stockholder became an interested stockholder, unless:

- prior to such time, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, exclusive of shares owned by directors who are also officers and by certain employee stock plans; or
- at or subsequent to such time, the business combination is approved by the board of directors and authorized at a stockholders’ meeting by at least two-thirds of the outstanding voting stock that is not owned by the interested stockholder.

Generally, a “business combination” includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. Generally, an “interested stockholder” is a person who owns, individually or with or through other persons, 15% or more of the corporation’s outstanding voting stock.

Forum Selection

Our bylaws provide that, unless we consent in writing to the selection of an alternative forum, and to the fullest extent permitted by law, the sole and exclusive forum for certain legal matters will be the Court of Chancery in the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware). This provision applies to (i) any derivative action or proceeding brought on behalf of Quanta, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our present or former directors, officers or employees to Quanta or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the DGCL, (iv) any action asserting a claim arising pursuant to any provision of the certificate of incorporation or bylaws (as either may be amended from time to time), or (v) any action asserting a claim governed by the internal affairs doctrine.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC.



Director Compensation Summary

(to be effective as of the May 2020 Annual Meeting of the Board of Directors)

At every annual meeting of stockholders at which a non-employee director is elected or re-elected, each such elected or re-elected non-employee director shall receive, (i) an annual award of restricted stock units (RSUs) having a value of \$150,000, and (ii) the annual cash retainer(s) set forth below for board membership, committee membership, and board/committee leadership to which such non-employee director is appointed:

	Annual Membership Cash Retainer	Annual Cash Retainer Supplement for Committee Chairmanship
Board of Directors	\$92,500	N/A
Audit Committee	\$15,000	\$20,000
Compensation Committee	\$10,000	\$15,000
Governance and Nominating Committee	\$10,000	\$15,000
Investment Committee	\$10,000	\$15,000

Upon initial appointment to the Board of Directors other than at an annual meeting of stockholders, each such initially appointed non-employee director shall receive, for the period from the appointment through the end of the director service year during which the appointment is made, a pro rata portion of such RSU award and applicable cash retainers.

Upon the appointment of any non-employee director as Chairman of the Board, the non-employee director so appointed shall receive additional annual compensation in the amount of \$180,000, of which 50% shall be payable in cash, and 50% shall be payable in RSUs; provided, however, that any non-employee director so appointed other than immediately following the annual meeting of stockholders shall receive a pro rata portion thereof for the period from the appointment through the end of the director service year.

Unless the director's board service is earlier terminated, restricted stock or RSUs awarded to non-employee directors will vest on June 1st following conclusion of the director service year; provided, however, that subject to the terms of applicable award agreements, unvested restricted stock or RSUs held by (i) any non-employee director who is not nominated for or elected to a new term, including for example, due to a reduction in the size of the Board, age precluding a re-nomination, the identification of a new nominee, or the desire to retire at the end of a term, or (ii) any non-employee director who resigns at Quanta's convenience, including any resignation resulting from the non-employee director's failure to receive a majority of the votes cast in an election for directors as required by Quanta's Bylaws, will vest in full on the earlier of (a) June 1st following conclusion of the director service year or (b) the date of such non-employee director's termination of service. Subject to the terms of applicable award agreements, RSUs will be settled in shares of Quanta common stock, provided that non-employee directors may elect to settle up to 50% of any RSU award in cash if the non-employee director is in compliance with applicable stock ownership guidelines as of the date of settlement of such RSUs and is expected to continue to be in compliance with applicable stock ownership guidelines immediately following such cash settlement of RSUs.

Each non-employee director shall receive a fee for attendance at each meeting of the Board of Directors or any committee in excess of the number of meetings per director service year specified below as follows:

	Fee for Meetings in Excess of the Following Number Per Service Year:	Physical Meeting	Telephonic Meeting
Board of Directors	9	\$2,000	\$1,000
Audit Committee	9	\$1,000	\$500
Compensation Committee	9	\$1,000	\$500
Governance and Nominating Committee	9	\$1,000	\$500
Investment Committee	9	\$1,000	\$500

Directors are reimbursed for reasonable out-of-pocket expenses incurred in attending meetings of the Board of Directors or the committees thereof, and for other expenses reasonably incurred in their capacity as directors of Quanta.

Notwithstanding anything herein to the contrary, directors who also are employees of Quanta or any of its subsidiaries do not receive additional compensation for serving as directors.

Revised as of December 11, 2019, to be effective May 28, 2020.

**QUANTA SERVICES, INC.
SUBSIDIARIES LIST**

The following is a list of the significant subsidiaries of Quanta Services, Inc. showing the place of incorporation or organization and the names under which each subsidiary does business. The names of certain subsidiaries may be omitted if such subsidiaries, considered as a single subsidiary, would not constitute a significant subsidiary.

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
1 Diamond, LLC <i>Cutting Technology - 1 Diamond, LLC</i>	Delaware
1Diamond AS	Norway
618232 Alberta Ltd.	Alberta
8246408 Canada Inc. <i>G-TEK</i> <i>G-Vac</i>	Quebec
Advanced Electric Systems, LLC <i>Advanced Utility Testing & Maintenance, LLC</i> <i>Utility Testing & Maintenance, LLC</i>	Delaware
Alexander Publications, LLC	California
Allteck GP Ltd.	British Columbia
Allteck Limited Partnership	British Columbia
Apprenticeship Programs, Inc.	Idaho
Arcanum Chemicals, LLC	Delaware
Arnett & Burgess Oil Field Construction Limited	Alberta
Arnett & Burgess Pipeliners (Rockies) LLC	Delaware
Arnett & Burgess Pipeliners Ltd.	Alberta
B&N Clearing and Environmental, LLC	Delaware
Banister Pipelines Constructors GP Ltd.	British Columbia
Banister Pipelines Limited Partnership	British Columbia
Brent Woodward, Inc.	Oregon
Brink Constructors, Inc. <i>Brink Constructors, Inc. A Corporation Of South Dakota</i>	South Dakota
Canadian Utility Construction Corp.	Canada
Catalyst Changers Inc.	Alberta
Cat-Spec, Ltd. <i>Cat Spec Limited, LP</i> <i>Cat Spec, Ltd</i> <i>CAT SPEC, Ltd.</i> <i>Cat Spec, Ltd. L.P.</i> <i>Cat Spec, Ltd., LP</i> <i>Cat Spec., Ltd. LP</i> <i>CAT-Spec Limited Partnership</i> <i>Cat-Spec Ltd, LP</i> <i>CAT-SPEC, Limited Partnership</i> <i>CAT-SPEC, Limited Partnership (Regd Name) CAT SPEC, Ltd. (Part Name)</i> <i>Cat-Spec, Ltd (A Domestic limited Partnership)</i> <i>Cat-Spec, Ltd. Limited Partnership</i> <i>Cat-Spec, Ltd., L.P.</i> <i>Cat-Spec, Ltd., LP (Used in VA By: Cat-Spec, Ltd.)</i>	Texas

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
Citadel Industrial Services, Ltd. <i>Citadel Industrial Services, L.P.</i> <i>Citadel Industrial Services, Ltd. Limited Partnership</i> <i>Citadel Industrial Services, Ltd., L.P.</i>	Texas
Coe Drilling Pty Ltd.	Australia
Conam Construction Co.	Texas
Consolidated Power Projects Australia Pty Ltd	Australia
Conti Communications, Inc.	Delaware
Crux Subsurface Canada Ltd.	British Columbia
Crux Subsurface, Inc.	Delaware
Dacon Corporation	Delaware
Dashiell Corporation (f/k/a Dashiell, LLC) <i>Dashiell (DE) Corporation (Dashiell Corporation)</i> <i>Dashiell Corporation DBA Dashiell (DE) Corporation</i> <i>Dacon Corporation</i>	Delaware
Digco Utility Construction, L.P. <i>Digco Utility Construction Limited Partnership</i>	Delaware
DNR Pressure Welding Ltd.	Alberta
Dorado Specialty Services, Ltd. <i>Dorado Specialty Services, L.P.</i> <i>Dorado Specialty Services, Ltd. L.P.</i> <i>Dorado Specialty Services, Ltd. Limited Partnership</i> <i>Dorado Specialty Services, Ltd., L.P.</i>	Texas
EHV Power ULC	British Columbia
Elite Fabrication, Ltd. <i>Elite Fabrication, LP</i>	Texas
Elite Piping & Civil, Ltd. <i>Elite Piping & Civil Limited Partnership</i> <i>Elite Piping & Civil Ltd, L.P.</i> <i>ELITE PIPING & CIVIL, L.P.</i> <i>Elite Piping & Civil, Limited Partnership</i> <i>Elite Piping & Civil, Lp</i> <i>Elite Piping & Civil, Ltd. Limited Partnership</i> <i>Elite Piping & Civil, Ltd., L.P.</i> <i>Elite Piping and Civil, L.P.</i>	Texas
Elite Turnaround Specialists, Ltd. <i>Elite Turnaround Specialists Limited Partnership</i> <i>Elite Turnaround Specialists Limited Lp</i> <i>Elite Turnaround Specialists Limited Partnership</i> <i>Elite Turnaround Specialists Ltd. L.P.</i> <i>Elite Turnaround Specialists, L.p.</i> <i>Elite Turnaround Specialists, Limited Partnership</i> <i>ELITE TURNAROUND SPECIALISTS, LTD</i> <i>Elite Turnaround Specialists, Ltd, Lp</i> <i>Elite Turnaround Specialists, Ltd. Limited Partnership</i> <i>Elite Turnaround Specialists, Ltd., LP</i>	Texas
Energy Consulting Group, LLC	Delaware
Ensco Pty Ltd	Australia
FIC GP, LLC (f/k/a First Infrastructure Capital GP, LLC)	Delaware
Field Personnel Services, LLC	Delaware
First Infrastructure Capital Advisors, LLC	Delaware
First Infrastructure Capital GP, L.P.	Delaware
Five Points Construction Co.	Texas

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
Grid Creative, Inc.	Idaho
Grid Manufacturing Corporation	Idaho
Grid Training Corporation <i>Northwest Lineman Center</i> <i>Northwest Lineman College</i>	Idaho
H.L. Chapman Pipeline Construction, Inc.	Delaware
Haverfield International Incorporated <i>Haverfield Aviation</i> <i>Haverfield Aviation, Inc.</i>	Delaware
Heritage Midstream, LLC	Delaware
Infraestructura ETP de Mexico, S. de R.L. de C.V	Mexico
InfraSource Construction, LLC (f/k/a Infrasource Underground Construction, LLC) <i>Infrasource Iowa Underground, LLC</i> <i>InfraSources Construction, LLC</i> <i>IUC ILLINOIS, LLC</i> <i>IUC Nebraska, LLC</i> <i>QS Mats</i> <i>Trans Tech Electric</i>	Delaware
InfraSource Field Services, LLC	Delaware
InfraSource Services, LLC	Delaware
Integracion Tecnologica del Peru, SAC	Peru
Intermountain Electric, Inc. <i>Grand Electric Inc.</i> <i>IM Electric, Inc.</i> <i>Ime Electric</i> <i>Intermountain Electric, Inc. which will do business in California as: Colorado IM Electric</i> <i>Intermountain Electric, Inc., A Corporation of Colorado</i>	Colorado
IonEarth, LLC	Michigan
Irby Construction Company <i>Irby Construction Company, Inc.</i> <i>Legend Foundation Services</i> <i>Marathon Construction Services</i>	Mississippi
Island Mechanical Corporation	Hawaii
J.C.R. Construction Co., Inc. <i>J.C.R. Utility Construction Co.</i>	New Hampshire
J.W. Didado Electric, LLC	Delaware
JBT Electric, LLC	Texas
Lazy Q Ranch, LLC <i>DE Lazy Q Ranch, LLC</i> <i>(De) Lazy Q Ranch, LLC</i>	Delaware
Lazy Q Training Center, LLC <i>The Lazy Q Lineman School</i>	Delaware
Lex Engineering Ltd.	British Columbia
Lindsey Electric, L.P.	Texas
M. G. Dyess, Inc.	Mississippi
M. J. Electric, LLC <i>Great Lakes Line Builders</i> <i>Iron Mountain M.J. Electric, LLC</i> <i>M. J. Electric, LLC - Iron Mountain</i> <i>M. J. Electric, LLC DBA M. J. Electric Iron Mountain, LLC</i> <i>M. J. ELECTRIC, LLC IRON MOUNTAIN</i> <i>M.J. Electric, LLC DBA M.J. Electric Iron Mountain</i> <i>M.J. Electric, LLC Iron Mountain</i>	Delaware

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
Manuel Bros., Inc.	Delaware
Mears Canada Corp.	Nova Scotia
Mears Equipment Services, LLC <i>Infrasource Of Pa, LLC</i> <i>QPS Global Services</i>	Delaware
Mears Group Pty Ltd	Australia
Mears Group, Inc. <i>De Mears Group</i> <i>De Mears Group, Inc.</i> <i>Enscope</i> <i>Ranger Directional</i>	Delaware
Mears Installation, LLC	Delaware
Mearsmex S. de R.L. de C.V.	Mexico
Mejia Personnel Services, LLC	Texas
Microline Technology Corporation	Michigan
Mid America Energy Services, Inc. (f/k/a Tom Allen Construction Company) <i>TA Construction</i> <i>Tom Allen Construction Company Inc.</i> <i>Tom Allen Construction Company of Delaware</i>	Delaware
MTS Quanta, LLC <i>Mercer Technical Services</i> <i>MTS Field Services</i> <i>MTS Field Services (Richmond Co)</i>	Texas
NACAP Niugini Ltd.	Papua New Guinea
Nacap PNG Limited	Papua New Guinea
Nacap Pty Ltd. (f/k/a Nacap Australia Pty Ltd.)	Australia
NLC CA., Inc.	Idaho
NLC FL., Inc. <i>Northwest Lineman Center</i>	Idaho
NLC ID., Inc. <i>Northwest Lineman College</i>	Idaho
NLC TX., Inc. <i>Northwest Lineman Center</i> <i>Northwest Lineman Training Center</i> <i>Northwest Lineman Training Center, Inc.</i>	Idaho
North Houston Pole Line, L.P. <i>North Houston Pole Line Limited Partnership</i> <i>QUANTA FOUNDATION SERVICES</i>	Texas
Northern Powerline Constructors, Inc. <i>Chatham Electric</i>	Alaska
NorthStar Energy Services, Inc. (f/k/a CAN-FER Utility Services, LLC) <i>NC Northstar Energy Services, Inc</i> <i>Quanta Underground Services</i> <i>Quanta Underground Services (Culpeper Co)</i> <i>Quanta Underground Services (Spotsylvania Co)</i> <i>Quanta Underground Services, Inc.</i>	North Carolina
Northstar Energy Solutions, LLC	Delaware
Nova Constructors LLC	Japan
Nova Constructors LTD	United Kingdom
Nova Equipment Leasing, LLC	Washington

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
Nova Group, Inc. <i>NGI Construction</i> <i>NGI Construction, Inc.</i> <i>NGI Construction, Inc. (FN)</i> <i>Nova Group, Inc</i> <i>Nova Group, Inc (CA)</i> <i>Nova Group, Inc. DBA NGI Construction</i>	California
Nova NextGen Solutions, LLC	Delaware
NPC Energy Services LLC	Alaska
O. J. Pipelines Canada Corporation <i>O.J. Pipelines Canada</i> <i>O.J. Industrial Maintenance</i>	New Brunswick
O. J. Pipelines Canada Limited Partnership	Alberta
One Call Locators Canada Ltd.	Canada
PAR Electrical Contractors, Inc. <i>Computapole</i> <i>Didado Utility Company, Inc.</i> <i>J.W. Didado Electric</i> <i>J.W. Didado Electric, Inc.</i> <i>Longfellow Drilling</i> <i>Riggin & Diggin Line Construction</i> <i>Seaward</i> <i>Seaward Corp</i> <i>Seaward Corporation</i>	Missouri
Par Internacional, S. de R.L. de C.V.	Mexico
Performance Energy Services Guyana, Ltd. (f/k/a Quanta International Holdings III, Ltd.)	British Virgin Islands
Performance Energy Services, L.L.C.	Louisiana
Phasor Engineering Inc.	Alberta
Phoenix North Constructors Inc. (f/k/a DiFazio North Constructors, Inc)	British Columbia
Phoenix Power Group, Inc.	Delaware
Potelco, Inc. <i>Potelco, Incorporated</i>	Washington
Power Delivery Program, Inc.	Idaho
Price Gregory International, Inc.	Delaware
Price Gregory Services, LLC	Delaware
Probst Electric, Inc. <i>Probst Construction, Inc.</i> <i>Advanced Electric Systems</i> <i>Utility Fleet Services</i>	Utah
QEPC Power Solutions, LLC	Delaware
QES GP, LLC	Delaware
QP Energy Services, LLC (f/k/a Quanta-Potelco Electrical Utilities, LLC)	Delaware
QPS Engineering LTD. <i>Quanta Inspection Services</i> <i>Quanta Resource Development</i>	Alberta
QPS Engineering, LLC <i>QPS Engineering PLLC</i> <i>QPS Environmental</i> <i>QPS Global</i> <i>QPS Global Services</i> <i>QPS Global Services (Richmond Ci)</i> <i>QPSE</i>	Delaware

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
QSI Engineering, Inc. (f/k/a Empire Geo-Services, Inc.)	Delaware
QSI Finance (Australia) Pty Ltd.	Australia
QSI Finance (Cayman) Pvt. Ltd.	Cayman Islands
QSI Finance Canada ULC	British Columbia
QSI Finance GP (US) LLC	Delaware
QSI Finance I (Singapore) Pte. Ltd.	Singapore
QSI Finance I (US), LP	Delaware
QSI Finance II (Australia) Pty Ltd.	Australia
QSI Finance II (Lux) S.à r.l	Luxembourg
QSI Finance II (Singapore) Pte. Ltd.	Singapore
QSI Finance III (Canada) ULC	British Columbia
QSI Finance III (Lux) SARL	Luxembourg
QSI Finance IV (Canada) ULC	British Columbia
QSI Finance IX (Canada) Limited Partnership	British Columbia
QSI Finance V (US), L.P.	Delaware
QSI Finance VI (Canada) ULC	British Columbia
QSI Finance VII (Canada) Limited Partnership	British Columbia
QSI Finance VIII (Canada) ULC	British Columbia
QSI Finance X (Canada) ULC	British Columbia
QSI, Inc.	Delaware
QSN Lux Holdings I SCSp	Luxembourg
QSN Lux Holdings II SCSp	Luxembourg
QSN Lux Holdings III SCSp	Luxembourg
QSN Lux Holdings IV SCSp	Luxembourg
QTSL, LLC	Delaware
Quanta APL GP II Ltd.	British Columbia
Quanta Asset Management LLC	Delaware
Quanta Associates, L.P.	Texas
Quanta Aviation Services, LLC	Delaware
Quanta Canada GP ULC	British Columbia
Quanta Canada Holdings III Limited Partnership	British Columbia
Quanta Canada Holdings LP	Alberta
Quanta Canada III GP Ltd.	British Columbia
Quanta Capital GP, LLC	Delaware
Quanta Capital LP, L.P.	Delaware
Quanta Capital Solutions, Inc.	Delaware
Quanta Cares	Texas
Quanta Electric Power Construction Management, Inc.	Nebraska
Quanta Electric Power Construction, LLC <i>QEPC</i>	Delaware
Quanta Electric Power Services West, LLC	Delaware
Quanta Electric Power Services, LLC	Delaware
Quanta Energized Innovations Ltd.	British Columbia
Quanta Energized Services of Canada Ltd.	British Columbia
Quanta Energized Services U.S., LLC	Delaware
Quanta Energy Services, LLC	Delaware

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
Quanta Equipment Company, LLC	Delaware
Quanta Government Solutions, Inc.	Delaware
Quanta Holdings I (Netherlands), B.V.	Netherlands
Quanta Holdings II (Netherlands), B.V.	Netherlands
Quanta Infraestructura de Chile SpA	Chile
Quanta Infrastructure Services, LLC	Delaware
Quanta Infrastructure Services, S. de R.L. de C.V.	Mexico
Quanta Inline Devices, LLC	Texas
Quanta Insurance Company, Inc.	Texas
Quanta International Holdings (US) LLC	Delaware
Quanta International Holdings II, Ltd.	British Virgin Islands
Quanta International Holdings, Ltd.	British Virgin Islands
Quanta International Limited	British Virgin Islands
Quanta Kingsvale LP Ltd.	British Columbia
Quanta Lines Pty Ltd. (f/k/a N.J. Construction Pty Ltd.)	Australia
Quanta Maine Services, LLC	Delaware
Quanta Middle East, LLC	Qatar
Quanta Pipeline Services, Inc. <i>QPS Flint Construction</i> <i>QPS Flint Tank Services</i> <i>QPS Professional Services</i> <i>Quanta Environmental Solutions</i> <i>Quanta EPC Services</i> <i>Quanta Tank Services</i>	Delaware
Quanta Power Australia Pty Ltd	Australia
Quanta Power Generation, Inc.	Delaware
Quanta Power Solutions India Private Limited	India
Quanta Power, Inc.	Delaware
Quanta Services Africa (PTY) Ltd.	South Africa
Quanta Services Australia Pty Ltd.	Australia
Quanta Services Chile SpA	Chile
Quanta Services Colombia S.A.S.	Colombia
Quanta Services Costa Rica, Ltda.	Costa Rica
Quanta Services Guatemala, Ltda.	Guatemala
Quanta Services International Holdings II LP	British Columbia
Quanta Services International Holdings LP	Alberta
Quanta Services Management Partnership, L.P.	Texas
Quanta Services Netherlands B.V.	Netherlands
Quanta Services of Canada Ltd.	British Columbia
Quanta Services Panama, S. de R.L.	Panama
Quanta Services Peru S.A.C.	Peru
Quanta Services Puerto Rico, LLC	Puerto Rico
Quanta Subsurface Canada, Ltd.	British Columbia
Quanta Subsurface, LLC	Delaware
Quanta Technology Canada ULC	British Columbia
Quanta Technology UK Ltd.	United Kingdom
Quanta Technology, LLC <i>Delaware Quanta Technology, LLC</i>	Delaware

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
Quanta Tecnologia do Brasil Ltda.	Brazil
Quanta Telecommunication Services, LLC <i>Quanta Telecom</i> <i>Quanta Telecom Services</i> <i>Quanta Telecommunication Services</i> <i>Quanta Telecommunications Services, LLC</i>	Delaware
Quanta Utility Engineering Services, Inc. (f/k/a Utilimap Corporation) <i>Utility Line Management Services, Inc.</i>	Missouri
Quanta Utility Installation Company, Inc.	Delaware
Quanta Utility Operation, LLC	Delaware
Quanta West, LLC (f/k/a Quanta Services West, LLC)	Delaware
Quantecua Cia. Ltda.	Ecuador
R. R. Cassidy, Inc.	Louisiana
Realtime Engineers, Inc. (f/k/a Infrasource Engineers, Inc.) <i>Infrasource Engineering Company, PC</i>	Delaware
Realtime Utility Engineers, Inc. (f/k/a Infrasource Engineering Company)	Wisconsin
Redes Andinas de Comunicaciones S.R.L.	Peru
RMS Holdings, LLC <i>RMS Holdings, LLC (Delaware)</i> <i>RMS Welding Systems</i> <i>Rms Welding Systems LLC</i> <i>RMS Welding Systems LLC</i> <i>RMS Welding Systems, LLC</i> <i>Rms Welding, LLC</i>	Delaware
Road Bore Corporation	Hawaii
Service Electric Company (f/k/a Dillard Smith Construction Company) <i>P.D.G. Electric</i> <i>Service EC (DE), Inc.</i> <i>Service Electric Company (DE)</i> <i>Service Electric Company of Delaware</i> <i>Service Electric Company, Inc.</i>	Delaware
Servicios de Infraestructura del Peru S.A.C.	Peru
Servicios Par Electric, S. de R.L. de C.V.	Mexico
Southwest Trenching Company, Inc.	Texas
Specialty Tank Services, Ltd. <i>Specialty Tank Services Limited Partnership</i> <i>Specialty Tank Services, L.P.</i> <i>Specialty Tank Services, Limited Partnership</i> <i>Specialty Tank Services, LP</i> <i>Specialty Tank Services, Ltd. (LP)</i> <i>Specialty Tank Services, Ltd. Limited Partnership</i> <i>Specialty Tank Services, Ltd. LP</i> <i>Specialty Tank Services, Ltd., L.P.</i> <i>Specialty Tank Services, Ltd., LP</i> <i>Texas Specialty Tank Services, Ltd. LP</i>	Texas
Stronghold General, LLC	Texas
Stronghold Holdings (BVI) Limited	British Virgin Islands

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
Stronghold Inspection, Ltd. <i>Stronghold Inspection Limited Partnership</i> <i>Stronghold Inspection Ltd, L.P.</i> <i>Stronghold Inspection, L.P.</i> <i>Stronghold Inspection, Limited Partnership</i> <i>Stronghold Inspection, Lp</i> <i>Stronghold Inspection, Ltd. Limited Partnership</i> <i>Stronghold Inspection, Ltd., L.P.</i>	Texas
Stronghold Specialty General, LLC	Texas
Stronghold Specialty, Ltd. <i>Stronghold Specialty, Ltd. Limited Partnership</i>	Texas
Stronghold Tower Group, Ltd. <i>Stronghold Tower Group, LP</i> <i>Stronghold Tower Group, Ltd, LP</i> <i>Stronghold Tower Group, Ltd., LP</i>	Texas
Stronghold VI, LLC	U.S. Virgin Islands
Stronghold, Ltd. <i>Stronghold Management Holdings, LP</i> <i>Stronghold, Limited Partnership</i> <i>Stronghold, Ltd. Limited Partnership</i>	Texas
Subterra Damage Prevention Specialists Ltd.	Canada
Summit Line Construction, Inc. <i>Summit Line Construction</i>	Utah
Sumter Utilities, Inc.	Delaware
T. G. Mercer Consulting Services, Inc.	Texas
TC Infrastructure Services Ltd.	British Columbia
The Aspen Utility Company, LLC <i>The Aspen Utility Company, LLC</i>	Texas
The ComTran Group, Inc.	Georgia
The Hallen Construction Co., Inc.	New York
The Ryan Company, Inc. <i>Ryan Company, Inc. of Massachusetts</i> <i>Ryan Company, Inc.(The)</i> <i>Ryan Company, Inc., The</i> <i>The Massachusetts Ryan Company, Inc.</i> <i>The Ryan Company Inc Of Massachusetts</i> <i>The Ryan Company Inc of Massachusetts</i> <i>The Ryan Company Incorporated of Massachusetts</i> <i>The Ryan Company Incorporated Of Massachusetts</i> <i>The Ryan Company Of Massachusetts, Inc.</i> <i>The Ryan Company of Massachusetts</i> <i>The Ryan Company of Massachusetts (FN)</i> <i>The Ryan Company of Massachusetts, Inc.</i> <i>The Ryan Company, Inc. (Massachusetts)</i> <i>The Ryan Company, Inc. of Massachusetts</i> <i>The Ryan Company, Incorporated Electrical Contractors</i>	Massachusetts
TurnKey Automation, Ltd. <i>TurnKey Automation Limited Partnership</i> <i>TurnKey Automation, Limited Partnership</i> <i>Turnkey Automation, Ltd. L.P.</i> <i>TurnKey Automation, Ltd. Limited Partnership</i> <i>Turnkey Automation, Ltd. LP.</i> <i>TurnKey Automation, Ltd., Limited Partnership</i> <i>TurnKey I&E, Ltd.</i>	Texas
Underground Construction Co., Inc. <i>Delaware Underground Construction Co.</i> <i>Ucc - Underground Construction Co.</i> <i>UCC Underground Construction Co., Inc.</i> <i>Underground Construction Co., Inc. (Delaware)</i>	Delaware

Subsidiary Name and Names Under Which Subsidiary Does Business	Jurisdiction of Incorporation or Formation
Underground Electric Construction Company, LLC	Delaware
Utility Training Services Corporation	Idaho
Valard Construction Australia Pty Ltd	Australia
Valard Construction (Ontario) Ltd.	Ontario
Valard Construction (Quebec) Inc.	Quebec
Valard Construction 2008 Ltd.	Alberta
Valard Construction LP	Alberta
Valard Construction, LLC <i>Valard</i>	Delaware
Valard Equipment (AB) Ltd.	British Columbia
Valard Equipment GP Ltd.	Alberta
Valard Equipment Limited Partnership	Alberta
Valard Geomatics (Ontario) Ltd.	Ontario
Valard Geomatics BC, Ltd. (f/k/a Valard Land Surveying Ltd.)	British Columbia
Valard Geomatics Ltd.	Alberta
Valard Mechanical Ltd.	British Columbia
Valard Norway AS	Norway
VALARD Polska sp. Z o.o.	Poland
Valard Sweden AB	Sweden
Valard Zagreb d. o. o.	Croatia
Winco, Inc. <i>Winco Powerline Services</i> <i>Winco Powerline Services Inc.</i> <i>Winco Powerline Services, Inc.</i> <i>Winco, Inc. an Oregon Based Corporation</i> <i>Winco, Inc. D/B/A Winco Powerline Services</i> <i>Winco, Inc. DBA Winco Services Inc.</i> <i>Winco, Inc. which will do business in California as: Winco Helicopters</i>	Oregon

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-231769, 333-226780, 333-193616 and 333-174374) and Form S-3 (No. 333-228402, 333-221869 and 333-216696) of Quanta Services, Inc. of our report dated February 28, 2020 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
Houston, Texas
February 28, 2020

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

1. I have reviewed this annual report on Form 10-K 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.

Date: February 28, 2020

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

Earl C. Austin, Jr.

President, Chief Executive Officer and Chief Operating Officer
(Principal Executive Officer)

I, Derrick A. Jensen, certify that:

1. I have reviewed this annual report on Form 10-K 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.

Date: February 28, 2020

By: /s/ DERRICK A. JENSEN

Derrick A. Jensen
Chief Financial Officer

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-K report for the period ending December 31, 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: February 28, 2020

/s/ EARL C. AUSTIN, JR.

Earl C. Austin, Jr.

President, Chief Executive Officer and Chief Operating Officer

Dated: February 28, 2020

/s/ DERRICK A. JENSEN

Derrick A. Jensen,

Chief Financial Officer