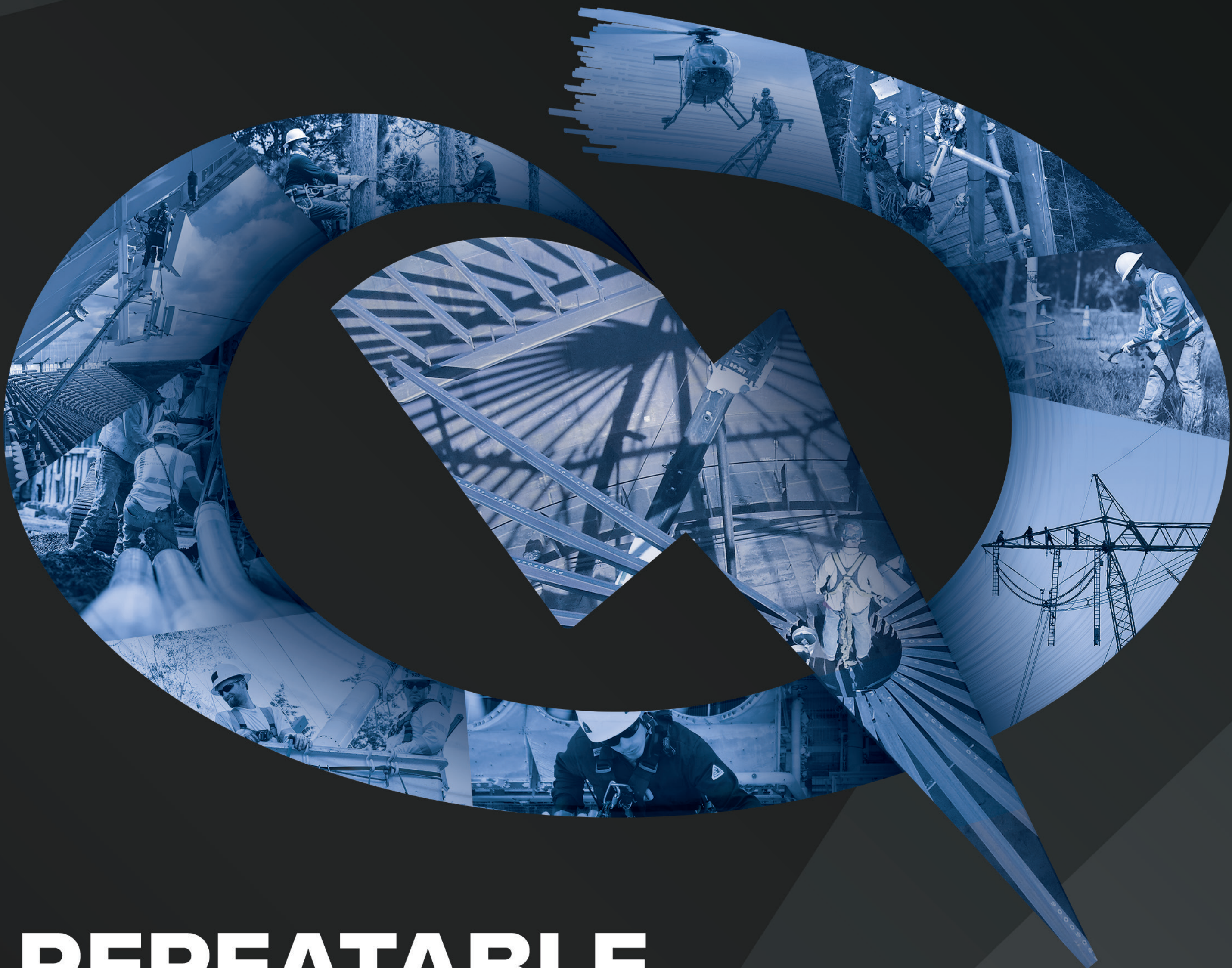
QUANTA SERVICES



REPEATABLE. SUSTAINABLE. RESILIENT.

ANNUAL REPORT 2020


LUCAS

ANNUAL REPORT 2020

PEOPLE SAFETY EXECUTION

QUANTA

THE YEAR IN REVIEW

Quanta generated solid results in 2020 that we believe reflect the resiliency and sustainability of our business, the benefit of our strong financial position, the successful execution of our strategic initiatives, and the excellence of our people. The challenges we faced brought out the best of this organization, and I believe made Quanta stronger.

QUANTA

My Fellow Stockholders:

Quanta is a critical infrastructure solutions provider, and during 2020 we remained steadfast in our commitment to our people, our customers and our mission to build and maintain the infrastructure that powers and connects our world.

Despite experiencing more than a year of the global pandemic, at the time of this writing, COVID-19 containment and treatment efforts are ongoing and a continued focus. At the outset of the pandemic, Quanta took proactive measures to protect the health and safety of our employees and continues to do so today. During this challenging time, Quanta relied on its experienced operating leadership and employees and was able to continue to successfully perform and put the company in a strong position going forward. I am proud of our ability to adapt to the difficult operating environment and believe Quanta performed well, delivering another solid and profitable year in 2020, which included numerous accomplishments.

Many Accomplishments in 2020

Despite unprecedented operating conditions and uncertainties caused by the pandemic for portions of our business, the strong performance of our Electric Power and Communications operations resulted in record adjusted EPS, adjusted EBITDA, cash flow and backlog in 2020. This would not have been possible without the outstanding performance of our field leadership and the people of this organization, who continue to be exceptional.

Some of our significant accomplishments in 2020 were:

- Electric Power Infrastructure Solutions segment achieved record revenues and its best operating margin performance in six years, driven by strong execution across our operations.
- Record storm response revenues were achieved by supporting our customers' efforts to restore power to millions of people adversely impacted by numerous severe weather

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

events during the year. Our ability to quickly mobilize this level of resources to support our customers in times of need – even during a pandemic – is unmatched in our industry.

- After an 18-month competitive process, LUMA Energy, LLC (LUMA), our joint venture with ATCO Ltd., was selected for a 15-year operation and maintenance agreement to operate, maintain and modernize the 18,000-mile electric transmission and distribution system in Puerto Rico. LUMA and the current operator are progressing toward transition of system operations later this year, and we continue to believe this opportunity is transformative for Quanta.
- We grew our communications services revenues by approximately 40%, meaningfully improved profit margins and ended the year with total backlog for these services of approximately $900 million.
- We substantially completed the exit of our Latin American operations, despite the significant challenges posed by the pandemic.
- We continued to lead the industry in safety, which we believe starts with training. We continued our incremental investments at Northwest Lineman College, our post-secondary educational institution, and the Quanta Advanced Training Center, and began site preparation for a new line worker training campus in Puerto Rico that will be operated by Northwest Lineman College. The facility is being designed to provide world-class training to LUMA's employees and develop Puerto Rico's future craft skilled workforce.
- Our industry leading training and recruiting initiatives are driving improved productivity in the field and ensure that we have the very best craft skilled labor. This enhances our ability to collaborate with customers and labor affiliations on future workforce needs, and further differentiates us in the marketplace as a strategic solutions provider.
- We invested approximately $400 million in the strategic acquisition of seven high-quality companies with great management teams that expand and enhance our ability to provide solutions to our customers, are additive to our base business, and advance our strategic initiatives. These companies add to our self-perform capabilities, which typically account for approximately 85% of our services and are key to providing cost certainty to our customers. We believe our approach to acquisitions and our operating model help to mitigate risk in our work portfolio through improved execution and results in more consistent earnings.
- We strengthened our financial position with the closing of our $1 billion, investment grade senior notes offering, which we believe points to the resiliency and sustainability of our business model and positive multi-year outlook.
- We demonstrated our commitment to stockholder value and our confidence in Quanta's financial strength and continued growth opportunities through the acquisition of approximately $250 million of our common stock and through a 25% increase in the per share amount of our dividends paid in 2020.
- And finally, the diversity of our services, as well as proactive cost management and execution through the significant uncertainty caused by the pandemic and challenged energy markets, allowed our Underground Utility and Infrastructure Solutions segment to perform well given the circumstances. We are optimistic that the most challenging market conditions are behind us and see opportunity for revenue and margin improvement in 2021, and we continue to believe the segment can achieve upper single-digit operating income margins as operating conditions further normalize over time.

We believe our strategic position in the marketplace remains strong and that we are well positioned for continued profitable growth over the near and longer term. While we are proud of our achievements last year, we remain focused on getting better and ensuring that Quanta continues to evolve to effectively collaborate with our customers and business partners and capitalize on the opportunities ahead of us.

Utilities Focused on Modernization and Reduced Carbon Emissions

Severe weather conditions that result in power outages, sometimes for extended periods of time, can significantly impact living conditions and underline how critical infrastructure is to our everyday wellbeing. The solutions Quanta provides support our customers' efforts to increase reliability, safety, efficiency and connectivity of these systems, which can have a favorable environmental and social impact on the markets they serve. Additionally, our solutions facilitate policies and goals aimed at the adoption of new technologies and transitioning towards a carbon-neutral economy, which we believe provides favorable and sustainable long-term trends for our business.

Our utility customers, which accounted for more than 70% of our 2020 revenues, are leaders in the effort to reduce carbon emissions with aggressive system modernization and hardening programs, renewable generation portfolio expansions, and through the implementation of new technologies for current and future needs. A number of utilities have committed to providing 100% of their power by clean energy or achieving net-zero carbon emissions by 2050. Achieving these goals will require substantial incremental investment in transmission, substation and distribution infrastructure to interconnect new renewable generation facilities to the power grid and to ensure grid reliability with the significant increase of intermittent power added to the system.

Further, developed economies are expected to increasingly rely on electricity to meet their carbon reduction goals. Vehicle electrification offers a large carbon-reduction opportunity, as does increased electrification for residential and commercial space and water heating, and industrial and agricultural uses. According to certain estimates, increased electrification and electric vehicle adoption in the United States could require 70 to 200 gigawatts of new power generation over the medium-term, the majority of which is expected to be renewables, and incremental transmission investment of $30 billion to $90 billion by 2030.

We believe these investment requirements are in addition to the existing significant multi-year investment programs targeting modernization of the power grid and increased reliability of power delivery under current market conditions.

Significant Opportunity for our Communications Services

The outlook for our communications operations, which is within our Electric Power Infrastructure Solutions segment, remains bright. Revenues for these services grew by approximately 40% in 2020, and we increased their profitability. Continuing this trend, we expect growth of approximately 30% in 2021 and believe we are on a path to achieve double-digit operating income margins.

Our communications services support the critically important technology we use every day for work, education, entertainment and connecting with friends and family. The effects of COVID-19 have caused communications providers to increase investment in their fiber networks to ensure adequate speed, capacity and reliability to meet these needs. Additionally, we believe Quanta is well positioned to leverage our electric power and communications solutions capabilities to assist many of our rural and municipal electric customers who are expected to participate in the Rural Digital Opportunity Fund. This fund provides more than $20 billion to bridge the digital divide that exists for millions of people living in rural America, who do not have access to adequate broadband connectivity. Further, we expect 5G deployments to accelerate in 2021, and we remain well positioned to continue to participate in this rollout.

Underground Utility and Infrastructure Solutions – Overcoming Challenges

Our Underground Utility and Infrastructure Solutions segment experienced meaningful challenges during the year due to the effects of the pandemic, such as operating restrictions in certain metropolitan areas that negatively impacted our gas utility services during a portion of the year and the significant reduction in demand for refined products that materially impacted our industrial services customers throughout the year. As mentioned earlier, we believe these dynamics are improving and will continue to improve as health and economic conditions improve.

Going forward, consistent with our strategy over the last five years, we expect to continue to focus on growing our gas utility, pipeline integrity and industrial services businesses due to the expected favorable long-term trends for those services, which are driven by safety, reliability and environmental regulations. Our gas utility services support regulated programs to replace and modernize aging infrastructure, which can be leak-prone and pose potential safety concerns. These services also support customer efforts to reduce methane emissions and position their gas distribution systems to potentially deliver hydrogen to users in the future. Our pipeline integrity services seek to ensure that existing pipelines operate safely and in an environmentally friendly manner. And many of our industrial services support customers' compliance with regulations aimed at minimizing environmental impacts caused by methane gas release and increased operational efficiency and safety.

Well Positioned for Sustainable, Profitable Growth

In summary, we generated solid results in 2020 that we believe reflect the resiliency and sustainability of our business, the benefit of our strong financial position, the successful execution of our strategic initiatives, and the excellence of our people. The challenges we faced brought out the best of this organization, and I believe made Quanta stronger.

We believe favorable safety, reliability and environmental initiatives and long-term industry trends, such as electrification and technology implementations, will continue to drive growth opportunities for Quanta for the foreseeable future. Quanta is actively engaged in collaborative conversations with many of our customers about how we can provide solutions throughout our customers' value chain to meet their strategic infrastructure investment goals in support of their multi-year, multi-billion-dollar programs extending as far as ten years.

Overall, our end markets and multi-year visibility are solid, and we have built a strong platform that positions us well to capitalize on favorable long-term trends, particularly the transition toward a carbon-neutral economy and the adoption of new technologies. Considering our organic growth opportunities and the levers available to us to allocate future cash flow generation into value-creating opportunities, such as stock repurchases, acquisitions, strategic investments and dividends, we believe Quanta will continue to generate meaningful stockholder value going forward.

Quanta is a portfolio of exceptional businesses with geographic and service line diversity. We are anchored by our commitment to craft skill labor and our self-perform capabilities. We are focused on operating the business for the long term and expect to continue to distinguish ourselves through safe execution and best-in-class field leadership. We will pursue opportunities to enhance Quanta's base business and leadership position in the industry and provide innovative solutions to our customers. We believe Quanta's diversity, unique operating model and entrepreneurial mindset form the foundation that will allow us to continue to generate long-term value for all our stakeholders.

In closing, I would like to thank you, our stockholders, for your continued support and confidence in Quanta. As always, we extend our thanks to our employees for their dedication, hard work and commitment to Quanta and our industry. We are excited to move forward with you, in prosperity and safety.

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

2020 AT A GLANCE

Always Getting Better

We continue to invest time and resources in our employees, our customers and the communities where we live and work.

more than **$7 M**
Community Investment in 2020

more than **250**
Quanta employees have received aid through Quanta Cares

more than **$450 M**
Invested in 2020 to maintain and upgrade our fleet

more than **400**
Veterans interviewed for Quanta training and employment opportunities

more than **13,000**
Quanta employees trained in 2020

more than **60,000**
Students trained at Quanta facilities to date

First Responders: A Busy Storm Season

Quanta's Storm Stats

Quanta's employees were busy helping our customers keep the lights on by rebuilding the power grid in the wake of numerous severe weather events during 2020.

We responded to
9 named hurricanes
across 24 States

We deployed more than
7,000 line workers
& provided emergency response services for more than 100 consecutive days

Quanta restored power to
more than **5.3 M**
end users

Our dedicated employees
worked more than **1.9M**
man hours restoring power

We provided
more than **1,110**
personal voltage detectors to our employees

Quanta provided
21 Operating Companies
working together cohesively with 70 safety professionals on site

COVID Response

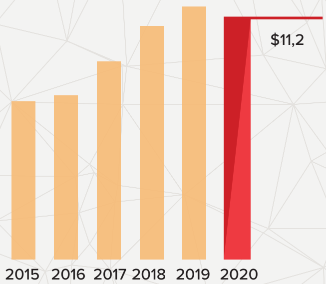
We have shown resiliency in the face of the unprecedented COVID-19 crisis. As always, our priority has been our people – keeping our employees safe and employed – and continuing to support customers. **We have provided to our employees:**

more than **75,000**
Standard Masks

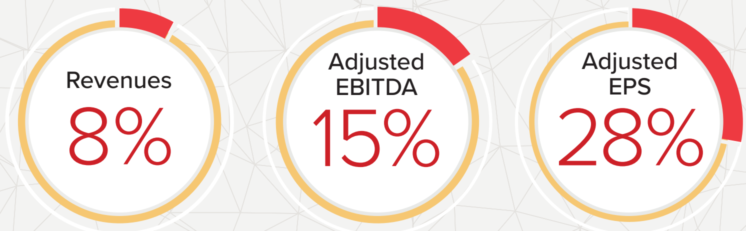
more than **150,000**
N95 Masks

more than **20,000**
Gallons of Sanitizer

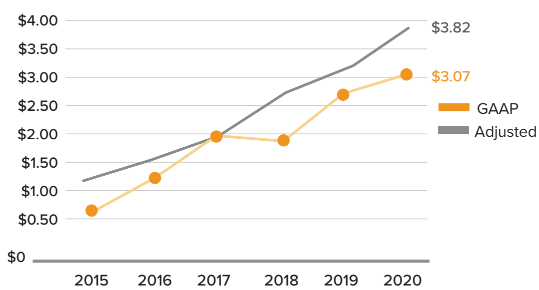
Revenues
(in billions) Year ended December 31.



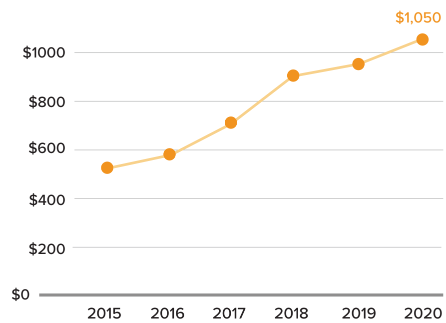
Solid Growth
Five-Year CAGR as of December 31, 2020.



GAAP and Adjusted Diluted Earnings Per Share [(1)]
From continuing operations. Year ended December 31.



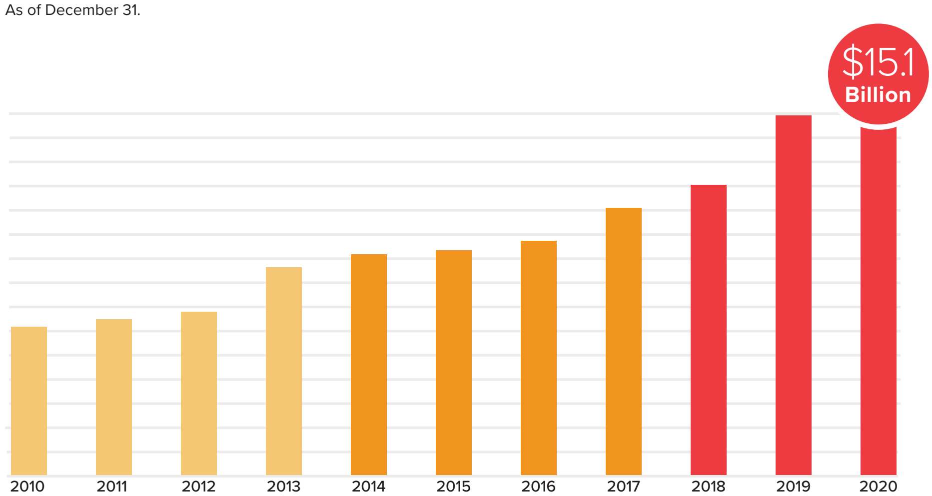
Adjusted EBITDA [(2)]
(in millions) Year ended December 31.



(1) A reconciliation of adjusted diluted earnings per share (a non-GAAP measure) to diluted earnings per share (the most directly comparable GAAP measure) is set forth in the attached reconciliation tables.

(2) A reconciliation of adjusted EBITDA (a non-GAAP measure) to net income attributable to common stock (the most directly comparable GAAP measure) is set forth in the attached reconciliation tables.

Historical Backlog Growth [(1)]
As of December 31.



(1) A reconciliation of backlog (a non-GAAP measure) to remaining performance obligations (the most directly comparable GAAP measure) is set forth in the attached reconciliation tables.

Liquidity [(1)]
As of December 31, 2020.

$2.2 billion

(1) Liquidity includes cash and cash equivalents and availability under Quanta's senior credit facility.

Operating Cash Flow
Year ended December 31.

$1,116 million

RESILIENT AND SUSTAINABLE

Quanta successfully navigated through the unprecedented health and economic environment caused by the global pandemic in 2020. We believe the dedication and skill of our people, our resilient business model and our strong financial position will allow Quanta to emerge from this uncertainty better positioned.

Favorable Long-Term Trends

Quanta provides infrastructure solutions that support our customers' efforts to increase the reliability, safety, efficiency and connectivity of their networks. Additionally, our solutions facilitate policies and goals aimed at transitioning toward a carbon-neutral economy through electrification and renewables integration and the adoption of new technologies such as electric vehicles and 5G wireless technology. As a result, we believe Quanta's business is levered to favorable and sustainable long-term trends. We believe these dynamics are in addition to the existing significant multi-year investment programs targeting modernization of the power grid and increased reliability of power delivery under current market conditions.

Solutions Based Approach

We recently renamed both of our segments to include "Solutions", which we believe more accurately describes the value creating and collaborative approach we take to working with our customers. Additionally, we renamed our Pipeline and Industrial segment to Underground Utility and Infrastructure Solutions, which we believe is more reflective of the strategic changes made over the past five years to reposition the segment towards a greater level of resilient business services to our gas utility, pipeline integrity and industrial customers. We continue to expand our capabilities in both of our segments to provide comprehensive end-to-end solutions centered on craft skill labor.

Strong Financial Position

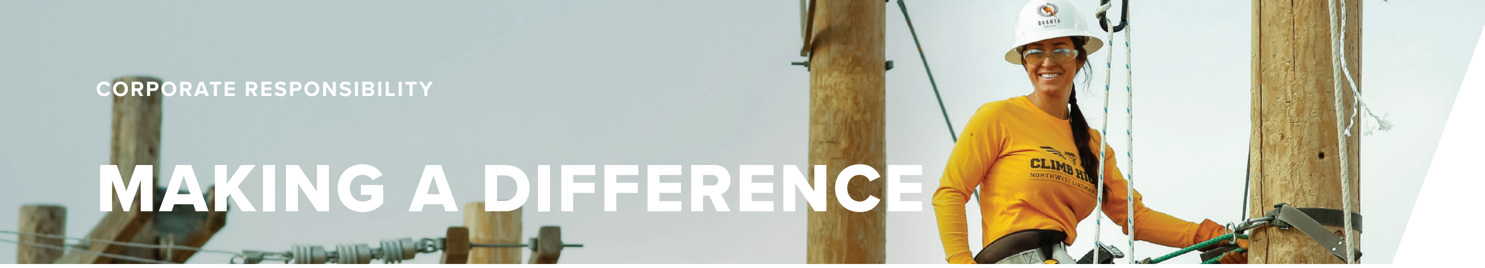
Quanta maintained a strong balance sheet and liquidity position throughout the year, generated record cash flow and received an investment grade credit rating in connection with its first senior notes offering, which we believe points to the resiliency and sustainability of our business model and positive multi-year outlook. We believe our financial strength continues to position us to allocate future cash flow generation into value-creating opportunities, such as stock repurchases, acquisitions, strategic investments and dividends.

Proven Strategy

Our strategy over the past five years has been to mitigate risks inherent in our business and prepare for unexpected events through diversification and by maintaining a strong financial profile. We have a diverse, high-quality customer base with low customer concentration, a broad and diverse geographic presence throughout North America and Australia and a diverse and expanding line of services. We believe continuing this strategy, along with favorable and resilient industry dynamics and strategic investments, will allow us to continue to serve all our stakeholders well.

World-class people. Unmatched execution.

MAKING A DIFFERENCE



Our Commitments

As society continues to progress and become more connected, there is an increasing need for reliable and modern infrastructure. Quanta is working to meet these evolving infrastructure needs by focusing on our customers, our employees and the communities where we live and work.

A carbon-neutral future will benefit all of us. We continue to innovate and lead the way to enable the critical infrastructure required to achieve that goal. We collaborate with our customers to help shape how they deploy resources toward that goal, and we give back to our employees and the world around us.

As we mature and strengthen, we keep our people, our planet and our principles at the forefront — always looking for new ways to create a positive impact. From our everyday actions on job sites across the country to major capital investments, we integrate sustainability into our business by prioritizing these key areas.

These commitments are core to who we are and have driven us since our inception. We will continue to make decisions for the long term, based on uncompromising values and clear strategy.

Our People

- Continued to lead the way in health and wellness programs for our employees
  - Quanta was named one of the Healthiest 100 Workplaces in America, an awards program created to honor people-first organizations that prioritize the well-being of their employee population and powered by Springbuk
  - The American Heart Association has recognized Quanta with gold level status, which is their highest honor, for implementation of quality workplace health programs and culture
  - Quanta was recognized in FORTUNE's 2021 World's Most Admired Companies list as one of the top companies in the Engineering & Construction sector
- Trained more than 13,000 employees at our training facilities in 2020
  - Northwest Lineman College: Leading educational and training institution for the electric power, communications and gas industries, with four campuses across the U.S., plus one under construction in Puerto Rico
  - Quanta Advanced Training Center: State-of-the-art 2,300-acre campus where employees and others receive hands-on instruction from master trainers in environments modeled on real-world job sites
- Continued to achieve industry-leading safety performance
  - Developed and implemented The Capacity Model® program, training more than 9,200 employees and customer personel throughout North America
- Continued to advance partnerships with unions, trade associations, universities, the military and others on workforce development initiatives
- Committed to advancing non-discrimination and human rights

Our Planet

- Collaborating with and supporting our customers in order to build the modernized infrastructure needed for a carbon-neutral future
- Building a grid that is capable of redundancy, moving power around and connecting renewables in a sustainable way
- Implementing software that tracks our facilities' energy usage
- Supporting our customers on environmentally sensitive projects and renewable portfolio standards
- Continuing to build a world-class aviation program, which supports our customers and reduces the environmental footprint of projects
- Investing hundreds of millions of dollars to continually upgrade our fleet, as well as developing initiatives to track, improve efficiency and reduce the carbon footprint of our equipment

Our Principles

- Board oversight of sustainability matters
- Management compensation tied to sustainability metrics, including safety performance and efficient equipment usage
- Robust ethics and compliance programs
- Committed to ongoing engagement with stakeholders on sustainability matters

Enabling the Infrastructure of the Future.

Reconciliation of Non-GAAP Financial Measures

Adjusted Diluted Earnings per Share from Continuing Operations Attributable to Common Stock

(in millions, except per share information) For the Years Ended December 31 (unaudited).

	2015	2016	2017	2018	2019	2020
Net income from continuing operations attributable to common stock (GAAP as reported) in millions	$120	$199	$315	$293	$402	$446
Adjustments						
Acquisition and integration costs	8	3	10	17	25	20
Asset impairment charges	58	8	58	53	14	8
Impairments of non-integral unconsolidated affiliates	-	-	-	-	-	8
Severance and restructuring charges	-	6	-	1	-	7
Change in fair value of contingent consideration liabilities	-	-	(5)	(11)	13	1
Gain on sale of equity investment	-	-	-	-	(13)	-
Income tax benefits associated with sale of equity investment	-	-	-	-	(8)	-
Bargain purchase gain	-	-	-	-	(3)	-
Write-off of deferred financing costs	-	-	-	-	-	2
Income tax impact of adjustments	(16)	(4)	(24)	(18)	(13)	(9)
Income of release of valuation allowance	-	-	-	-	-	(45)
Impact of income tax contingency releases	-	(20)	(7)	(8)	(6)	(8)
Impact of Tax Cut and Jobs Act	-	-	(70)	33	-	-
Impact of change in Canadian provincial statutory tax	5	-	-	-	(3)	-
Income tax impact primarily related to entity restructuring and recapitalization efforts	-	-	(18)	2	-	-
Impact of tax benefit from realization of previously unrecognized deferred tax asset	(4)	-	-	-	-	-
Adjusted net income from continuing operations attributable to common stock before certain non-cash adjustments	**171**	**192**	**259**	**362**	**408**	**430**
Non-cash stock based compensation	37	40	47	52	52	91
Amortization of intangible assets	35	32	32	44	62	77
Income tax impact of non-cash adjustments	(26)	(26)	(29)	(25)	(30)	(44)
Adjusted net income from continuing operations attributable to common stock for adjusted diluted earnings per share from continuing operations	**217**	**238**	**309**	**433**	**492**	**554**
Weighted average shares						
Weighted average shares outstanding for diluted and adjusted diluted earnings per share	195	157	157	154	148	145
Earnings attributable to common stock						
Diluted earnings per share from continuing operations	$0.62	$1.26	$2.00	$1.90	$2.73	$3.07
Adjusted diluted earnings per share from continuing operations	$1.11	$1.51	$1.97	$2.81	$3.33	$3.82

The non-GAAP measure of adjusted diluted earnings per share from continuing operations is provided to enable investors to evaluate performance excluding the effects of items that management believes impact the comparability of operating results between periods. Management also believes that the exclusion of these items enables it to more effectively identify operating trends that might not otherwise be apparent.

Reconciliation of Non-GAAP Financial Measures

EBITDA and Adjusted EBITDA

(in millions) For the Years Ended December 31 (unaudited).

	2015	2016	2017	2018	2019	2020
Net income attributable to common stock (as defined by GAAP)	**$120**	**$199**	**$315**	**$293**	**$402**	**$446**
Interest expense	8	15	21	37	67	45
Interest income	(1)	(2)	(1)	(2)	-	(2)
Provision for income taxes	97	107	35	162	165	119
Amortization of intangible assets	35	32	32	44	62	77
Equity in (earnings) losses of non-integral unconsolidated affiliates	-	1	11	53	(77)	10
Income taxes and depreciation included in equity in earnings of integral unconsolidated affiliates	-	-	-	-	-	3
Depreciation expense	163	170	184	203	218	225
EBITDA	**$422**	**$522**	**$597**	**$790**	**$837**	**$923**
Non-cash stock-based compensation	37	41	46	52	52	91
Acquisition and integration costs	8	3	11	17	25	20
Asset impairment charges	58	8	60	53	14	8
Change in fair value of contingent consideration liabilities	-	-	(5)	(11)	13	1
Reduction of indemnification asset	-	-	-	-	4	-
Bargain purchase gain	-	-	-	-	(3)	-
Severance and restructuring charges	-	6	-	1	-	7
Adjusted EBITDA	**$525**	**$580**	**$709**	**$902**	**$942**	**$1050**
Consolidated revenues	$7,572	$7,651	$9,466	$11,171	$12,112	$11,203
Adjusted EBITDA margin	6.9%	7.6%	7.5%	8.1%	7.8%	9.4%

The non-GAAP measures of EBITDA and Adjusted EBITDA are provided to enable investors to evaluate performance excluding the effects of items that management believes impact the comparability of operating results between periods. Management also believes that the exclusion of these items enables it to more effectively identify operating trends that might not otherwise be apparent.

Reconciliation of Non-GAAP Financial Measures

Remaining Performance Obligations and Backlog

(in millions) For the Years Ended December 31 (unaudited).

	2018		2019		2020	
Electric Power Infrastructure Solutions	12 Month	Total	12 Month	Total	12 Month	Total
Remaining performance obligations	$2,093	$3,046	$2,483	$3,958	$2,511	$3,548
Estimated orders under MSAs and short-term, non-fixed price contracts	2,468	5,500	2,874	5,864	3,560	7,433
Backlog	4,561	8,546	5,357	9,822	6,071	10,981
Underground Utility and Infrastructure Solutions						
Remaining performance obligations	$1,004	$1,636	$671	$1,345	$327	$438
Estimated orders under MSAs and short-term, non-fixed price contracts	1,411	2,161	1,919	3,838	1,869	3,713
Backlog	2,415	3,797	2,590	5,183	2,196	4,151
Total						
Remaining performance obligations	$3,097	$4,682	$3,154	$5,303	$2,838	$3,986
Estimated orders under MSAs and short-term, non-fixed price contracts	3,879	7,661	4,793	9,702	5,429	11,146
Backlog	$6,976	$12,343	$7,947	$15,005	$8,267	$15,132

The non-GAAP measure of backlog is a common measurement used in Quanta's industry and is a measure that enables management to more effectively forecast future capital needs and results and better identify future operating trends that may not otherwise be apparent. Management also believes this measure is useful for investors in forecasting our future results and comparing us to our competitors. However, our methodology for determining backlog may not be comparable to the methodologies used by other companies.

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, 2020

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

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

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

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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☑

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 30, 2020 (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 $5.3 billion.

As of February 23, 2021, the number of outstanding shares of Common Stock of the Registrant was 138,365,007.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's Definitive Proxy Statement for the 2021 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, 2020
INDEX

Cautionary Statement About Forward-Looking Statements and Information

This Annual Report on Form 10-K (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, cash flows, liquidity, weighted average shares outstanding, capital expenditures, tax rates and other projections of operating or financial results;
- Expectations regarding our business or financial outlook;
- Expectations regarding opportunities, technological developments, competitive positioning, future economic and regulatory conditions and other trends in particular markets or industries;
- Expectations regarding the pandemic associated with the novel coronavirus disease that began in 2019 (COVID-19), including the continued and potential impact of the COVID-19 pandemic and of governmental responses to the pandemic on our business, operations, supply chain, personnel, financial condition, results of operations, cash flows and liquidity;
- Expectations regarding our plans and strategies, including plans, effects and other matters relating to the COVID-19 pandemic and our exit from our Latin American operations;
- The business plans or financial condition of our customers, including with respect to or as a result of the COVID-19 pandemic;
- The potential impact of commodity prices and commodity production volumes on our business, financial condition, results of operations and cash flows and demand for our services;
- The potential benefits from, and future financial and operational performance of, acquired businesses and our investments, including our investment in LUMA Energy, LLC (LUMA);
- Beliefs and assumptions about the collectability of receivables;
- 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 and opportunities with respect to future projects, including renewable energy projects and larger electric transmission and pipeline projects;
- 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 expected outcome of pending or threatened legal proceedings; 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 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 Securities and Exchange Commission (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. Although forward-looking statements reflect our good faith beliefs at the time made, reliance should not be placed on forward-looking statements because they involve known and unknown risks, uncertainties and other factors, which may cause our actual results, performance or achievements to differ materially from anticipated future results, performance or achievements expressed or implied by such forward-looking statements. 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.

PART I

ITEM 1. *Business*

Overview

Quanta Services, Inc. (together with its subsidiaries, “Quanta,” “we,” “us” or “our”) is a leading provider of specialty contracting services, delivering comprehensive infrastructure solutions for the electric and gas utility, communications, pipeline and energy industries in the United States, Canada, Australia and select other international markets.

Within each of the industries we serve, the services we provide include the engineering, construction, and repair and maintenance of infrastructure, such as electric power transmission and distribution networks; substation facilities; communications and cable multi-system operator networks; gas utility systems; pipeline transmission systems and facilities; and downstream industrial facilities. Our operations are decentralized and labor-intensive, and we rely on craft skilled labor personnel and experienced operators to successfully manage our day-to-day business. We also have an experienced management team, both at the executive level and within our subsidiaries, which we refer to as operating units. We operate a fleet of owned and leased trucks and trailers, support vehicles and specialty construction equipment, as well as various proprietary technologies that enhance our service offerings. We have a large and diverse customer base, including many of the leading companies in the utility, industrial, communications and energy 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. Our services are typically provided pursuant to master service agreements, repair and maintenance contracts and fixed price and non-fixed price construction contracts. 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 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, and we endeavor to develop and maintain strategic alliances and preferred service provider status with our customers.

We believe that our business strategies, along with our safety culture and financial resources, differentiate us from our competition and position us to benefit from future capital spending by our customers. Our strategies of expanding our portfolio of service offerings for existing and potential customers, increasing and enhancing our presence in core geographic markets, technological and training capabilities, promoting best practices and cross-selling services to our existing customers place us in the position to capitalize on opportunities and trends in the industries we serve and expand our operations to select new markets.

Services

We report our results under two reportable segments: (1) Electric Power Infrastructure Solutions and (2) Underground Utility and Infrastructure Solutions. This structure is generally focused on broad end-user markets for our services. We operate primarily in the United States; however, we derived approximately 14.1%, 15.9% and 23.2% of our revenues from foreign operations, primarily in Canada and Australia, during the years ended December 31, 2020, 2019 and 2018.

Electric Power Infrastructure Solutions. Our Electric Power Infrastructure Solutions segment provides, among other things, comprehensive network solutions to customers in the electric power, communications and other industries. Services performed by the Electric Power Infrastructure Solutions segment generally include:

- the design, engineering, new construction, upgrade and repair and maintenance of electric power transmission and distribution infrastructure and substation facilities to support, among other things, utility customers’ efforts to ensure the safety and reliability of the power grid and integrate renewable generation and the growing trend towards the electrification of transportation and other industries;
- emergency restoration services, including the repair of infrastructure damaged by, among other things, inclement weather and wildfires;
- the energized installation, maintenance and upgrade of electric power infrastructure utilizing unique bare hand and hot stick methods and our proprietary robotic arm techniques;
- the installation of “smart grid” technologies on electric power networks;
- engineering and construction of substations, switchyards and transmission infrastructure to interconnect renewable energy generation, including solar, wind, hydro power and backup natural gas generation facilities;
- engineering and construction of micro-grids, battery storage and solar generation facilities;

- comprehensive design and construction services to wireline and wireless communications companies, cable multi-system operators and other customers within the communications industry (including services in connection with 5G wireless deployment);
- the design, installation, maintenance and repair of commercial and industrial wiring; and
- aviation services primarily for the utility industry, including the transportation of line workers, the setting of poles, and the stringing of wires.

This segment also includes a majority of the financial results of our training facility and our postsecondary educational institution, which specializes in pre-apprenticeship training, apprenticeship training and utility task training for electric workers, as well as training for the gas utility and communications industries. For additional information on this institution, see *Human Capital Resources - Employee Recruiting, Development and Training*.

Underground Utility and Infrastructure Solutions. Our Underground Utility and Infrastructure Solutions 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 Underground Utility and Infrastructure Solutions segment generally include:

- the design, engineering, new construction, upgrade and repair and maintenance of natural gas systems for gas utility customers;
- pipeline protection, integrity testing, rehabilitation and replacement;
- catalyst replacement services, high-pressure and critical-path turnaround services, instrumentation and electrical services, piping, fabrication and storage tank services to the midstream and downstream industrial energy complex;
- engineering and construction services for pipeline systems, storage systems and compressor and pump stations; and
- trenching, directional boring and mechanized welding services related to the above services and in connection with our electric power infrastructure services.

To a lesser extent, this segment also designs, installs and maintains fueling systems and water and sewer infrastructure, fabricates pipeline support systems and related structures and facilities for the pipeline industry and provides services to the offshore energy market.

Recent Acquisitions

We continue to evaluate, strategic acquisitions to broaden our customer base, expand our geographic area of operations, grow our portfolio of services and increase opportunities across our operations. During the year ended December 31, 2020, we acquired seven businesses that we believe support our strategic goals and enhance our ability to innovate and expand our services offerings to serve our customers. These acquisitions involved aggregate consideration of approximately $351.7 million paid or payable in cash, subject to certain adjustments, 1,334,469 shares of Quanta common stock, which had a fair value of $57.1 million as of the respective acquisition dates, and certain contingent consideration obligations. For additional information on our investments and acquisitions, see Notes 2, 4 and 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*.

Puerto Rico Joint Venture

During the first half of 2020, a joint venture in which we own a 50% interest, LUMA Energy, LLC (LUMA), was selected for a 15-year operation and maintenance agreement to operate, maintain and modernize the approximately 18,000-mile electric transmission and distribution system in Puerto Rico. The operation and maintenance period is scheduled to begin following a transition period, which is expected to end in mid-2021 and during which we receive a fixed transition services fee. During the operation and maintenance period, LUMA will receive a fixed annual management fee, with the opportunity to receive additional annual performance-based incentive fees.

Customer Relationships

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, 2020, our largest customer accounted for 5% of our consolidated revenues and our ten largest customers accounted for 32% of our consolidated revenues. Representative customers include:

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

Our customers include utilities, communications, industrial and energy delivery companies, as well as governmental entities. We have estimated revenues by customer type as a percentage of total revenues below. Such estimates are based on management judgment and assumptions and are provided to show perceived trends in our customer types and should be considered directional in nature.

	2020	2019	2018
Utility	72 %	64 %	60 %
Communications	4 %	3 %	2 %
Industrial	13 %	15 %	14 %
Energy Delivery	6 %	14 %	17 %
Other	5 %	4 %	7 %
Total revenues	100 %	100 %	100 %

Customer types in the table above are defined as follows:

- Utility - Customers that are electric and gas utilities;
- Communications - Customers that own and/or operate assets supporting delivery of data, communications and digital services;
- Industrial - Customers that own and/or operate refinery, chemical and industrial plants and other commercial or manufacturing facilities;
- Energy Delivery - Customers that own and/or operate pipelines for the delivery of hydrocarbons; and
- Other - Customers that are not accurately described by the categories set forth above.

We believe utility, communications and industrial customers provide us with growth opportunities due to the long-term capital programs associated with these industries. Our opportunities and capital programs associated with energy delivery customers are dependent on the cyclicality of larger pipeline projects, and energy delivery and industrial customers have been negatively impacted by the currently challenged energy market and recent oil price volatility, as well as the exacerbating effect of the pandemic associated with the novel coronavirus disease (COVID-19).

We are a preferred service provider for many of our customers, which generally 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.

Although we have an integrated 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' needs and 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.

Competition and Market Demand

The markets in which we operate are highly competitive. We compete with other contractors in 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. However, 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.

For further information regarding the effects of competition on our business and trends in market demand affecting our business, see *Risks Related to Operating Our Business* and *Risks Related to Our Industries* in Item 1A. *Risk Factors* of this Annual Report and *Overview - Business Environment* and *Results of Operations* in Item 7. *Management's Discussion and Analysis of Financial Condition* of this Annual Report.

Material Resources

We depend on the availability of certain equipment, including specialty vehicles, to perform our services. We operate a fleet of owned and leased bucket trucks, digger derricks, trucks and trailers, support vehicles and specialty construction equipment, such as sidebooms, dozers, backhoes, excavators, trenchers, generators, boring machines, cranes, robotic arms, wire pullers, tensioners and helicopters. As of December 31, 2020, the total size of the rolling stock fleet was approximately 51,000 units. Additionally, our customers typically supply most or all of the raw materials required for each project. However, pursuant to certain of our contracts, we may procure all or part of the raw materials required. To the extent 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.

While the ongoing COVID-19 pandemic has resulted in significant supply chain disruptions globally and within the United States, we have not experienced, and do not anticipate experiencing, any significant procurement difficulties, as we purchase our required materials and equipment 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 the continued impact of the ongoing COVID-19 pandemic, as well as global trade relationships and other general market and political conditions. For further information regarding the risks associated with availability of materials, see *Risks Related to Operating Our Business* in Item 1A. *Risk Factors* of this Annual Report.

Seasonality and Cyclicality

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. 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 additional information on seasonality and cyclicality, please see *Significant Factors Impacting Results* within Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*.

Regulation

Compliance with numerous regulations has a material effect on our operations. Our operations are subject to various federal, state, local and international laws and regulations including:

- licensing, permitting and inspection requirements applicable to contractors and engineers;
- regulations relating to worker safety and environmental protection;
- permitting and inspection requirements applicable to construction projects;
- wage and hour regulations and regulations associated with our collective bargaining agreements and unionized workforce;
- regulations relating to transportation of equipment and materials, including licensing and permitting requirements, as well as aviation activities;
- building and electrical codes;
- applicable U.S. and non-U.S. anti-corruption regulations;
- immigration regulations applicable to U.S. and cross-border employment; 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. Additionally, the overall regulatory environment can impact our customers' projects and demand for our services, and in connection with the current heightened regulatory environment and increased regulatory enforcement and challenges, our customers have experienced delays, reductions in scope and cancellations of projects. We are also 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. As a result, 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.

For further information regarding the effects of regulation on our business, see *Risks Related to Operating Our Business* and *Risks Related Regulation and Compliance* in Item 1A. *Risk Factors* of this Annual Report and *Overview - Business Environment* in Item 7. *Management's Discussion and Analysis of Financial Condition* of this Annual Report.

Human Capital Resources

We believe our employees are our most important assets, and we focus significant attention and resources on attracting, developing and retaining talented and experienced individuals. We believe our industry-leading training and safety programs are a strength and competitive differentiator with not only our current and potential employees, but with our customers, which have high safety standards and are increasing the amount of their outsourced infrastructure services. Our operations are decentralized and labor-intensive, and we rely on craft skilled labor personnel and experienced operators to successfully manage our day-to-day business, as well as corporate management and professional personnel to coordinate and execute our business strategies, allocate capital and coordinate equipment usage, and facilitate certain centralized administrative services.

Employee Profile

As of December 31, 2020, we had approximately 35,800 employees, consisting of approximately 7,600 salaried employees, including executive officers, professional and administrative staff, project managers and engineers, job superintendents and field personnel, and approximately 28,200 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. As of December 31, 2020, we had approximately 29,700 U.S. employees and approximately 6,100 non-U.S. employees, with the majority of our non-U.S. employees based in Canada. Additionally, approximately 34% of our employees at December 31, 2020 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 Safety

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 ongoing training requirements for our employees and have also developed and implemented critical safety equipment and innovations. For example, on our project sites we have implemented emergency response plans, first aid training and automated external defibrillators, which have helped save the lives our employees and bystanders. We have also continued to invest significant resources in our safety training facilities, including the Quanta Advanced Training Center located in Texas, and our safety monitoring tools, including fleet management software. Our operating units also develop and share best practices for safety policies and practices, and we have an established program for onboarding newly acquired companies and working with them to augment their existing safety practices as necessary.

Furthermore, during the COVID-19 pandemic, the majority of our operations have continued, as they have been deemed essential to critical infrastructure. In response to this new operating environment, we have implemented additional safety protocols and procedures to protect the health and safety of our employees, such as the adoption of specialized training initiatives and the utilization of additional protective equipment for our employees operating in the field and additional sanitation measures for our offices, vehicles and equipment. We also reduced non-essential business travel, applied work-from-home policies where appropriate and developed other human resource guidance to help employees. We have not experienced any meaningful impact on the availability of our workforce or key personnel as a result of the COVID-19 pandemic.

Employee Recruiting, Development and Training

Our success depends on our ability to attract, develop and retain highly qualified employees, including craft skilled labor, engineers, architects, designers, management and professional and administrative employees.

Craft Skilled Labor. Our industry is experiencing a shortage of journeyman linemen and specialty craft labor in certain geographic areas. Furthermore, the cyclical nature of the energy 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 infrastructure, communications and underground utility and infrastructure industries and specializes in pre-apprenticeship training, apprenticeship training and specialized utility task training for electric workers. At our Quanta Advanced Training Center, we have also continued to invest in our internal education and training capabilities for beginning linemen and have added lead and cable splicing and directional drilling and gas distribution to our existing energized electric power and pipeline integrity training. These programs provide classroom and on-the-job training programs and allow 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 attract potential employees and 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. Certain of our operating units have also 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. 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.

For additional information on the risks associated with labor resources in our industries, see *Risks Related to Operating Our Business* in Item 1A. *Risk Factors* of this Annual Report and *Overview - Business Environment* in Item 7. *Management's Discussion and Analysis of Financial Condition* of this Annual Report.

Management and Professional Personnel. Due to our decentralized operating structure, significant decision-making authority resides with our operating unit management, and our corporate management and administrative personnel are relied upon to allocate capital and communicate, coordinate and help execute our business strategies. We have also implemented enterprise-wide talent development and succession planning programs designed to identify and develop future and/or replacement candidates for key positions. For example, we have developed and administer a succession program with respect to our executive officers and senior operating unit personnel, which is reviewed and/or overseen by our Board of Directors.

Compensation and Benefits

Our compensation programs are generally designed to align employee compensation with market practices and our performance, as well as provide the proper incentives to attract, retain and motivate employees. With respect to our executive officers, operating unit management, other senior leadership and corporate employees, compensation programs consist of both fixed and variable components. The fixed portion is generally set at market levels, with variable compensation designed to reward employees based on company performance. In connection with these compensation programs, we also grant stock-based compensation to management and key operations personnel at the majority of our operating units, which we believe helps to align incentives throughout our decentralized organization. We also enter into employment agreements with our executive officers and certain other key personnel. For additional information regarding our executive compensation, please see the information required in Item 11. *Executive Compensation*, which will be incorporated by reference to our definitive proxy statement related to our 2021 Annual Meeting of Stockholders.

We also provide additional benefits to our employees. For example, we provide health, welfare and benefit plans for employees who are not covered by collective bargaining agreements, and we maintain 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 and to which we make certain matching contributions.

Ethics and Compliance

All of our employees are subject to Quanta's Code of Ethics and Business Conduct, which includes guidance and requirements concerning, among other things, general business ethics, including policies concerning the environment, conflicts of interest, anti-corruption, harassment and discrimination, data security and privacy, and insider trading, and Quanta's Anti-Bribery & Corruption Policy, which includes guidance and requirements concerning, among other things, interactions with government officials; provision of gifts, entertainment and hospitality; due diligence on certain high-risk service providers; and charitable and political contributions. Training with respect to these policies is conducted as part of our comprehensive ethics and compliance training program.

Climate-Related Impacts

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. Concerns about the impact of climate change have resulted, and are expected to continue to result, in technological advancements and market developments that impact our business. For example, utility customers are transitioning toward more sustainable sources of power generation, such as renewables, which can provide additional opportunities for our electric power services. Additionally, increased electrification of new technologies may lead to continued and additional demand for new and expanded electric power infrastructure and reengineering of existing electric power infrastructure. However, concerns about climate change could also result in potential new regulations, regulatory actions or requirements to fund energy efficiency activities, as well as decreased demand for refined products, which in turn could negatively impact our customers and demand for certain of our underground utility and infrastructure services. We also maintain a large fleet of vehicles 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 or increases in fuel prices.

Additionally, 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. 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, grid hardening and other infrastructure improvements (e.g., fire hardening programs in California and the western United States and storm hardening in coastal regions). 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.

For additional information regarding the risks and opportunities described above, see Item 1A. *Risk Factors, Overview - Business Environment* and *Overview - Significant Factors Impacting Results* in Item 7. *Management's Discussion and Analysis of Financial Condition* of this Annual Report.

Risk Management and Insurance

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, aviation and general liability claims. Deductibles for the employer's liability and workers' compensation programs are $5.0 million per occurrence, and deductibles for the auto liability and general liability programs are $15.0 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 $0.8 million per claimant per year.

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.

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 and future risk of wildfires in California and other areas in the western United States, Australia and other locations, insurers have reduced coverage availability and increased the cost of insurance coverage for such events in recent years. As a result, our level of insurance coverage for wildfire events decreased, including in connection with our annual insurance renewals in the spring of 2020 and 2019, and our levels of coverage may not be sufficient to cover potential losses. Our third-party insurers could also decide to further reduce or exclude coverage for wildfires or other events in connection with our insurance renewal in the spring of 2021 and/or in the future. In any such event, our overall risk exposure would increase, which could negatively affect our results of operations, financial condition and cash flows.

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 material 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 *Cautionary Statement About Forward-Looking Statements and Information.*

Summary Risk Factors

The following is a summary of some of the material risks and uncertainties that could materially adversely affect our business, financial condition and results of operations. You should read this summary together with the more detailed description of each risk factor contained below.

Risks Related to Operating Our Business

- Our operating results may vary significantly from quarter to quarter.
- The COVID-19 pandemic and related economic repercussions have materially affected our and our customers' businesses, and the duration and extent of the negative impact resulting from the pandemic remains uncertain.
- A variety of issues could affect the timing or profitability of our projects, and could result in, among other things, project termination or payment of liquidated damages.
- Our business is subject to operational hazards (e.g., wildfires, explosions) that can result in significant liabilities, and we may not be insured against all potential liabilities.
- Unavailability or cancellation of third-party insurance would increase our risk exposure and disrupt our operations, and our estimates of losses under our insurance programs could prove inaccurate.
- Our business is labor-intensive, and we may be unable to attract and retain qualified employees or we may incur significant costs if we are unable to efficiently manage our workforce.
- A loss of business from certain significant customers could have a material effect on our business.
- Our financial results are based on estimates and assumptions that may differ from actual results.
- We may fail to adequately recover on contract change orders or claims against customers.
- Changes in estimates related to revenues and costs under customer contracts could result in a reduction or elimination of revenues or profits or the recognition of losses.
- During the ordinary course of our business, we are subject to lawsuits, claims and other legal proceedings, as well as bonding claims and related reimbursement requirements.

- We may be unsuccessful in generating internal growth.
- Many of our contracts may be canceled or suspended on short notice or may not be renewed or replaced.
- The nature of our business exposes us to warranty, engineering and other related claims.
- We can incur liabilities or suffer negative financial or reputational impacts due to health and safety matters.
- Disruptions or failure to adequately protect our information technology systems could materially affect our business or result in harm to our reputation.
- A deterioration of our reputation or brands could have an adverse impact on our business.
- Our financial results and financial condition may be adversely affected as a result of asset impairments.
- Our inability to successfully execute our acquisition strategy may adversely impact our growth.
- Our decentralized management infrastructure could negatively impact our business.
- The loss of key personnel could disrupt our business.
- Our investments and joint ventures expose us to risks and may result in conflicts of interest.
- We extend credit to, and enter into other financing arrangements with customers, which subject us to credit and investment risk.
- Risks associated with operating in international markets could harm our business and prospects.
- Limitations on the availability of suppliers, subcontractors and equipment manufacturers could adversely affect our business.
- An increase in the price or restrictions on the use of fuel, materials or equipment could adversely affect our business.
- Increasing scrutiny and expectations with respect to corporate sustainability practices may impose additional costs on us or expose us to reputational or other risks.

Risks Related to Our Industries

- Negative economic and market developments, including low commodity production volumes and prices, can adversely impact our customers.
- Our revenues and profitability can be negatively impacted if customers encounter financial difficulties or disputes arise with our customers.
- Our business is highly competitive and competitive pressures could negatively impact our business.
- Technological advancements and other market conditions could negatively affect our business.

Risks Related to Regulation and Compliance

- Regulatory requirements applicable to our business and potential changes related to those requirements may adversely affect our business.
- Our unionized workforce and related obligations may adversely affect our operations.
- We could be adversely affected by failure to comply with laws applicable to our foreign activities.
- Compliance with tax laws could adversely affect our financial results.
- Our failure to comply with environmental laws and regulations could result in significant liabilities and costs.
- Certain specific regulatory requirements are applicable to us and certain of our subsidiaries, which could materially impact our business.
- Governmental opportunities could subject us to increased regulation and costs and may pose additional risks relating to funding and compliance.
- Immigration laws, including inability to verify employment and restrictions on movement, could adversely impact our business.

Risk Related to Financing Our Business

- We may not have access to sufficient funding to finance desired growth and operations.
- We have a significant amount of debt that can negatively impact our business.
- We may not have sufficient cash flow to service our debt.
- Our variable rate indebtedness subjects us to interest rate risk.
- We may be unable to compete for projects if we cannot obtain surety bonds, letters of credit or bank guarantees.
- A downgrade in our debt rating could restrict our ability to access capital markets.

Risks Related to Our Common Stock

- Our sale or issuance of additional common stock or other equity securities could be dilutive to each stockholder's ownership interest or affect the market price of our common stock.
- There can be no assurance that we will declare or pay future dividends on our common stock.
- Certain provisions of our governing documents could make an acquisition of Quanta more difficult.

Risks Related to 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, including as a result of project delays, reductions in project scope, project terminations or cancellations, and agreement terminations and expirations;
- increases in project costs that result from, among other things, natural disasters and emergencies, adverse weather conditions or events, legal challenges, permitting, regulatory or environmental processes, or inaccurate project cost estimates;
- variations in the size, scope, costs and margins of ongoing projects, as well as the mix of our customers, contracts and business;
- fluctuations in economic, political and market conditions on a regional, national or global basis, including potential regulatory, legislative and policy changes resulting from the 2020 U.S. congressional and presidential elections;
- pricing pressures as a result of competition;
- changes in the budgetary spending patterns or strategic plans of customers or governmental entities;
- liabilities and costs incurred in our operations that are not covered by, or that are in excess of, our third-party insurance or indemnification rights, including significant liabilities that arise from the inherently hazardous conditions of our operations (e.g., explosions, fires) and the operations of our subcontractors, and which could be exacerbated by the geographies in which we operate;
- disputes with customers or delays and payment risk relating to billing and payment under our contracts and change orders, including customers affected by the volatility of commodity prices or production 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;
- restructuring, severance and other costs associated with, among other things, 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 our operations or growth internally or through acquisitions.

The effects of the COVID-19 pandemic and related economic repercussions have materially affected how we and our customers are operating our businesses, and the duration and extent to which this will negatively impact our future results of operations and overall financial performance remains uncertain.

The COVID-19 pandemic has negatively impacted the global economy, disrupted consumer spending and global supply chains, and created significant volatility and disruption of financial markets. We have experienced some resulting disruptions to our business operations, and we expect the COVID-19 pandemic could continue to have a material adverse impact on our business and financial performance. Specifically, we have been negatively impacted by the COVID-19 pandemic as a result of the shelter-in-place restrictions and work disruptions in some of our service areas creating disruptions to portions of our operations, particularly in major metropolitan markets that have been meaningfully impacted by the pandemic and in Latin America. We have also experienced permitting and regulatory delays attributable to the COVID-19 pandemic. Additionally, restrictions on operations related to industrial facilities, as well as reduced demand for refined products, have resulted in suspensions and delays related to our high-pressure and critical-path turnaround services to the downstream and midstream energy markets. In addition to these current dynamics, the COVID-19 pandemic may create or exacerbate risks related to our operations and regulatory and compliance matters, including as a result of:

- evolving governmental guidance or requirements, including travel and movement restrictions, that continue to impact our ability to perform services or complete projects in accordance with required delivery schedules, which could result in additional costs or penalties (e.g., liquidated damages);
- additional delays with respect to permitting and regulatory matters and additional project deferrals, delays, and cancellations and changes in customer spending patterns and strategic plans as a result of, among other things, prolonged decreases in energy demand, lack of available financing for our customers' businesses or termination of, or force majeure events arising under, existing customer agreements;
- governmental guidance or requirements, including work-from-home policies, or potential illness that negatively impact the availability or productivity of our key personnel or a significant number of employees or cause other disruptions to our business, corporate governance or financial reporting processes;
- increased payment risk associated with customers experiencing financial difficulties (including bankruptcy) and an increase in disputes with customers relating to billing and payment under contracts and change orders;
- potential liabilities and reputational harm related to occupational health and safety matters;
- our inability to execute our business strategy, including with respect to certain capital investments such as acquisitions, investments and service offering expansions;
- limitations on the ability of our suppliers, vendors and subcontractors to perform;
- additional impairment charges related to goodwill, other intangible assets, other long-lived assets and investments;
- additional costs associated with restructuring, severance and related matters or other increased employment-related costs (e.g., workers' compensation insurance claims); and
- an increase in cyber-attacks and attempted intrusions into our information technology systems as a result of, among other things, increased reliance on such systems.

The extent of the impact of the COVID-19 pandemic on our business and financial performance, including our ability to execute our near-term and long-term business strategies and initiatives in the expected time frame, will depend on future developments, including the duration and severity of the pandemic, the resulting governmental and other measures implemented to address the pandemic and the development and availability of effective treatments and vaccines, which are uncertain and cannot be predicted. As a result, the ultimate impact of the COVID-19 pandemic is difficult to predict, and the pandemic may continue to materially impact our business, financial condition, results of operations or cash flows.

A variety of issues could affect the timing or profitability of our 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, additional costs or project performance issues as a result of, among other things:

- inability to meet project schedule requirements or achieve guaranteed performance or quality standards for a project, which can result in increased costs, through rework, replacement or otherwise, or the payment of liquidated damages to the customer or contract termination;
- failure to accurately estimate project costs or accurately establish the scope of our services;
- failure to make judgments in accordance with applicable professional standards (e.g., engineering standards);
- 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;
- changes in laws or permitting and regulatory requirements during the course of our work (e.g., federal district court ruling vacating the U.S. Army Corps of Engineers Clean Water Act Section 404 Nationwide Permit 12);
- delays in the delivery or management of design or engineering information, equipment or materials;
- our or a customer's failure to timely obtain permits or rights of way or meet other permitting, regulatory or environmental requirements or conditions;

- schedule changes;
- natural disasters or emergencies, including wildfires and earthquakes, as well as significant weather events (e.g., hurricanes, tropical storms, tornadoes, floods, droughts, blizzards and extreme temperatures) and adverse or unseasonable weather conditions (e.g., prolonged rainfall or snowfall, early thaw in Canada and the northern United States);
- 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;
- other factors such as terrorism, military action and public health crises (e.g., the COVID-19 pandemic);
- changes in the cost of equipment, commodities, materials or labor; and
- delay or failure to perform by suppliers, subcontractors or other third parties, or our failure to coordinate performance of such parties, as approximately 15% to 20% of our work is subcontracted to other service providers.

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 associated with delays may be substantial and not recoverable from third parties, and in some cases, we may be required to compensate the customer for such delays, including in circumstances where we have guaranteed project completion or performance by a scheduled date and incur liquidated damages if we do not meet such schedule.

Furthermore, we generate a significant portion of our revenues under fixed price contracts, including contracts for projects where we provide engineering, procurement and construction (EPC) services (e.g., large electric transmission and pipeline projects, facility and terminal projects), and we have strategically expanded these service offerings in recent years. These contracts often involve complex pricing, scope of services and other bid preparation components that require challenging estimates and assumptions on the part of our personnel, which increases the risk that costs incurred on such projects can vary, sometimes substantially, from our original estimates.

To the extent our costs on a project exceed our revenues, we incur a loss. Additionally, performance difficulties can result in project cancellation by a customer and damage to our reputation or relationship with a customer, which can adversely affect our ability to secure new contracts. As a result, 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 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, communications and other 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 and maintenance and other services for utilities and other customers that operate electric power, natural gas, communications and other infrastructure in California and other areas in the western United States, including inspection of, and construction, upgrade, repair and maintenance and other services relating to, the electrical power and natural gas transmission and distribution infrastructure operated by PG&E Corporation and its primary operating subsidiary, Pacific Gas and Electric Company (together, PG&E), as well as other utilities and customers, in California and other western states. PG&E and certain other utility customers have been determined to be or are potentially responsible for catastrophic wildfire events that have occurred in recent years, some of which events Quanta's operating units have received document hold requests and subpoenas in connection with, and some of which events currently remain under investigation. We are not a party to any pending legal proceeding relating to such wildfire events 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. For example, one of our larger operating units 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, and we assumed certain contingent liabilities related to a natural gas explosion in connection with our acquisition of this operating unit in 2019, which are described further in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data.* Additionally, we operate a significant number of helicopters in the performance of our services, including the transportation of line workers, the setting of poles, the stringing of wires and wildfire control and prevention, among other activities, including in locations that have a higher risk of wildfires and in densely populated areas. Our operation of helicopters is subject to various risks, such as crashes, collisions, fires, adverse weather conditions or mechanical failures.

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 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 years after we complete our services, and potential claims and liabilities arising from significant accidents and events can take years and significant legal costs to resolve.

Potential liabilities include, among other things, claims associated with personal injury, including severe injury or loss of life, and destruction of or significant damage to property and equipment as well as harm to 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 liabilities and legal costs. In addition, if any of these events or losses related thereto are alleged or found to be the result of our or our customer's activities or services, we could be subject to government enforcement actions, regulatory penalties, civil litigation and governmental actions, including investigations, citations, fines and suspension of operations. Insurance coverage may not be available to us or may be insufficient to cover the cost of any of these liabilities and legal costs, and our insurance costs may increase if we incur liabilities associated with operational hazards. 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, aviation 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 also 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, and issue letters of credit to secure our obligations in connection with our casualty insurance programs. Our insurance policies include various coverage requirements, including notice requirements, 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, and there is no assurance that any of our 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. For example, due to the increased occurrence and future risk of wildfires in California and other areas in the western United States, Australia and other locations, insurers have reduced coverage availability and increased the cost of insurance coverage for such events in recent years. As a result, our level of insurance coverage for wildfire events decreased, including in connection with our annual insurance renewals in the spring of 2020 and 2019, and our levels of coverage may not be sufficient to cover potential losses. Furthermore, our third-party insurers could also decide to further reduce or exclude coverage for wildfires or other events in connection with our insurance renewal in the spring of 2021 and/or in the future. 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 unreported incidents. 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 experienced program managers and qualified journeyman linemen, available for our Electric Power Infrastructure Solutions segment. With respect to our Underground Utility and Infrastructure Solutions 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, and 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, certain significant 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 32% of our consolidated revenues for the year ended December 31, 2020. 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. A significant customer may also 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.

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.

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.

During the ordinary course of our business, we are subject to lawsuits, claims and other legal proceedings, as well as bonding claims and related reimbursement requirements.

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 or damages caused by accidents and events related to such systems, even if our services are not the cause of such failures and damages. 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.

In addition, 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. For example, we were required to make material reimbursements to our sureties for bond-related costs in connection with the exercise of approximately $112 million of on-demand advance payment and performance bonds related to a terminated telecommunications project in Peru. As of December 31, 2020, the total amount of our outstanding performance bonds was estimated to be approximately $3.7 billion. To the extent reimbursements are required, the amounts could be material and could adversely affect our consolidated business, financial condition, results of operations or 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* of this Annual Report.

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. Our ability to generate internal growth will be affected by, among other factors, our ability to profitably scale the services we currently offer and expand our overall service offerings, attract new customers, increase the number of projects we perform for existing customers; hire and retain qualified employees and expand geographically within our current markets, as well as our ability to address regulatory, environmental and permitting requirements and economic or market conditions that affect us or our customers. Inability to successfully generate internal growth may adversely affect our financial condition, results of operations and cash flows.

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 our customers cancel or suspend contracts having significant value, we fail to renew or replace a significant number of our existing contracts when they expire or are completed or the anticipated volume of work under an existing master service agreement is not assigned to us.

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

We typically provide contractual warranties for our services and materials, guaranteeing the work performed against, among other things, defects in workmanship, and we may agree to indemnify our customers for losses related to our services.

The length of these warranty periods varies 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 materials suppliers to provide us warranties that are consistent with those we provide customers, if any of these suppliers default on their warranty obligations to us, we may incur costs to repair or replace the defective materials. 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*, we are involved in litigation with respect to a claim of approximately $59 million in damages related to alleged warranty defects on a pipeline project.

Furthermore, our business involves professional judgments regarding the planning, design, development, construction, operations and management of electric power, communications, underground utility 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, warranty, engineering and other related 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 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 precautions designed to mitigate this risk, 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, and our reliance on those systems has increased as a result of remote working arrangements necessitated by the COVID-19 pandemic. 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, or systems of key third parties and information technology vendors that we rely upon, 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, which could have a material adverse impact on our business, financial condition, results of operations and cash flows.

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.

Our brands and our reputation are among our most important assets, 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, including our recent joint venture in LUMA Energy, LLC (LUMA), which was selected for a 15-year operation and maintenance agreement to operate, maintain and modernize the approximately 18,000-mile electric transmission and distribution system in Puerto Rico;
- 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, 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 or customers lose confidence in us, our business, financial condition, results of operations, or cash flows could be adversely affected.

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, 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, and as a result actual results 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. For example, 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 recognize. 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. As described further in Note 2 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*, we record goodwill when we acquire a business, and goodwill must be tested at least annually for impairment. Additionally, 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. 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 first and second quarters of 2020, we recorded charges of $3.1 million and $14.9 million for aggregate charges of $18.0 million, primarily related to a $9.3 million impairment associated with an investment in a water and gas pipeline infrastructure contractor located in Australia and $8.7 million of impairments associated with two non-integral equity investments that have been negatively impacted by the decline in demand for refined petroleum products. Additionally, during the fourth quarters of 2020, 2019 and 2018, we recorded $8.3 million, $13.9 million and $49.4 million of asset impairment charges that primarily related to the following: the exit of our Latin American operations and the planned sale of certain equipment in 2020; 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 in 2019; and the winding down of certain oil-influenced operations and assets in 2018.

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

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 and stock issuances, the incurrence or assumption of debt and other known and unknown liabilities and expose us to burdensome regulatory requirements. For example, we assumed certain contingent liabilities associated with an acquisition in 2019, 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.

Additionally, we also generally require that key management and former principals of the businesses we acquire enter into non-competition agreements in our favor. Enforceability of these non-competition agreements varies by jurisdiction and typically is dependent upon specific facts and circumstances, making it difficult to predict their enforceability. Therefore, if a member of the key management of the businesses we acquire is terminated, we might be subject to increased competition if the restrictive covenants entered into by such person are not enforceable or have expired, which could materially and adversely affect our business, financial condition, results of operations and cash flows.

Our decentralized management structure could negatively impact our business.

We cannot be certain that our management structure will be adequate to support our operations as they expand. Our 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. For example, our ability to coordinate and utilize resources, including our fleet, depends on effective communications and processes among our operating units. As a result, the ability to internally communicate, coordinate and execute business strategies, plans and tactics may be negatively impacted by our increasing size and complexity. 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, senior corporate management and management of our operating units, which includes leadership and key personnel of the businesses we acquire. 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 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 and joint ventures 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, joint ventures and other investment arrangements with various partners, including customers and infrastructure investors, through which we have invested in infrastructure assets and businesses, and we expect this activity to continue in the future. For additional information on our investment activity, including our recent joint venture in LUMA, see Note 2 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*.

These types of investments expose us to increased risks, including poor performance by the infrastructure projects or businesses 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 evaluated the partnership, at the end of which the investment period for any future investments ended. 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.

Additionally, the purpose of our joint ventures is typically to combine skills and resources to allow for the bidding and performance of particular projects, and the 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. We and our joint venture partners are also 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. As a result, 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 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, communications providers, energy companies, 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 and Australia. 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. For example, a customer for which we were contracted to construct a natural gas pipeline encountered financial difficulties during 2020 that resulted in nonpayment of certain receivables owed, and as a result we decided to foreclose our liens on the pipeline asset in order to recover the outstanding amounts. 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. 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, thereby increasing the risk of loss in those circumstances. 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 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 and Australia, we also perform work in other foreign countries and U.S. territories. For the year ended December 31, 2020, we derived $1.58 billion, or 14.1%, of our consolidated revenues from foreign operations, the substantial majority of which was related to Canada and Australia.

Changes in economic conditions, including those resulting from wars and other conflicts, civil unrest, public health crises, such as the COVID-19 pandemic, 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 are subject to fluctuating exchange rates and 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 or liabilities 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 and liabilities associated with winding down or exiting an existing market. For example, we incurred operating losses of $74.0 million, including asset impairment charges of $7.0 million, during 2020 in connection with the exit of our Latin American operations, and our exit from this market could result in additional significant costs during 2021 or in subsequent years. 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.

Additionally, during the year ended December 31, 2020, foreign revenues decreased by approximately $17 million in comparison with the year ended December 31, 2019 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, including a significant number of specialty vehicles. 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, customers in certain states and Canada, in order to receive certain funding or for other reasons, may expect or compel us to engage a specified percentage of suppliers that meet diversity-ownership requirements, which can further limit our pool of available suppliers and limit our ability to secure contracts, maintain our services or grow 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. As a result, regulatory or other requirements that require us to outsource a percentage of services to subcontractors, whether they are businesses meeting diversity-ownership requirements or otherwise, also limit our ability to self-perform our services, thereby potentially increasing performance risk associated with our services. Furthermore, services subcontracted to other service providers generally yield lower margins, and therefore these regulatory requirements can impact our profitability and results of operations.

An increase in the price or restrictions on use of fuel, materials or equipment necessary for our business 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, particularly fuel prices for our large rolling-stock fleet, which could be negatively impacted by potential regulatory, legislative and policy changes resulting from the 2020 U.S. congressional and presidential elections. 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 ability to utilize certain existing vehicles within our fleet may also be limited by emissions or other regulations. To the extent we are unable to utilize a significant portion of our existing fleet, we may be unable to perform services, which could have an adverse effect on our future financial condition, results of operations and cash flows.

Increasing scrutiny and changing expectations from investors and customers with respect to corporate sustainability practices may impose additional costs on us or expose us to reputational or other risks.

Investors and other interested constituencies have focused increasingly on the environmental, social and governance (ESG) practices of companies, including practices with respect to human capital resources, emissions and environmental impact and political spending. 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 in order to 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 ratings information to investors on ESG matters may assign unfavorable ratings to Quanta or our industries, which 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 Our Industries

Negative economic and market conditions, including low commodity 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, the COVID-19 pandemic, 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 Underground Utility and Infrastructure Solutions 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 commodity prices and production volumes, 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. For example, the COVID-19 pandemic and corresponding preventative measures taken around the world have resulted in downward pressure on commodity prices, which negatively impacted, and may continue to negatively impact, certain services within our Underground Utility and Infrastructure Solutions segment and resulted in impairment losses of $8.7 million related to certain non-integral equity method investments during the year ended December 31, 2020 and may result in future impairment losses associated with goodwill, other intangible assets and other long-lived assets. Demand for our industrial services operations also declined during 2020 as customers reduced and deferred regularly scheduled maintenance due to lack of demand for refined products as a result of the COVID-19 pandemic. Additionally, pipeline and industrial capital projects have been, and are expected to be, negatively impacted for a prolonged period due to the low commodity price environment and resulting reductions in customer capital budgets. Furthermore, the change in control of the U.S. Congress and presidency in 2021 may result in increased restrictions on oil and gas production activities, which could have a material adverse effect on the oil and gas industry as a whole. If the profitability of our Underground Utility and Infrastructure Solutions segment were to decline, our overall financial position, results of operations and cash flows could also be adversely affected. A decline in prices, production or the development of resource plays can also negatively impact demand for certain electric power infrastructure services performed in energy-reliant markets, including Canada and Australia.

Our revenues and profitability can be negatively impacted 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 fail 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, 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 have filed certain international arbitration proceedings 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, 2020. A failure to 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, delaying our collection of approximately $165 million of our pre-petition receivables, which were ultimately collected or sold to a third party during the second half of 2019 and 2020. A customer within our Underground Utility and Infrastructure Solutions segment encountered financial difficulties during 2020 that resulted in nonpayment of certain receivables owed, and as a result of which we decided to foreclose our liens on the pipeline asset in order to recover the outstanding amounts. See *Concentrations of Credit Risk* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for additional information. 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 highly competitive, and competitive pressures could negatively affect our business.

We cannot be certain that we will maintain or enhance our competitive position or maintain our current customer base. 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, and may have or develop expertise, experience and resources to provide services that are superior in both price and quality to our services. Additionally, 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, thereby reducing the services they outsource to us in the future.

Furthermore, a substantial portion of our revenues is directly or indirectly dependent upon obtaining new contracts, which is unpredictable and often involves complex and lengthy negotiations and bidding processes that are impacted by a wide variety of factors, including, among other things, price, governmental approvals, financing contingencies, commodity prices, environmental conditions, overall market and economic conditions, and a potential customer's perception of our ability to perform the work or the technological advantages held by our competitors. 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 recently experienced, and may in the future experience, more competitive pricing for smaller scale projects 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.

Technological advancements and other market developments could negatively affect our business.

Technological advancements, market developments and other factors may increase our costs or alter our customers' existing operating models or the services they require, which could result in reduced demand for our services. For example, a reduction in demand for hydrocarbons or plastics or an increase in demand for renewable energy sources or otherwise, could negatively impact certain of our customers and reduce demand for our services. Additionally, a transition to a decentralized electric power grid, which relies on more dispersed and smaller-scale renewable energy sources, could reduce the need for large infrastructure projects and significant maintenance and rehabilitation programs, thereby reducing demand for, or profitability of, our services. Our future success will depend, in part, on our ability to anticipate and adapt to these and other potential changes in a cost-effective manner and to offer services that meet customer demands and evolving industry standards. If we fail to do so 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.

Furthermore, 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. If our intellectual property rights or work processes become obsolete, through technological advancements or otherwise, 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.

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. Concerns about climate-related issues could also potentially result in new legislation, regulation, regulatory actions or other requirements at the local, state or federal level, including as a result of the 2020 U.S. congressional and presidential elections. Such actions 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, in January 2021, the new U.S. presidential administration issued an executive order directing all federal agencies to review and take action to address, among other things, any federal regulations, orders, guidance documents or policies promulgated during the prior presidential administration that may be inconsistent with the current administration's policies. Any new 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 costs for our large rolling-stock fleet, render portions of our fleet obsolete or reduce the availability of vehicles we need to perform our services. In addition, if our operations are perceived to result in high greenhouse gas emissions, our reputation could suffer. 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.

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, 2020, approximately 34% 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 strikes or work stoppages could 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 a projected minimum funding deficiency). Plans in these classifications must adopt remedial measures, 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 have these funding statuses, 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 certain opportunities in countries 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, which 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 can be expensive and 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 financial results.

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, and significant changes could result from the change in control of the U.S. Congress and presidency in 2021, all of 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. Furthermore, the Biden administration has provided informal guidance on certain tax law changes that it would support, which includes, among other things, raising tax rates on both domestic and foreign income and imposing a new alternative minimum tax on book income. Since future changes to federal and state tax legislation and regulations are unknown, we cannot predict the ultimate impact such changes may have on our business.

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 also 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. Additionally, we own and lease facilities that contain above- and below-ground fuel storage tanks, which could leak and cause us to 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 or the stricter enforcement of existing laws and regulations, including as a result of the change in control of the U.S. Congress and presidency in 2021, as well as 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 various corporate governance and financial reporting requirements, 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 control over financial reporting was effective as of December 31, 2020; however, there can be no assurance that our internal control 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.

Additionally, 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), which imposes 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.

Furthermore, our wholly-owned captive insurance company is a registered insurance company 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. Our postsecondary educational institution is subject to authorization and regulatory oversight in the various states in which it operates, and failure to comply with these requirements could result in significant monetary damages or subject these entities to fines, limitations on operations, injunctions or other penalties. The postsecondary educational institution is also accredited by the Accrediting Commission of Career Schools and Colleges, and 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 also collect and retain information about our customers, stockholders, vendors and employees. Legislation and regulatory requirements, as well as contractual commitments, affect how we must store, use, transfer and process the confidential information of our customers, stockholders, vendors and employees. 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 and 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 or delays that prevent the future transfer of our foreign employees to the United States, we may incur additional costs to hire and train new employees. For example, as a result of the COVID-19 pandemic, we have experienced delays and restrictions due to immigration processes that have prevented certain foreign workers from entering and working in the United States. 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.

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. 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 credit facility and the indenture for our 2.900% Senior Notes due October 1, 2030 contain certain restrictions, including financial covenants and other restrictions on our ability to borrow amounts under the credit 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 credit facility is also dependent upon additional commitments from our lenders. Furthermore, if we 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 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. For example, fluctuations in economic, political and market conditions as a result of the COVID-19 pandemic impacted lenders and capital markets during portions of 2020. If we are unable to borrow under our senior 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, which could have a material adverse impact on our business, financial condition, results of operations and cash flows. For additional information on the terms of our senior credit facility and senior notes due 2030, please read Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations - Debt Instruments.*

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.

We have a significant amount of debt, and our significant indebtedness could adversely affect our business, financial condition and results of operations and our ability to meet our payment obligations under our other debt.

We have a significant amount of debt and debt service requirements. As of December 31, 2020, we had approximately $1.18 billion of outstanding long-term debt, and we had $2.01 billion of undrawn borrowing capacity under our senior credit facility. This level of debt could have significant consequences on our future operations, including:

- making it more difficult for us to meet our payment and other obligations under our outstanding debt;
- resulting in an event of default if we fail to comply with the financial and other restrictive covenants contained in our debt agreements, which event of default could result in all of our debt becoming immediately due and payable;
- reducing the availability of our cash flows to fund working capital, capital expenditures, acquisitions or strategic investments, dividends and other general corporate purposes, and limiting our ability to obtain additional financing for these purposes;
- subjecting us to the risk of increasing interest expense on variable rate indebtedness, including borrowings under our senior credit facility;
- limiting our flexibility in planning for, or reacting to, and increasing our vulnerability to changes in our business, the industries in which we operate and the general economy;
- limiting our ability to pursue business opportunities that become available to us; and
- placing us at a competitive disadvantage compared to our competitors that have less debt or are less leveraged.

Any of the above-listed factors could have an adverse effect on our business, financial condition and results of operations and our ability to meet our payment obligations on our existing indebtedness.

Servicing our debt requires a significant amount of cash, and we may not have sufficient cash flow from our operations to pay our indebtedness.

Our ability to generate cash in order to make scheduled payments on the principal of, to pay interest on or to refinance our indebtedness depends on our future performance, which is subject to economic, financial, competitive, legislative, regulatory and other factors beyond our control. In addition, our ability to borrow funds in the future to make payments on our debt will depend on the satisfaction of the covenants in our senior credit facility and our other financing and other agreements we may enter into in the future. Specifically, we will need to maintain certain financial ratios. Our business may not continue to generate sufficient cash flow from operations in the future and future borrowings may not be available to us under our senior credit facility or from other sources in an amount sufficient to service our indebtedness to make necessary capital expenditures or to fund our other liquidity needs. If we are unable to generate cash from our operations or through borrowings, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to make payments on our indebtedness or refinance our indebtedness will depend on factors including the state of the capital markets and our financial condition at such time, as well as the terms of our financing agreements. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations.

Our variable rate indebtedness subjects us to interest rate risk.

Borrowings under our senior 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, 2020 was 2.1%. The annual effect on our pretax earnings of a hypothetical 50 basis point increase or decrease in variable interest rates would be approximately $0.7 million based on our December 31, 2020 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 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), which may be a rate based on the secured overnight financing rate published by the Federal Reserve Bank of New York. 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 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. Changing to an alternative interest rate or to the Base Rate may lead to additional volatility in interest rates and could cause our debt service obligations to increase significantly. If this were to occur, our available liquidity and cash flows could be negatively impacted.

We may be unable to compete for 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.

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.

A downgrade in our debt rating could restrict our ability to access the capital markets.

The terms of our financings are, in part, dependent on the credit ratings assigned to our debt by independent credit rating agencies. We cannot provide assurance that our current credit rating will remain in effect for any given period of time or that it will not be lowered or withdrawn entirely by a rating agency. Factors that may impact our credit rating include, among other things, our debt levels and liquidity, capital structure, financial performance, planned asset purchases or sales, near- and long-term growth opportunities, customer base and market position, geographic diversity, regulatory environment, project performance and risk profile. A downgrade in our credit rating, particularly to non-investment grade levels, could limit our ability to access the debt capital markets or refinance our existing debt or cause us to refinance or issue debt with less favorable terms and conditions. An increase in the level of our indebtedness and related interest costs may increase our vulnerability to adverse general economic and industry conditions and may affect our ability to obtain additional financing, as well as have a material adverse effect on our business, financial condition, results of operations and cash flows.

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 138,300,191 shares were outstanding as of December 31, 2020. 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 office space for our corporate headquarters in Houston, Texas and own and lease other facilities throughout the United States, Canada, Australia and certain other foreign countries where we conduct business. These 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, 2020, we owned 67 of our facilities and leased the remainder. We believe that our existing facilities are suitable and adequate for our current needs; however, we continue to evaluate real estate strategies to support our recent growth.

Equipment

We operate a fleet of owned and leased trucks and trailers, support vehicles and specialty construction equipment, such as bucket trucks, digger derricks, backhoes, excavators, trenchers, generators, boring machines, cranes, robotic arms, wire pullers, tensioners and helicopters. As of December 31, 2020, the total size of the rolling stock fleet was approximately 51,000 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 is suitable 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 damage, environmental liabilities, wage and hour claims and other employment-related damages, punitive damages, 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,* which is 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 23, 2021, there were approximately 559 holders of record of our common stock. This number does not include stockholders for whom shares of our common stock are held in "nominee" or "street name." 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 2020

On December 17, 2020, we completed an acquisition in which a portion of the consideration consisted of the unregistered issuance of shares of our common stock. The aggregate consideration paid at closing in the acquisition included 129,883 shares of our common stock, valued at $7.4 million as of the acquisition date. For additional information about this acquisition, see Note 4 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data.* The shares of common stock issued in this transaction 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 2020

The following table contains information about our purchases of equity securities during the three months ended December 31, 2020.

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, 2020				
Open Market Stock Repurchases [1]	—	$ —	—	$ 586,756,136
Tax Withholdings [2]	5,865	$ 53.56	—	
November 1 - 30, 2020				
Open Market Stock Repurchases [1]	297,232	$ 68.13	297,232	$ 566,506,467
Tax Withholdings [2]	9,380	$ 69.37	—	
December 1 - 31, 2020				
Open Market Stock Repurchases [1]	422,179	$ 70.35	422,179	$ 536,807,425
Tax Withholdings [2]	2,432	$ 66.70	—	
Total	737,088		719,411	$ 536,807,425

(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. Additionally, on August 6, 2020, 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, 2023, up to an additional $500.0 million of our outstanding common stock. Repurchases under these programs 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. These programs do 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 unit awards or the settlement of previously vested but deferred restricted stock unit and performance stock unit awards.

Dividends

We have declared a quarterly dividend during each quarter beginning in the fourth quarter of 2018, and we currently expect that comparable cash dividends will continue to be paid for the foreseeable future. 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 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.

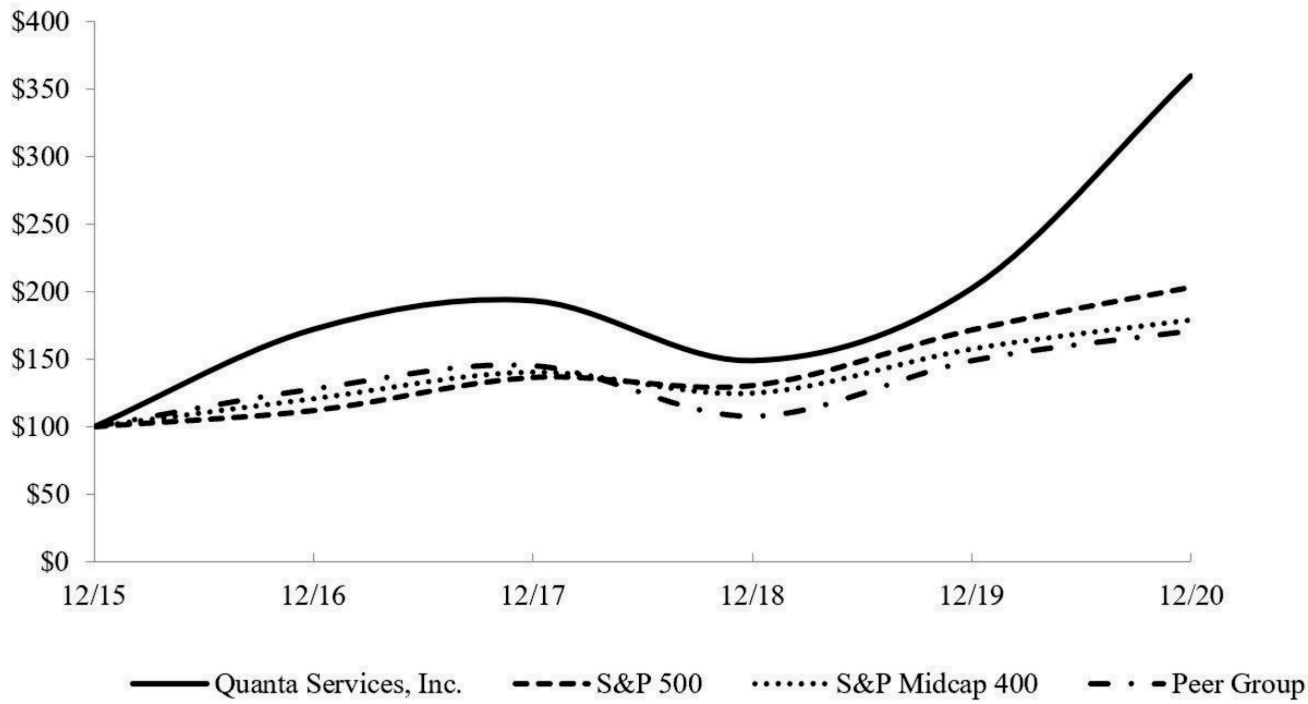
Performance Graph

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, 2015 to December 31, 2020, 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 Mid-Cap 400) and a peer group selected by our management that includes public companies within our industries. The companies in the peer group were selected to represent a broad group of publicly held corporations with operations similar to ours, and 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 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 and the peer group on December 31, 2015 and tracks their relative performance through December 31, 2020. The returns of each company in the peer group is 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 and the Peer Group



	December 31,					
	2015	2016	2017	2018	2019	2020
Quanta Services, Inc.	$ 100.00	$ 172.10	$ 193.14	$ 148.84	$ 202.18	$ 359.36
S&P 500	$ 100.00	$ 111.96	$ 136.40	$ 130.42	$ 171.49	$ 203.04
S&P MidCap 400	$ 100.00	$ 120.74	$ 140.35	$ 124.80	$ 157.49	$ 179.00
Peer Group	$ 100.00	$ 127.93	$ 145.15	$ 107.66	$ 148.80	$ 170.91

ITEM 6. ***Selected Financial Data***

Part II, Item 6 is no longer required as we have adopted certain provisions within the amendments to Regulation S-K that eliminate Item 301.

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 *Cautionary Statement About Forward-Looking Statements and Information* above and Item 1A. *Risk Factors*.

Overview

We are a leading provider of specialty contracting services, delivering comprehensive infrastructure solutions for the electric and gas utility, communications, pipeline and energy 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, engineering, new construction, upgrade and repair and maintenance of infrastructure within each of the industries we serve, such as electric power transmission and distribution networks; substation facilities; communications and cable multi-system operator networks; gas utility systems; and pipeline transmission systems and facilities. 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 new construction contracts.

We report our results under two reportable segments: (1) Electric Power Infrastructure Solutions and (2) Underground Utility and Infrastructure Solutions, 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 Solutions segment are the results related to our communications infrastructure services.

Current Year Financial Results and Significant Operational Trends and Events

Key financial results for the year ended December 31, 2020 included:

- Consolidated revenues decreased 7.5% to $11.20 billion as compared to $12.11 billion for the year ended December 31, 2019;
- Operating income increased 10.2%, or $56.5 million, to $611.4 million as compared to $554.9 million for the year ended December 31, 2019;
- Net income attributable to common stock increased 10.8%, or $43.6 million, to $445.6 million as compared to $402.0 million for the year ended December 31, 2019;
- Diluted earnings per share increased 12.5%, or $0.34, to $3.07 as compared to $2.73 for the year ended December 31, 2019;
- EBITDA (a non-GAAP measure) increased 10%, or $85.8 million, to $922.7 million as compared to $836.9 million for the year ended December 31, 2019, and adjusted EBITDA (a non-GAAP measure) increased 11%, or $108.1 million, to $1.05 billion as compared to $941.8 million for the year ended December 31, 2019;
- Net cash provided by operating activities increased 111.9%, or $589.4 million, to $1.12 billion as compared to $526.6 million for the year ended December 31, 2019;
- Remaining performance obligations decreased 24.8%, or $1.32 billion, to $3.99 billion as of December 31, 2020 as compared to $5.30 billion as of December 31, 2019; and
- Total backlog (a non-GAAP measure) increased 0.8%, or $127.5 million, to $15.13 billion as of December 31, 2020 as compared to $15.00 billion as of December 31, 2019.

For a reconciliation of EBITDA and adjusted EBITDA to net income attributable to common stock, their most comparable GAAP measure, and a reconciliation of backlog to remaining performance obligations, its most comparable GAAP measure, see *Non-GAAP Reconciliations* below.

During 2020, we were impacted by certain significant operational trends and events as compared to 2019 as described below.

Electric Power Infrastructure Solutions Segment

- Revenues increased by 9.1% to \$7.77 billion, as compared to \$7.12 billion. Overall, revenues increased as a result of continued favorable dynamics across our core utility market and increased demand for our electric power services, including a \$220 million increase in emergency restoration services revenues and a \$125 million increase in revenues from our North American communication operations. We also recognized approximately \$175 million of incremental revenues from acquired businesses and increased revenues from larger transmission projects in Canada.
- Operating income increased by 39.8% to \$826.3 million, as compared to \$591.2 million, and operating income as a percentage of revenues increased to 10.6% as compared to 8.3%. Operating income increased primarily due to improved performance across the segment and increased emergency restoration services and Canadian revenues, both of which contributed to improved equipment utilization and fixed cost absorption as compared to the year ended December 31, 2019, which was negatively impacted by elevated levels of unabsorbed costs due to severe weather and other delays on certain larger transmission projects in Canada.
- Operating income was negatively impacted in both periods by our Latin American operations, which have been adversely impacted by the COVID-19 pandemic due to shelter-in-place restrictions and other work disruptions. As a result of these factors, we accelerated various contract terminations and other activities in order to expedite cessation of operations in the region. We substantially completed our exit of this market as of December 31, 2020. During the year ended December 31, 2020, these operations generated an operating loss of \$74.0 million. During the year ended December 31, 2019, these operations generated an operating loss of \$85.7 million, which included the recognition of a \$79.2 million charge associated with a terminated telecommunications project in Peru, composed of a \$48.8 million reversal of revenues and a \$30.4 million increase in cost of services. See *Business Environment* below for additional information and discussion related to the exit of our Latin American operations.

Underground Utility and Infrastructure Solutions Segment

- Revenues decreased by 31.3% to \$3.43 billion, as compared to \$4.99 billion.
- Revenues associated with larger pipeline projects decreased by approximately \$830 million as a result of the industry entering the late-stage of the current construction cycle, as well as the next cycle of projects being delayed due to various factors, including among other things, permitting delays and worksite access limitations related to environmental regulations.
- The impact of the COVID-19 pandemic contributed to the decline in revenues and operating income. Specifically, shelter-in-place and worksite access restrictions in major metropolitan areas caused short-term disruptions for our gas utility customers in the first half of 2020, and a lack of demand for refined products during 2020 resulted in project delays and deferrals that negatively impacted our high pressure and critical-path turn around services to the downstream and midstream energy markets.
- Revenues were favorably impacted by approximately \$230 million of incremental revenues from acquired businesses.
- Operating income decreased by 48.8% to \$170.1 million, as compared to \$332.0 million, and operating income as a percentage of revenues decreased to 5.0%, as compared to 6.7%. Operating income and operating income as a percentage of revenues decreased primarily due to the decrease in revenues and the adverse effects of the COVID-19 pandemic and the overall challenged energy market on our operations.

During 2019, our results were also impacted by the recognition of \$60.3 million (\$43.9 million net of tax) of previously deferred earnings as a result of the completion of a larger transmission project in Canada and the subsequent recognition of a \$13.0 million gain (\$20.7 million with favorable tax benefits) related to the sale of our interest in such project. 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.

See *COVID-19 Pandemic – Response and Impact, Results of Operations* and *Liquidity and Capital Resources* below for additional information and discussion related to our consolidated and segment results.

Debt Issuance and Amendment and Extension of Senior Credit Facility

On September 22, 2020, we issued $1.00 billion aggregate principal amount of 2.900% Senior Notes due October 1, 2030 (the senior notes) and received proceeds of $986.7 million, net of the original issue discount, underwriting discounts and debt issuance costs. We used the net proceeds, together with cash on hand, to voluntarily prepay $1.21 billion of term loans then-outstanding under our senior credit facility, which had a maturity date in October 2022. Additionally, we entered into an amendment to the credit agreement for our senior credit facility (the credit agreement) that, among other things, increased the aggregate revolving commitments from $2.14 billion to $2.51 billion, extended the maturity date from October 31, 2022 to September 22, 2025, released the liens on the collateral securing our obligations thereunder, released the subsidiary guarantors from their guarantees of such obligations and removed the collateral reinstatement provision that would have applied in the event our corporate credit rating were to fall below an investment grade rating. See *Liquidity and Capital Resources – Debt Instruments* for additional information on the senior notes issuance and the amendment to our credit agreement.

Recent Acquisitions

We continue to selectively evaluate acquisitions as part of our overall business strategy and acquired seven businesses in the year ended December 31, 2020. These acquired businesses enhanced and expanded, among other things, our services related electric power distribution, transmission and substation maintenance; our directional boring and emergency restoration services capabilities; our engineering and design services for electric utilities, gas utilities and communications services companies; our aviation services for the utility industry; our capabilities with respect to underground conduit services and short- and long-haul fiber optic cable and utilities; our services to provide heavy, civil, industrial and energy related services and construction and maintenance of pipelines and metering stations; and our industrial services business. During the year ended December 31, 2020, revenues were positively impacted by approximately $405 million from acquired businesses.

Puerto Rico Joint Venture

Additionally, during the year ended December 31, 2020, a joint venture in which we own a 50% interest, LUMA Energy, LLC (LUMA), was selected for a 15-year operation and maintenance agreement to operate, maintain and modernize the approximately 18,000-mile electric transmission and distribution system in Puerto Rico. The 15-year operation and maintenance period is scheduled to begin following a transition period that is expected to end in mid-2021. During the transition period, LUMA will complete numerous steps necessary to transition operation and maintenance from the current operator and receives a fixed transition services fee, payable in monthly installments, and is reimbursed for costs and expenses. During the operation and maintenance period, LUMA will continue to be reimbursed for costs and expenses and will receive a fixed annual management fee, with the opportunity to receive additional annual performance-based incentive fees. LUMA will not assume ownership of any electric transmission and distribution system assets and will not be responsible for operation of the power generation assets. LUMA is operationally integral to our operations, and therefore our share of LUMA's net income or losses is reported within operating income and reflected within the Electric Power Infrastructure Solutions segment.

COVID-19 Pandemic – Response and Impact

During 2020 and the first part of 2021, the COVID-19 pandemic has significantly impacted global economies, resulting in workforce and travel restrictions, supply chain and production disruptions and reduced demand and spending across many sectors. We continue to operate substantially all of our activities as a provider of essential services. In response to the pandemic, we have implemented proactive measures to protect the health and safety of our employees, such as the adoption of specialized training initiatives and the utilization of additional protective equipment for our employees operating in the field and additional sanitation measures for our offices, vehicles and equipment, as well as reduced non-essential business travel, applied work-from-home policies where appropriate and developed other human resource guidance to help employees.

During 2020, our results were adversely impacted by the COVID-19 pandemic as a result of disruptions in our operations created by shelter-in-place restrictions in certain service areas, primarily during the first and second quarters of 2020 and in major U.S. metropolitan markets that have been meaningfully impacted by the pandemic. While the significant adverse impacts resulting from these shelter-in-place restrictions subsided in the second half of 2020, the possibility of future restrictions remains. The COVID-19 pandemic has also compounded broader challenges in the energy market that are affecting portions of our Underground Utility and Infrastructure Solutions segment. In particular, demand for our midstream and industrial services operations has declined as customers are reducing and deferring regularly scheduled maintenance and capital projects due to lack of demand for refined products. This dynamic had a materially negative impact on segment results during 2020 and is expected to continue to negatively impact segment results in 2021. We have also experienced permitting and regulatory delays for projects due to the COVID-19 pandemic, and the pandemic has negatively impacted our Latin American operations due to shelter-in-place restrictions and other work disruptions in the region.

We are focused on maintaining a strong balance sheet to help us navigate the challenges presented by the COVID-19 pandemic. As of December 31, 2020, we had $184.6 million of cash and cash equivalents and $2.01 billion of availability under our senior credit facility. We generated $1.12 billion and $526.6 million in cash flow from operations in the years ended December 31, 2020 and 2019. We continue to manage our costs through, among other things, reductions in discretionary spending, reductions in workforce at operations experiencing challenges, hiring and compensation increase deferrals, and deferrals of non-essential capital expenditures. Capital expenditures for 2020 were $260.1 million, which was $39.9 million less than our original estimate at the beginning of 2020. We plan to continue to maintain capital discipline and monitor rapidly changing market dynamics and adjust our costs and financing strategies accordingly, and we expect capital expenditures for 2021 to be approximately $325 million.

As a result of the currently challenged energy market and recent oil price volatility, as well as the exacerbating effect of the COVID-19 pandemic, we assessed the expected negative impacts related to goodwill, intangible assets, long-lived assets, and investments as of the end of each quarter during 2020, including at December 31, 2020. We recognized $18.0 million of impairments related to investments during the first and second quarters of 2020, as described further in *Results of Operations* below, and concluded that the impact of these effects was not likely to result in any other impairments of such assets at this time. As described further in Note 2 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data,* we also performed our annual goodwill impairment test during the fourth quarter of 2020. We concluded that, although the fair value of certain reporting units within the Underground Utility and Infrastructure Solutions Division did not exceed their book value by 10% or more, no goodwill impairments had occurred as of December 31, 2020. We are continuing to monitor the actual and forecasted financial results of our reporting units, and the potential future impacts are uncertain and may change based on numerous factors.

During 2020, the U.S. federal government also enacted the Coronavirus Aid, Relief, and Economic Security Act (the CARES Act), which provides for various tax relief and tax incentive measures. These measures are not expected to have a material impact on our results of operations. However, pursuant to the CARES Act , we deferred the payment of $108.9 million of the employer portion of payroll taxes during the year ended December 31, 2020, 50% of which are due by December 31, 2021 and the remainder of which are due by December 31, 2022.

The broader and longer-term implications of the COVID-19 pandemic on our results of operations and overall financial performance and position remain highly uncertain and variable, and we expect continued operational challenges in 2021 for portions of our operations as we continue to operate during this unprecedented and unpredictable health and economic environment. The future impact that the pandemic, or any resulting market disruption and volatility, will have on our business, cash flows, liquidity, financial condition and results of operations will depend on future developments, including, among others, the ongoing spread of COVID-19 and the duration and severity of the pandemic; the development, availability and administration of effective treatments and vaccines; the actions taken by governmental authorities, customers, suppliers and other third parties and the consequences of those actions; our workforce availability in light of potential increased spread of COVID-19; and the timing and extent to which normal economic and operating conditions resume and continue. For additional discussion regarding risks associated with the COVID-19 pandemic, see Item 1A. *Risk Factors* of this Annual Report.

Business Environment

Despite the challenges presented by the COVID-19 pandemic, we believe there are long-term growth opportunities across our industries, and we continue to have a positive long-term outlook. Although not without risks and challenges, including those discussed in *Overview* and *Cautionary Statement About Forward-Looking Statements and Information* above and Item 1A. *Risk Factors* of this Annual Report, we believe, with our full-service operations, broad geographic reach, financial position and technical expertise, we are well positioned to capitalize on opportunities and trends in our industries.

Electric Power Infrastructure Solutions 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 renewables and natural gas 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 have and continue to implement system upgrades or hardening programs in response to recurring severe weather events, such as hurricanes and wildfires, and in particular there are significant system resiliency initiatives in California and other regions in the western U.S. underway that are designed to prevent and manage the impact of wildfires. These resiliency initiatives provide additional opportunities for our services; however, they also increase our potential exposure to significant liabilities attributable to those events.

While the COVID-19 pandemic has resulted in an overall decline in electricity usage in the near term, primarily related to commercial and industrial users, 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. Furthermore, to the extent that electrification trends increase, including electric vehicle (EV) adoption, demand for electricity could be greater than currently anticipated. As demand for power increases, we also expect an increase in new power generation facilities powered by renewable energy sources (e.g. solar and wind) and certain traditional energy sources (e.g., natural gas). 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. Additionally, the Federal Communications Commission has enacted a program to deploy more than $20 billion in federal funds to bring high speed fixed broadband service to underserved rural homes and small businesses through the Rural Digital Opportunity Fund. As a result of these industry trends, we believe there will be meaningful demand for our engineering and construction services in that market. We have strategically focused our communications services on the North American market, and during 2019 and 2020 we have substantially completed the exit of our Latin American communications operations. While we have incurred costs related to exiting these operations, we anticipate this decision will result in improved profitability of our overall services offerings.

Underground Utility and Infrastructure Solutions Segment. For several years we have focused on increasing our underground utility and infrastructure solutions related to specialty services and industries that we believe are driven by regulated utility spending, regulation, replacement and rehabilitation of aging infrastructure and safety and environmental initiatives, which we believe provide a greater level of business sustainability and predictability. These service offerings include gas utility services, pipeline integrity services and downstream industrial services, all of which we have expanded through organic growth, geographic expansion initiatives and select acquisitions. This strategy is also intended to mitigate the seasonality and cyclicality of our larger pipeline project activities, which we are not strategically investing in but continue to pursue to the extent they satisfy our margin and risk profiles and support the needs of our customers.

As discussed in *COVID-19 Pandemic - Response and Impact,* though we experienced short-term disruptions in 2020 due to the impact of the COVID-19 pandemic in certain metropolitan markets, we believe demand for our gas utility distribution services will increase as a result of customer desire to upgrade and replace aging infrastructure, lower natural gas prices, and increasing regulatory requirements. In particular, natural gas utilities have implemented multi-decade modernization programs to replace aging cast iron, bare steel, gas and plastic system infrastructure with modern materials for safety, reliability and environmental purposes.

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. Regulatory requirements continue to mandate or require our customers to test, inspect, repair, maintain and replace pipeline infrastructure to ensure that it operates safely, reliably and in an environmentally conscious manner. Further, permitting challenges associated with construction of new pipelines can make existing pipeline infrastructure more valuable, motivating owners to extend the useful life of existing pipeline assets through integrity initiatives. Due to these dynamics, we expect demand to continue to grow for our pipeline integrity services.

The COVID-19 pandemic and challenging overall energy market conditions have resulted in an overall decline in global demand for refined products during 2020 and thus far in 2021, which has negatively impacted our critical path services and related specialty services to refinery and chemical processing facilities that are primarily along the Gulf Coast of the United States and in other select markets in North America. While demand for our critical path catalyst services has remained solid, in the second half of 2020 customers began reducing onsite activity for our other services and have deferred maintenance and certain turnaround projects to late 2021 and 2022. We believe there are significant long-term opportunities for our services, including our high-pressure and critical-path turnaround services, as well as our capabilities with respect to instrumentation and electrical services, piping, fabrication and storage tanks services, and other industrial services, and that processing facilities located along the U.S. Gulf Coast region should have certain long-term strategic advantages due to their proximity to affordable hydrocarbon resources. However, these processing facilities can also be negatively impacted for short-term periods due to severe weather events, such as hurricanes, tropical storms and floods.

The broader oil and gas industry is highly cyclical and subject to price volatility, such as the current low commodity price environment, 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 by the current challenged energy market. Furthermore, we have entered the late-stage of the current construction cycle of larger pipeline projects, as well as the next cycle of projects are being delayed due to various factors including, among other things, permitting delays and worksite access limitations related to environmental regulations. For example, during 2020 an approximately 600-mile natural gas pipeline under construction in the eastern United States, for which we had been contracted to construct a portion of, was terminated due to, among other things, continued regulatory delay and risk. As such, our revenues related to larger pipeline projects have declined significantly over the last few years, including by approximately $830 million from 2019 to 2020.

Due to its abundant supply and current low price, we 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 North America 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.

Regulatory Challenges and Opportunities. The regulatory environment creates both challenges and opportunities for our business, and in recent years electric power and underground utility infrastructure margins have been impacted by regulatory and permitting delays in certain periods, particularly with respect to larger electric transmission and larger pipeline projects. Regulatory and environmental permitting processes continue to create uncertainty for projects and negatively impact customer spending, and delays have increased as the COVID-19 pandemic has impacted regulatory agency operations. For example, during 2020 a federal district court ruling vacated the U.S. Army Corps of Engineers Clean Water Act Section 404 Nationwide Permit 12, which has impacted certain projects and could result in increased costs and project interruptions or delays if we or our customers are forced to seek individual permits from the U.S. Army Corps of Engineers.

However, we believe that there are also several existing, pending or proposed legislative or regulatory actions that may alleviate certain regulatory and permitting 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. In addition to the health and safety measures we are taking to ensure labor resource availability during the COVID-19 pandemic, we continue to address the longer-term need for additional labor resources in our markets. Our customers continue to seek additional specialized labor resources to address an aging utility workforce and longer-term 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 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 *Cautionary Statement About Forward-Looking Statements and Information* above and Item 1A. *Risk Factors* of this Annual Report, 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. Additionally, as referenced above in *COVID-19 Pandemic – Response and Impact*, portions of our operations experienced significant challenges during the second quarter of 2020 as a result of the COVID-19 pandemic, which impacted typical seasonality, and we believe that the ongoing impact of the pandemic could impact our typical seasonality in 2021.

Weather, natural disasters and emergencies. The results of our business in a given period can be impacted by adverse weather conditions, severe weather events, natural disasters or other emergencies, which include, among other things, heavy or prolonged snowfall or rainfall, hurricanes, tropical storms, tornadoes, floods, blizzards, extreme temperatures, wildfires, pandemics (including the ongoing COVID-19 pandemic) and earthquakes. These conditions and events can negatively impact our financial results due to, among other things, the termination, deferral or delay of projects, reduced productivity and exposure to significant liabilities. See *COVID-19 Pandemic – Response and Impact* above for further discussion regarding the current and expected impact of the COVID-19 pandemic. 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.

Demand for services. We perform the majority of our services under existing contracts, such as master service agreements (MSAs) and/or strategic alliances, pursuant to which our customers assign work to us over the term of the agreement. Typically under our MSAs and similar agreements, our customers are not committed to specific volumes of our services. Therefore, our volume of business can be positively or negatively affected by fluctuations in demand for our services, which may vary by geographic region. For example, to the extent our customers accelerate grid modernization or hardening programs or face deadlines to meet regulatory requirements for rehabilitation, reliability or efficiency, our volume of work could increase under existing agreements. Also, as described above in *COVID 19 Pandemic – Response and Impact,* we have experienced reductions in demand for certain of our services as a result of disruptions due to shelter-in-place and worksite access restrictions and delays in regulatory agency operations due to the COVID-19 pandemic, as well as the decline in commodity prices and decreased demand for refined products. 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, their capital spending and their access to capital; economic and political conditions on a regional, national or global scale, including interest rates, governmental regulations affecting the sourcing of certain materials and equipment, and other changes in U.S. and global trade relationships; and project deferrals and cancellations.

Revenue mix and impact on margins. 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. Larger or more complex projects with higher voltage capacities; larger-diameter throughput capacities; increased engineering, design or construction complexities; more difficult terrain or geographical requirements; or longer distance requirements typically yield opportunities for higher margins than our recurring services described above, as we assume a greater degree of performance risk and there is greater utilization of our resources for longer construction timeframes. However, larger projects are subject to additional risk of regulatory delay and cyclicality. For example, our revenues with respect to larger electric transmission and pipeline projects have declined significantly in recent years, and a significant number of larger projects have been delayed or cancelled during that same period. 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. 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. As a result, 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 (including in connection with difficult geographic characteristics); 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. Moreover, we currently generate, and expect to continue generating, a significant portion of our revenues under fixed price contracts, and fixed price contracts are more common in connection with our larger and more complex projects that typically involve greater performance risk. Under these contracts, we assume risks related to project estimates and execution, and project revenues can vary, sometimes substantially, from our original projections due to a variety of factors, including the additional complexity, timing uncertainty or extended bidding, regulatory and permitting processes associated with these projects. These variations can result in a reduction in expected profit or the incurrence of losses on a project, and as discussed in further detail in Note 2 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplemental Data* of this Annual Report, we have experienced significant project losses in connection with fixed price contracts that have impacted our results.

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 or availability of materials and equipment we or our customers procure, including as a result of changes in U.S. or global trade relationships, governmental regulations affecting the sourcing of certain materials and equipment or other economic or political conditions, may impact our margins or cause delays. 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, 2019 and 2018 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, 2019, which was filed with the SEC on February 28, 2020. 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	
	2020		2019		$	%
Revenues	$11,202,672	100.0 %	$12,112,153	100.0 %	$ (909,481)	(7.5)%
Cost of services (including depreciation)	9,541,825	85.2	10,511,901	86.8	(970,076)	(9.2)%
Gross profit	1,660,847	14.8	1,600,252	13.2	60,595	3.8 %
Equity in earnings of integral unconsolidated affiliates	11,303	0.1	—	—	11,303	*
Selling, general and administrative expenses	(975,074)	(8.7)	(955,991)	(7.9)	(19,083)	2.0 %
Amortization of intangible assets	(76,704)	(0.6)	(62,091)	(0.5)	(14,613)	23.5 %
Asset impairment charges	(8,282)	(0.1)	(13,892)	(0.1)	5,610	(40.4)%
Change in fair value of contingent consideration liabilities	(719)	—	(13,404)	(0.1)	12,685	(94.6)%
Operating income	611,371	5.5	554,874	4.6	56,497	10.2 %
Interest expense	(45,013)	(0.4)	(66,890)	(0.6)	21,877	(32.7)%
Interest income	2,449	—	927	—	1,522	164.2 %
Other income (expense), net	2,539	—	83,376	0.7	(80,837)	(97.0)%
Income before income taxes	571,346	5.1	572,287	4.7	(941)	(0.2)%
Provision for income taxes	119,387	1.1	165,472	1.3	(46,085)	(27.9)%
Net income	451,959	4.0	406,815	3.4	45,144	11.1 %
Less: Net income attributable to non-controlling interests	6,363	—	4,771	0.1	1,592	33.4 %
Net income attributable to common stock	$ 445,596	4.0 %	$ 402,044	3.3 %	$ 43,552	10.8 %

* The percentage change is not meaningful.

Revenues. Revenues decreased primarily due to a reduction in services related to larger pipeline transmission projects and the challenged energy market conditions, exacerbated by the impact of the COVID-19 pandemic, which resulted in a $1.56 billion decrease in revenues from our Underground Utility and Infrastructure Solutions segment. This decrease was partially offset by a $651.5 million increase in revenues from our Electric Power Infrastructure Solutions segment due to strong demand for our electric power services, including an increase in emergency restoration services revenues. See *Segment Results* below for additional information and discussion related to segment revenues.

Gross profit. The increase in gross profit was primarily due to increased earnings from electric power infrastructure solutions, partially offset by lower earnings from underground utility and infrastructure solutions primarily due to the decrease in revenues. See *Segment Results* below for additional information and discussion related to segment results.

Equity in earnings of integral unconsolidated affiliates. The amount for the year ended December 31, 2020 primarily relates to the commencement of transition services under the agreement awarded to LUMA in June 2020 for the operation and maintenance of the electric transmission and distribution system in Puerto Rico.

Selling, general and administrative expenses. Contributing to the increase was a $30.9 million increase in expenses associated with acquired businesses and a $39.3 million increase in compensation expenses. The increase in compensation expense was largely associated with increased non-cash stock-based compensation expense, including a $14.0 million correction of prior period amounts related to the valuation of and accounting for certain performance-based equity awards that were awarded during the years 2017 to 2019. Included in the correction was $7.2 million of non-cash stock-based compensation related to 2019. Also contributing to the increase in non-cash stock-based compensation in 2020 was higher achievement under performance-based awards, as well as an increase in the amount of equity-based awards due to acquisitions and business growth. Partially offsetting these increases were decreases in certain expenses related to our cost containment measures in the current operating environment, including a $22.1 million decrease in travel and related expenses. Also partially offsetting the increases were a $17.2 million decrease in costs associated with legal and other contracted services and a $7.6 million decrease in provision for credit losses. Selling, general and administrative expenses as a percentage of revenues increased to 8.7% for the year ended December 31, 2020 from 7.9% for the year ended December 31, 2019, primarily due to the decrease in revenues described above.

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. Management reviews long-lived assets for potential impairment whenever events or changes in circumstance indicate the carrying amount may not be realizable, which may arise in connection with regular evaluations as to whether business operations have the ability to contribute long-term strategic value. As part of such evaluations during the fourth quarter of 2020, we recognized $8.3 million of asset impairment charges, $7.0 million of which related to our Latin American operations and $1.3 million of which related to the planned sale of certain equipment. During the fourth quarter of 2019, we recognized $13.9 million of asset impairments 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.

Change in fair value of contingent consideration liabilities. The overall changes were primarily due to changes in performance in post-acquisition periods by 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 Note 2 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for more information.

Interest expense. Interest expense decreased primarily due to a lower weighted average interest rate associated with our senior credit facility.

Other income (expense), net. The net other income for the year ended December 31, 2020 was primarily related to the receipt of an $8.9 million favorable legal settlement, the favorable impact of $5.2 million related to foreign currency transactions and a $2.3 million dividend related to an investment in a water and gas pipeline infrastructure contractor located in Australia. Other income was partially offset by a $9.3 million impairment associated with our investment in the same water and gas pipeline infrastructure contractor and $8.7 million of impairments associated with two non-integral equity investments that have been negatively impacted by the recent decline in demand for refined petroleum products. The net other income for the year ended December 31, 2019 was primarily due to the recognition of earnings previously deferred in 2018 and 2017 on a large electric transmission project in Canada that was substantially completed and placed into commercial operation during the three months ended March 31, 2019. As a result of the project completion, we recognized $60.3 million of earnings that were deferred in prior periods. Additionally, during the three months ended December 31, 2019, we recognized a gain of $13.0 million related to the sale of our equity interest in the limited partnership that owned the project.

Provision for income taxes. The effective tax rates for the years ended December 31, 2020 and 2019 were 20.9% and 28.9%. The effective tax rate for the year ended December 31, 2020 was favorably impacted by a $45.1 million reduction in our deferred tax asset valuation allowance related to foreign tax credits and $8.2 million of tax benefits related to a decrease in reserves for uncertain tax positions, which resulted from the expiration of certain federal and state statutes of limitations periods. The effective tax rates for the years ended December 31, 2020 and 2019 include the impact of taxable losses of $60.8 million and $86.2 million associated with our Latin American operations, for which no income tax benefit was recognized. The effective tax rate for 2019 was also impacted by $7.8 million of favorable tax benefits associated with the sale of our interest in the limited partnership referenced above and $10.7 million of tax benefits related to decreases in reserves for uncertain tax positions, which primarily resulted from the expiration of certain federal and state statutes of limitations periods and the settlement of tax audits. Absent these items, the effective tax rates for December 31, 2020 and 2019 would have been 27.3% and 27.9%. We expect our effective tax rate to be approximately 26.5% to 27.0% for 2021.

Other comprehensive income (loss), net of taxes. Other comprehensive income (loss) results from translation of the balance sheets of our foreign operating units, which are primarily located in Canada and Australia and have functional currencies other than the U.S. dollar, and therefore are affected by the strengthening or weakening of the U.S. dollar against such currencies. The gain in the year ended December 31, 2020 was impacted primarily by the weakening of the U.S. dollar against both the Australian and Canadian dollars as of December 31, 2020 when compared to December 31, 2019. The gain in the year ended December 31, 2019 was impacted primarily by the weakening of the U.S. dollar against the Canadian dollar as of December 31, 2019 when compared to 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) and operating margins for the periods indicated, as well as the dollar and percentage change from the prior period. Operating margins are calculated by dividing operating income by revenues. Management utilizes operating margins as a measure of profitability, which can be helpful for monitoring how effectively we are performing under our contracts. Management also believes operating margins are a useful metric for investors to utilize in evaluating our performance. The following table shows dollars in thousands.

	Year Ended December 31,				Change	
	2020		2019		$	%
Revenues:						
Electric Power Infrastructure Solutions excluding Latin America	$ 7,765,742	69.3 %	$ 7,058,611	58.3 %	$ 707,131	10.0 %
Latin America	7,601	0.1	63,226	0.5	(55,625)	(88.0)%
Electric Power Infrastructure Solutions	7,773,343	69.4	7,121,837	58.8	651,506	9.1 %
Underground Utility and Infrastructure Solutions	3,429,329	30.6	4,990,316	41.2	(1,560,987)	(31.3)%
Consolidated revenues	$11,202,672	100.0 %	$12,112,153	100.0 %	$ (909,481)	(7.5)%
Operating income (loss):						
Electric Power Infrastructure Solutions excluding Latin America	$ 889,010	11.4 %	$ 676,926	9.6 %	$ 212,084	31.3 %
Latin America	(73,988)	*	(85,749)	*	11,761	*
Equity in earnings of integral unconsolidated affiliates	11,303	N/A	—	N/A	11,303	*
Electric Power Infrastructure Solutions	826,325	10.6 %	591,177	8.3 %	235,148	39.8 %
Underground Utility and Infrastructure Solutions	170,074	5.0 %	332,011	6.7 %	(161,937)	(48.8)%
Corporate and non-allocated costs	(385,028)	N/A	(368,314)	N/A	(16,714)	4.5 %
Consolidated operating income	$ 611,371	5.5 %	$ 554,874	4.6 %	$ 56,497	10.2 %

* The percentage change is not meaningful.

Electric Power Infrastructure Solutions Segment Results

Overall, revenues increased as a result of continued favorable dynamics across our core utility market and increased demand for our electric power services, including a $220 million increase in emergency restoration services revenues and a $125 million increase in revenues from our North American communication operations. We also recognized approximately $175 million of incremental revenues attributable to acquired businesses and increased revenues on larger transmission projects in Canada. These increases were partially offset by decreased revenues associated fire hardening programs in the western United States as compared to the year ended December 31, 2019.

We have substantially completed the exit of our Latin American operations as of December 31, 2020. These operations have been adversely impacted by the COVID-19 pandemic due to shelter-in-place restrictions and other work disruptions that resulted in our acceleration of various contract terminations and other activities during 2020 in order to expedite cessation of operations in the region. As a result of these factors, during the year ended December 31, 2020, our Latin American operations generated an operating loss of $74.0 million, including $7.0 million of asset impairment charges and $2.7 million of regulatory required severance payments. During the year ended December 31, 2019, our Latin American operations generated an operating loss of $85.7 million, which included a $79.2 million charge associated with the termination of a telecommunications project in Peru, composed of 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 the project costs incurred through the project termination date, a reserve against a portion of alleged liquidated damages and recognition of estimated costs to complete the project turnover and close out the project. See *Legal Proceedings* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplemental Data* of this Annual Report for additional information regarding this project.

Operating income and operating income as a percentage of revenues were positively impacted during the year ended December 31, 2020 by increased revenues from larger transmission projects in Canada and emergency restoration services revenues, both of which contributed to improved equipment utilization and fixed cost absorption. The year ended December 31, 2019 was negatively impacted by severe weather and other delays on certain larger transmission projects in Canada that resulted in elevated levels of unabsorbed costs. Partially offsetting these increases between periods was a reduction in fire hardening services in the western United States during the year ended December 31, 2020. The equity in earnings of integral unconsolidated affiliates primarily relates to the commencement of transition services under the operation and maintenance agreement awarded to LUMA in June 2020.

Underground Utility and Infrastructure Solutions Segment Results

During the year ended December 31, 2020, reduced revenues associated with larger pipeline projects of approximately $830 million significantly contributed to the overall decrease in segment revenues. Revenues associated with larger pipeline projects declined as a result of the industry entering the late-stage of the current construction cycle as well as the next cycle of projects being delayed due to various factors, including among other things, permitting delays and worksite access limitations related to environmental regulations. Revenues also declined due to lower demand for our services in end-markets where the price of oil is influential. Lastly, the COVID-19 pandemic resulted in reduced capital spending and deferred regularly scheduled maintenance by our midstream and industrial customers, and shelter-in-place and worksite access restrictions in major metropolitan areas caused short-term disruptions for our gas distribution customers. These decreases were partially offset by approximately $230 million in incremental revenues from acquired businesses during 2020.

The decreases in operating income and operating income as a percentage of revenues were primarily due to the reduction of revenues, including revenues related to larger pipeline projects, which generally yield higher margins. Performance on contracts, including on larger pipeline projects, can vary based on several factors. For example, during the year ended December 31, 2020, adverse weather conditions across our Canadian larger pipeline projects negatively impacted operating income. However, the negative impact on these projects was offset by favorable factors on certain larger pipeline projects in the United States, including a contract termination that resulted in the recognition of previously deferred suspension and milestone payments.

Also contributing to the decrease in segment operating income were adverse impacts related to the COVID-19 pandemic and the overall challenged energy market, including lower revenues associated with industrial services, which negatively impacted margins and the ability to cover fixed and overhead costs, as discussed further above in *COVID-19 – Response and Impact.* Partially offsetting these adverse impacts were proactive cost management activities across the impacted operations. Operating income and operating income as a percentage of segment revenues in 2020 were also negatively impacted by $4.1 million of severance and restructuring charges related to the exit of certain ancillary pipeline operations and $1.3 million of asset impairment charges related to the planned sale of certain equipment. Operating income and operating income as a percentage of segment revenues for the year ended December 31, 2019 were negatively impacted by $28.3 million of project losses associated with engineering and production delays on a processing facility project, which was completed as of December 31, 2020, and $10.2 million of asset impairment charges from the winding down and exit of certain oil-influenced operations and assets.

Corporate and Non-allocated Costs

The increase in corporate and non-allocated costs was primarily due to a $40.2 million increase in non-cash stock-based compensation, including a $14.0 million correction of prior period amounts related to the valuation of and accounting for certain performance-based equity awards that were awarded during the years 2017 to 2019. Included in the correction was $7.2 million of non-cash stock-based compensation related to 2019. Also contributing to higher non-cash stock-based compensation in 2020 was higher achievement under performance-based equity awards, as well as an increase in the amount of equity-based awards due to acquisitions and business growth. Additionally, the increase in corporate and non-allocated costs included a $14.6 million increase in intangible asset amortization. Partially offsetting these increases were decreases in certain expenses related to our cost containment measures in the current operating environment, including a $6.3 million decrease in travel and related expenses and a $6.1 million decrease in costs associated with legal and other contracted services. Also partially offsetting the increases were a $5.0 million decrease in acquisition and integration costs and. with respect to contingent consideration liabilities, a $0.7 million increase in the fair value recognized during the year ended December 31, 2020 as compared to a $13.4 million increase in the fair value recognized during the year ended December 31, 2019.

Non-GAAP Reconciliations

EBITDA and Adjusted EBITDA

EBITDA and adjusted EBITDA, measures not recognized under generally accepted accounting principles in the United States (GAAP), when used in connection with net income attributable to common stock, are intended to provide useful information to investors and analysts as they evaluate our performance. EBITDA is defined as earnings before interest, taxes, depreciation, amortization, equity in (earnings) losses of non-integral unconsolidated affiliates and interest, taxes depreciation and amortization of integral unconsolidated affiliates, and adjusted EBITDA is defined as EBITDA adjusted for certain other items as described below. These measures should not be considered as an alternative to net income attributable to common stock or other measures of performance that are derived in accordance with GAAP. Management believes that the exclusion of these items from net income attributable to common stock enables it to more effectively evaluate our operations period over period and to identify operating trends that might not be apparent when including the excluded items.

As to certain of the items below, (i) equity in (earnings) losses of non-integral unconsolidated affiliates varies from period to period depending on the activity and financial performance of non-integral unconsolidated affiliates, including deferral and subsequent recognition upon completion of construction of earnings on contracts performed for entities in which Quanta has an equity interest and gain or loss on sales of investments accounted for using the equity method of accounting; (ii) non-cash stock-based compensation expense varies from period to period due to acquisition activity, changes in the estimated fair value of performance-based awards, forfeiture rates, accelerated vesting and amounts granted; (iii) acquisition and integration costs vary from period to period depending on the level of our acquisition activity; (iv) asset impairment charges can vary from period to period depending on economic and other factors; (v) restructuring and severance charges vary from period to period depending on restructuring activities; (vi) bargain purchase gains can vary from period to period depending on our acquisition activity and the valuation of acquired businesses; (vii) change in fair value of contingent consideration liabilities varies from period to period depending on the performance in post-acquisition periods of certain acquired businesses; and (viii) tax settlements and adjustments to related indemnification assets can vary from period to period depending on the status and resolution of pending matters. Because EBITDA and adjusted EBITDA, as defined, exclude some, but not all, items that affect net income attributable to common stock, such measures may not be comparable to similarly titled measures of other companies. The most comparable GAAP financial measure, net income attributable to common stock, and information reconciling the GAAP and non-GAAP financial measures, are included below. The following table shows dollars in thousands.

	Year Ended December 31,	
	2020	**2019**
Net income attributable to common stock (GAAP as reported)	$ 445,596	$ 402,044
Interest expense	45,013	66,890
Interest income	(2,449)	(927)
Provision for income taxes	119,387	165,472
Amortization of intangible assets	76,704	62,091
Equity in (earnings) losses of unconsolidated affiliates	9,994	(76,801)
Income taxes and depreciation included in equity in earnings of integral unconsolidated affiliates	3,174	—
Depreciation expense	225,256	218,107
EBITDA	922,675	836,876
Non-cash stock-based compensation (a)	91,641	52,013
Acquisition and integration costs	19,809	24,767
Asset impairment charges (b)	8,282	13,892
Severance and restructuring charges (c)	6,808	—
Bargain purchase gain (d)	—	(3,138)
Change in fair value of contingent consideration liabilities	719	13,404
Reduction of indemnification asset (e)	—	3,991
Adjusted EBITDA	$ 1,049,934	$ 941,805

(a) The amount for the year ended December 31, 2020 includes a $14.0 million correction of prior period amounts related to the valuation of and accounting for certain performance-based equity awards that were awarded during the years 2017 to 2019. Included in the correction was $7.2 million of non-cash stock-based compensation related to 2019.

(b) The amount for the year ended December 31, 2020 reflects asset impairment charges related to the exit of the Latin American operations and the planned sale of certain equipment. The amount for the year ended December 31, 2019 reflects asset impairment charges 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.

(c) The amount for the three and twelve months ended December 31, 2020 relates to severance and restructuring charges related to the exit of certain ancillary pipeline operations and our Latin American operations.

(d) The amount for the year ended December 31, 2019 reflects a bargain purchase gain related to the acquisition of an electrical infrastructure solutions business.

(e) The amount for the year ended December 31, 2019 reflects an expense associated with the reduction of an indemnification asset related to the favorable settlement of certain non-U.S. income tax obligations associated with an acquired business.

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 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 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, 2020 and 2019, MSAs accounted for 63% and 53% of our estimated 12-month backlog and 70% and 61% of total backlog. The increase in MSA backlog resulted from our entry into several new multiyear MSAs with electric and gas utility customers during the three months ended September 30, 2020. 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, emergencies (including the ongoing COVID-19 pandemic) 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, 2020		December 31, 2019	
	12 Month	Total	12 Month	Total
Electric Power Infrastructure Solutions				
Remaining performance obligations	$ 2,511,157	$ 3,547,838	$ 2,483,109	$ 3,957,710
Estimated orders under MSAs and short-term, non-fixed price contracts	3,559,443	7,433,445	2,873,446	5,864,527
Backlog	6,070,600	10,981,283	5,356,555	9,822,237
Underground Utility and Infrastructure Solutions				
Remaining performance obligations	327,205	437,544	670,707	1,344,741
Estimated orders under MSAs and short-term, non-fixed price contracts	1,868,820	3,713,607	1,919,791	3,837,923
Backlog	2,196,025	4,151,151	2,590,498	5,182,664
Total				
Remaining performance obligations	2,838,362	3,985,382	3,153,816	5,302,451
Estimated orders under MSAs and short-term, non-fixed price contracts	5,428,263	11,147,052	4,793,237	9,702,450
Backlog	$ 8,266,625	$ 15,132,434	$ 7,947,053	$ 15,004,901

The decrease in remaining performance obligations from December 31, 2019 to December 31, 2020 was primarily due to a reduction in larger pipeline projects. Total backlog increased due to the increase in MSA backlog related to expanding base business activities.

Liquidity and Capital Resources

Cash Requirements

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.

While the extent of the impact of the COVID-19 pandemic on our future operational and financial performance will depend on future developments and remains uncertain, based on our current business forecast for 2021, including revenue and earnings prospects and other cost management actions taken in response to market conditions, we anticipate that our cash and cash equivalents on hand, future cash flows from operations and existing borrowing capacity under our senior credit facility, which we increased and extended the maturity of during the three months ended September 30, 2020, as well as other available financing alternatives, will provide sufficient funds to enable us to meet our interest payment obligations, fund ongoing operating needs, facilitate our ability to repurchase stock and pay any future dividends we declare, fund acquisitions or strategic investments that facilitate the long-term growth and sustainability of our business and fund essential capital expenditures and lease payments during 2021. 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. We expect capital expenditures for the year ended December 31, 2021 to be approximately $325 million. Additionally, refer to *Contractual Obligations* below for a summary of our future contractual obligations and a description of other contingencies as of December 31, 2020 and *Off-Balance Sheet Transactions* below for a description of certain contingent obligations that are not recorded on our consolidated balance sheets. Although any of these contingent obligations could require the use of cash in future periods, certain contingent obligations 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, 2020 as described below.

Our available commitments under our senior credit facility and cash and cash equivalents at December 31, 2020 were as follows (in thousands):

		December 31, 2020
Total capacity available for revolving loans and letters of credit	$	2,510,000
Less:		
Borrowings of revolving loans under our senior credit facility		148,508
Letters of credit outstanding under our senior credit facility		348,300
Available commitments under senior credit facility for issuing revolving loans or new letters of credit		2,013,192
Plus:		
Cash and cash equivalents		184,620
Total available commitments under senior credit facility and cash and cash equivalents	$	2,197,812

Our financial strategy and consistent performance has earned us an investment grade credit rating from S&P Global Ratings and Moody’s Investors Service. However, our ability to access the capital markets in the future depends on a number of factors, including our financial performance and financial position, our credit rating, industry conditions, general economic conditions, our backlog, capital expenditure commitments, market conditions and market perceptions of us and our industry.

We may seek to access the capital markets from time to time to raise additional capital, increase liquidity as necessary, refinance or extend the term of our existing indebtedness or otherwise fund our capital needs. For example, on September 22, 2020, we issued $1.00 billion aggregate principal amount of our senior notes, receiving proceeds of $986.7 million, net of the original issue discount, underwriting discounts and debt issuance costs. We utilized those proceeds, together with cash on hand, to voluntarily prepay $1.21 billion of outstanding term loans under our senior credit facility, which had a maturity date in October 2022. Additionally, we entered into an amendment to our senior credit facility that, among other things, increased the aggregate revolving commitments from $2.14 billion to $2.51 billion and extended the maturity date from October 31, 2022 to September 22, 2025.

Sources and Uses of Cash

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

	Year Ended December 31,	
	2020	2019
Net cash provided by operating activities	$ 1,115,977	$ 526,551
Net cash used in investing activities	(499,323)	(617,596)
Net cash provided by (used in) financing activities	(601,365)	177,687

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 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. 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, including the impact of the COVID-19 pandemic.

Net cash provided by operating activities during 2020 was favorably impacted by lower working capital requirements resulting from a decrease in revenues, as well as increased earnings as compared to 2019. Also favorably impacting cash provided by operating activities during 2020 was the deferral of $108.9 million of the employer portion of payroll tax payments under the CARES Act, 50% of which are due by December 31, 2021 and the remainder of which are due by December 31, 2022. The CARES Act permitted deferral of the employer portion of payroll taxes through December 31, 2020. Net cash provided by operating activities during the year ended December 31, 2020 also included the receipt of $82.0 million of insurance proceeds associated with the settlement of two pipeline project claims in the fourth quarter of 2019.

Net cash provided by operating activities during 2019 was lower due to the payment of $112 million as a result of the exercise of on-demand advance payment and performance bonds in connection with the termination of the large telecommunications project in Peru, which is described in further detail in *Legal Proceedings* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*. Net cash used in operating activities for the year ended December 31, 2019 was also impacted by higher working capital requirements, including mobilization and tooling costs, to support business growth and extended billing and collection cycles for certain utility customers.

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 for the quarter ended December 31, 2020 was 83 days, which compares to our historical average over the last five years of 80 days and our DSO for the quarter ended December 31, 2019. which was 81 days.

Investing Activities

Net cash used in investing activities during 2020 included $292.6 million used for acquisitions, $260.1 million of capital expenditures and $14.9 million of cash paid for investments in unconsolidated affiliates and other entities, partially offset by $35.4 million of proceeds from the sale of property and equipment, $18.8 million of proceeds from the disposition of businesses and $14.0 million of cash received from investments in unconsolidated affiliates and other entities.

Net cash used in investing activities during 2019 included $388.0 million used for acquisitions, $261.8 million of capital expenditures and $47.1 million of cash paid for investments in unconsolidated affiliates and other entities, which 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.

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 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

On September 22, 2020, we received proceeds from the issuance of the senior notes of $990.1 million, which is net of the original issue discount and underwriting discounts, as described further in *Debt Instruments – 2.900% Senior Notes due October 2030*. These proceeds, together with cash on hand, were used to voluntarily prepay the then-outstanding term loans under the credit agreement, which is reflected in the $1.20 billion of net repayments under our senior credit facility. Net cash used in financing activities in 2020 also included $247.2 million of cash payments for common stock repurchases, $61.5 million of payments to settle certain contingent consideration liabilities, $28.9 million of cash dividends and dividend equivalents, $25.4 million of cash payments to satisfy tax withholding obligations associated with stock-based compensation, and $11.1 million of debt issuance and amendment costs related to the senior notes issuance and the September 2020 amendment to our credit agreement.

Net cash provided by financing activities in 2019 included $272.5 million of net borrowings under our senior credit facility, partially offset by $28.3 million of net short-term repayments, $23.2 million of cash payments for dividends and cash dividend equivalents, $20.1 million of cash payments for common stock repurchases and $16.1 million of payments to satisfy tax withholding obligations associated with stock-based compensation.

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, 2020	6,680	$ 249,949
December 31, 2019	376	$ 11,954
December 31, 2018	13,917	$ 451,290

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, 2020, 2019 and 2018, cash payments related to stock repurchases were $247.2 million, $20.1 million and $443.2 million.

As of December 31, 2020, $36.8 million remained authorized under our stock repurchase program approved during the third quarter of 2018, which permits us to repurchase outstanding common stock from time to time through June 30, 2021. In August 2020, our Board of Directors authorized us to repurchase, from time to time through June 30, 2023, up to an additional $500.0 million in shares of our outstanding common stock under a new stock repurchase program, for an aggregate of $536.8 million remaining under the stock repurchase programs as of December 31, 2020. We are not obligated to acquire any specific amount of common stock and the repurchase programs may be modified or terminated by our Board of Directors at any time at its sole discretion and without notice.

For additional detail regarding the terms of stock repurchase programs, 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 2020, 2019 and 2018 (in thousands, except per share amounts):

Declaration Date	Record Date	Payment Date	Dividend Per Share	Dividends Declared
December 11, 2020	January 4, 2021	January 15, 2021	$ 0.06	$ 8,933
August 26, 2020	October 1, 2020	October 15, 2020	$ 0.05	$ 7,244
May 28, 2020	July 1, 2020	July 15, 2020	$ 0.05	$ 7,182
March 26, 2020	April 6, 2020	April 15, 2020	$ 0.05	$ 7,184
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 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 equivalent payments 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.

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 and cash flows from operations; current and anticipated capital requirements and expansion plans; the current and potential impact of the COVID-19 pandemic and other market, industry, economic and political conditions; income tax laws then in effect; and the requirements of Delaware law. In addition, as discussed below, our credit agreement restricts the payment of cash dividends unless certain conditions are met.

Debt Instruments

2.900% Senior Notes due October 2030

On September 22, 2020, we issued $1.00 billion aggregate principal amount of the senior notes and received proceeds of $986.7 million from the offering, net of the original issue discount, underwriting discounts and debt issuance costs. We used the net proceeds, together with cash on hand, to voluntarily prepay the $1.21 billion of term loans then-outstanding under the credit agreement.

Interest on the senior notes, in the amount of $14.5 million, is payable semi-annually in arrears on April 1 and October 1 of each year, commencing April 1, 2021. The maturity date for the senior notes is October 1, 2030. We may redeem all or a portion of the senior notes at any time prior to July 1, 2030 at a price equal to 100% of the principal amount plus a make-whole premium and accrued and unpaid interest, and at any time on or after July 1, 2030 at a price equal to 100% of the principal amount plus accrued and unpaid interest, in each case as further specified by terms of the senior notes and the indenture and supplemental indenture governing the senior notes (together, the indenture). Additionally, upon the occurrence of a Change of Control Triggering Event (as defined in the indenture), unless we have exercised our right to redeem the senior notes in full by giving irrevocable notice to the trustee, each noteholder will have the right to require us to purchase all or a portion of such holder's senior notes at a purchase price equal to 101% of the principal amount thereof plus any accrued and unpaid interest.

The indenture also contains customary events of default and covenants that, among other things, limit our ability to incur liens securing indebtedness, to engage in certain sale and leaseback transactions with respect to certain properties and to sell all or substantially all of our assets or merge or consolidate with or into other companies.

Senior Credit Facility

On September 22, 2020, we entered into an amendment to the credit agreement for our senior credit facility that, among other things, increased the aggregate revolving commitments from \$2.14 billion to \$2.51 billion and extended the maturity date for the revolving commitments from October 31, 2022 to September 22, 2025. Pursuant to the amendment, the pledge of capital stock of certain of our subsidiaries and the liens on the collateral that secured the obligations under the credit agreement were released and all of our subsidiaries that were guarantors of the obligations under the credit agreement were released from their guarantees of such obligations. In addition, the amendment removed the collateral reinstatement provision that would have applied in the event our corporate credit rating were to fall below an investment grade rating. As referenced above, we also used the net proceeds from the offering of our senior notes, together with cash on hand, to voluntarily prepay all the term loans then-outstanding under the credit agreement in the aggregate principal amount of \$1.21 billion.

Additionally, 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 commitments, 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) additional amounts 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.

Borrowings under the credit agreement are to be used to refinance existing indebtedness and for working capital, capital expenditures, acquisitions, stock repurchases and other general corporate purposes. The maturity date for the senior credit facility is September 22, 2025. During the years ended December 31, 2020 and 2019, our weighted average interest rates associated with our senior credit facility were 2.1% and 3.8%.

As of December 31, 2020, we had \$148.5 million of outstanding revolving loans under the credit agreement and \$348.3 million of letters of credit issued under our senior credit facility. As of December 31, 2020, we also had \$18.2 million of letters of credit issued by a financial institution that ceased to be a lender under the senior credit facility subsequent to the September 2020 amendment to the credit agreement, which are collateralized by a \$19.1 million letter of credit issued by a lender under our senior credit facility. As of December 31, 2020, subject to the applicable sublimits, the remaining \$2.01 billion of available commitments under the senior credit facility was available for additional revolving loans or letters of credit in U.S. dollars and certain alternative currencies.

As of December 31, 2020, we were in compliance with all of the financial covenants under the credit agreement, which are further described in Note 8 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data*.

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. 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 senior credit facility and/or cash and cash equivalents on hand.

To address the transition in financial markets away from the London Interest Bank Offered Rate (LIBOR) by the end of 2021, our senior 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), which may be a rate based on the secured overnight financing rate published by the Federal Reserve Bank of New York. 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 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. Changing to an alternative interest rate or to the Base Rate may lead to additional volatility in interest rates and could cause our debt service obligations to increase significantly.

Contractual Obligations and Contingencies

The following table summarizes our future contractual obligations as of December 31, 2020, excluding certain amounts discussed below (in thousands):

	Total	2021	2022	2023	2024	2025	Thereafter
Long-term debt - principal (1)	$1,195,489	$ 9,685	$ 8,314	$ 8,318	$ 8,317	$ 156,825	$1,004,030
Long-term debt - cash interest (2)	295,756	30,778	30,436	30,116	29,796	29,475	145,155
Short-term debt (3)	4,233	4,233	—	—	—	—	—
Operating lease obligations (4)	288,680	94,166	68,284	47,872	29,362	18,685	30,311
Operating lease obligations that have not yet commenced (5)	3,842	679	620	612	455	470	1,006
Finance lease obligations (6)	2,367	920	690	493	264	—	—
Short-term lease obligations (7)	13,577	13,577	—	—	—	—	—
Deferral of tax payments (8)	108,870	54,435	54,435	—	—	—	—
Equipment purchase commitments (9)	69,689	69,689	—	—	—	—	—
Total contractual obligations	$1,982,503	$ 278,162	$ 162,779	$ 87,411	$ 68,194	$ 205,455	$1,180,502

(1) Amount represents the principal amount of our long-term debt. The cash interest obligations related to the fixed-rate portion of our long-term debt are included in Long-term debt - cash interest; however, our $148.5 million of outstanding revolving loans under our senior credit facility bear interest at variable market rates. Assuming the principal amount outstanding and interest rate in effect at December 31, 2020 remained the same, the annual cash interest expense would be approximately $3.1 million, payable until September 22, 2025, the maturity date of the facility.

(2) Amount represents cash interest expense associated with our fixed-rate, long-term debt, which primarily includes our senior notes and financing transactions arising from the exercise of our equipment rental purchase options.

(3) Amount represents short-term borrowings recorded on our December 31, 2020 consolidated balance sheet.

(4) Amounts represent undiscounted operating lease obligations at December 31, 2020 for our real estate and equipment leases. The operating lease obligations recorded on our December 31, 2020 consolidated balance sheet represent the present value of these amounts.

(5) Amounts represent undiscounted operating lease obligations that had not commenced as of December 31, 2020. The operating lease 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, 2020. The finance lease obligations recorded on our December 31, 2020 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, 2020 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) Amounts represent deferral of $108.9 million of the employer portion of payroll tax payments, 50% of which are due by December 31, 2021 and the remainder of which are due by December 31, 2022. The CARES Act permitted deferral of the employer portion of payroll taxes through December 31, 2020.

(9) 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.

We have various contingencies and commitments that may require the use of cash in future periods, including those set forth below. 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.

Uncollectible accounts receivable - We grant credit under normal payment terms, generally without collateral, to our customers. While we generally have certain statutory lien rights with respect to services provided, we are subject to potential credit risk related to business, economic and financial market conditions that affect these customers and locations, which has been heightened as a result of the unfavorable and uncertain economic and financial market conditions resulting from the ongoing COVID-19 pandemic and the significant decline in commodity prices and volatility in commodity production volumes. 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. See *Concentration of Credit Risk* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for further discussion related to these potential contingencies.

Lawsuits and other 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, which typically seek, among other things, compensation for alleged personal injury, breach of contract, negligence or gross negligence and/or property damage, environmental liabilities, wage and hour and other employment-related damages, punitive damages, 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 liability 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. For additional information regarding litigation, claims and other legal proceedings see *Legal Proceedings* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data.* In all instances, management has assessed the matter based on current information and made a judgment concerning its potential outcome, giving due consideration to the nature of the claim, the amount and nature of damages sought and the probability of success. Management's judgment may prove materially inaccurate, and such judgment is made subject to the known uncertainties of litigation.

Collective bargaining agreements and multiemployer pension plan liabilities - Certain of our operating units are parties to collective bargaining agreements with unions that represent certain of their employees, and from time to time, we are a party to grievance and arbitration actions based on claims arising out of the collective bargaining agreements, which specify that we pay certain wages, provide certain benefits to union employees and contribute certain amounts to multiemployer pension plans and employee benefit trusts. 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, and therefore we are unable to accurately predict our union employee payroll and the resulting contribution obligations for future periods. Furthermore, we may be required to make additional contributions to our multiemployer pension plans if they become underfunded or if we withdraw or are deemed to have withdrawn from a plan or a plan is terminated or experiences a mass withdrawal. For additional information on these obligations and potential contingencies, see *Collective Bargaining Agreements and Multiemployer Pension Plans* in Notes 13 and 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data.*

Bonds and parent guarantees - Many customers, particularly in connection with new construction, require us to post performance and payment bonds, which provide a guarantee that we will perform under the terms of a contract and pay subcontractors and vendors. In certain circumstances, the customer may demand that our surety make payments or provide services under the bond, and we must reimburse the surety for any expenses or outlays it incurs. 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, and may cover all of the subsidiary's unperformed, undischarged and unreleased obligations and liabilities under or in connection with the relevant agreement. See *Bonds and Parent Guarantees* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for further discussion related to these obligations and potential contingencies;

Insurance liabilities - Due to the nature of our operations, at any given time we have a significant amount of accrued insurance claims. Additionally, 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. See *Insurance* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for further discussion related to these obligations and potential contingencies.

Indemnities and assumed liabilities - In connection with our acquisition transactions, we assume certain liabilities and obtain 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. However, we may not have discovered certain liabilities during due diligence and our indemnities may not cover all of our exposure for such pre-acquisition matters or the indemnitors may be unwilling or unable to pay amounts owed to us. Accordingly, we may incur expenses that are not reimbursed, and such amounts could be material. See *Indemnities* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for further discussion related to these potential contingencies.

Contingent consideration liabilities prior to their resolution - We have incurred liabilities related to contingent consideration associated with certain acquisitions, payable in the event certain performance objectives are achieved by the acquired businesses during designated post-acquisition periods. The aggregate amount of these 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. See *Fair Value Measurements - Contingent Consideration Liabilities* in Note 2 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for further discussion related to these potential contingencies.

Liabilities related to our deferred compensation plans - We maintain non-qualified deferred compensation plans pursuant to which non-employee directors and certain key employees may defer receipt of some or all of their compensation. These plans are unfunded and unsecured compensation arrangements, and the amount of the obligations can fluctuate based on the market value of participants' investment elections under the plan. See *Deferred Compensation Plans* in Note 13 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for further discussion related to these plans.

Undistributed earnings of foreign subsidiaries - We generally do not provide for taxes related to undistributed earnings of our foreign subsidiaries and we could be subject to additional foreign withholding taxes if we were to repatriate cash that is indefinitely reinvested outside the United States. See Note 10 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for further discussion related to these potential contingencies;

Unrecognized tax benefits - We remain under examination by various U.S. state, Canadian and other foreign tax authorities for multiple periods and believe it is reasonably possible that within the next 12 months unrecognized tax benefits may decrease by up to $11.9 million as a result of settlement of these examinations or the expiration of certain statute of limitations periods. See Note 10 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for further discussion related to these potential contingencies.

Commitment fees under our senior credit facility - Fees associated with letters of credit under our senior credit facility and other letters of credit and commitment fees under our senior credit facility are variable because they depend on the amount of outstanding letters of credit, availability and applicable fees. Assuming that the amount of letters of credit outstanding and the fees as of December 31, 2020 remained the same, the annual cash expense for our letters of credit would be approximately $4.7 million. See Note 8 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for further discussion related to these obligations and potential contingencies.

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 and leases that have not yet commenced; letters of credit obligations; surety guarantees related to 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 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, including changes in estimates; progress on construction projects; variable consideration; and collectability of accounts receivable, 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 Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data).*

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*).

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. Furthermore, the risk of nonpayment may be heightened as a result of depressed economic and financial market conditions, including in connection with the ongoing COVID-19 pandemic and the significant decline in commodity prices and volatility in commodity production volumes. 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. For example a customer within our Underground Utility and Infrastructure Solutions segment encountered financial difficulties during 2020 that resulted in nonpayment of certain receivables owed, and as a result of which we decided to foreclose our liens on the pipeline asset in order to recover the outstanding amounts. See *Concentrations of Credit Risk* in Note 14 of the Notes to Consolidated Financial Statements in Item 8. *Financial Statements and Supplementary Data* for additional information.

Interest Rate Risk. As of December 31, 2020, 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 variable rate debt, which is comprised of borrowings under the credit agreement for our senior credit facility. As of December 31, 2020, the fair value of our variable rate debt of $148.5 million approximated book value, and our weighted average interest rate on our variable rate debt for the year ended December 31, 2020 was 2.1%. The annual effect on our pretax earnings of a hypothetical 50 basis point increase or decrease in variable interest rates would be approximately $0.7 million based on our December 31, 2020 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 2020, revenues from our foreign operations accounted for 14.1% of our consolidated revenues. Fluctuations in foreign exchange rates during the year ended December 31, 2020 caused a decrease of approximately $17 million in foreign revenues compared to the year ended December 31, 2019. 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.

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, 2020.

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 $28.5 million as of December 31, 2020, an assumed 5% adverse change to foreign exchange rates would result in a fair value decline of $0.9 million.

ITEM 8. ***Financial Statements and Supplementary Data***

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

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, 2020 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, 2020 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, 2020 excluded the seven businesses we acquired in 2020. 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 2.9% and 1.2% of our consolidated assets and revenues as of and for the year ended December 31, 2020.

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, 2020, and 2019 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, 2020, 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, 2020, 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, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020 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, 2020, 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, 2020 because they were acquired by the Company in purchase business combinations during 2020. 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 2.9% and 1.2% of consolidated total assets and consolidated total revenues, respectively, as of and for the year ended December 31, 2020.

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, 2020, approximately 47.9% of the Company's revenues 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. 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 management's cost estimates or covered by its contracts. The estimating process is based on the professional knowledge and experience of management's project estimators, project managers and finance professionals.

The principal considerations for our determination that performing procedures relating to revenue recognition for contracts recognized over time is a critical audit matter are (i) the significant judgment by management when determining the total contract costs and (ii) the high degree of auditor judgment, subjectivity and effort 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 and the determination of total estimated contract cost for contracts recognized over time. These procedures also included, among others, (i) testing management's process for determining the total estimated contract cost 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.

Goodwill Impairment Assessment – Three Reporting Units within the Underground Utility and Infrastructure Solutions Division

As described in Notes 2 and 5 to the consolidated financial statements, the Company's consolidated goodwill balance was $2.1 billion as of December 31, 2020, and the amount of the goodwill associated with the three reporting units was $99.8 million. Goodwill 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 reporting units. If management 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 reporting unit with its carrying amount, including goodwill. In connection with the 2020 annual goodwill assessment, management identified certain reporting units for which a quantitative goodwill impairment assessment was deemed appropriate based on financial performance indicators. After taking into account a 10% decrease in fair value of the reporting units for which a quantitative impairment test was performed, three reporting units within the Underground Utility and Infrastructure Solutions Division would have fair values below their carrying amounts. Management determines the fair value of its reporting units using the income approach (discounted cash flow method). Inherent assumptions and estimates used in developing future cash flows include projected revenues and margins, and weighted average costs of capital.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of the three reporting units is a critical audit matter are (i) the significant judgment by management when determining the fair value estimates of the reporting units; (ii) the high degree of auditor judgment, subjectivity and effort in performing procedures and evaluating management's significant assumptions related to projected revenues and margins, and weighted average costs of capital; 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 management's goodwill impairment assessment, including controls over the valuation of three reporting units. These procedures included, among others (i) testing management's process for determining the fair value estimates for three reporting units; (ii) evaluating the appropriateness of the discounted cash flow method; (iii) testing the completeness and accuracy of the underlying data used in the fair value estimates; and (iv) evaluating the reasonableness of the significant assumptions used by management related to projected revenues and margins, and weighted average costs of capital. Evaluating management's assumptions related to projected revenues and margins involved evaluating whether the assumptions were reasonable considering (i) current and past performance of the reporting units; (ii) the consistency with external market and industry data; and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in evaluating (i) the appropriateness of the discounted cash flow method and (ii) the reasonableness of the significant assumption related to the weighted average costs of capital.

/s/ PricewaterhouseCoopers LLP

Houston, Texas
February 26, 2021

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, 2020	December 31, 2019
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 184,620	$ 164,798
Accounts receivable, net of allowances of $16,546 and $9,398	2,716,083	2,747,911
Contract assets	453,832	601,268
Inventories	50,472	55,719
Prepaid expenses and other current assets	183,382	261,290
Total current assets	3,588,389	3,830,986
Property and equipment, net of accumulated depreciation of $1,372,132 and $1,250,197	1,560,656	1,386,654
Operating lease right-of-use assets	256,845	284,369
Other assets, net	435,713	393,264
Other intangible assets, net of accumulated amortization of $517,574 and $437,886	435,655	413,734
Goodwill	2,121,014	2,022,675
Total assets	$ 8,398,272	$ 8,331,682
LIABILITIES AND EQUITY		
Current Liabilities:		
Current maturities of long-term debt and short-term debt	$ 14,764	$ 74,869
Current portion of operating lease liabilities	85,134	92,475
Accounts payable and accrued expenses	1,509,794	1,489,559
Contract liabilities	528,864	606,146
Total current liabilities	2,138,556	2,263,049
Long-term debt, net of current maturities	1,174,294	1,292,195
Operating lease liabilities, net of current portion	178,822	196,521
Deferred income taxes	166,407	214,779
Insurance and other non-current liabilities	391,221	311,307
Total liabilities	4,049,300	4,277,851
Commitments and Contingencies		
Equity:		
Common stock, $0.00001 par value, 600,000,000 shares authorized, 162,710,792 and 159,415,540 shares issued, and 138,300,191 and 142,324,318 shares outstanding	2	2
Exchangeable shares, no par value, 0 and 36,183 shares issued and outstanding	—	—
Additional paid-in capital	2,170,026	2,024,610
Retained earnings	3,264,967	2,854,271
Accumulated other comprehensive loss	(232,997)	(241,818)
Treasury stock, 24,410,601 and 17,091,222 common shares	(857,817)	(586,773)
Total stockholders' equity	4,344,181	4,050,292
Non-controlling interests	4,791	3,539
Total equity	4,348,972	4,053,831
Total liabilities and equity	$ 8,398,272	$ 8,331,682

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,		
	2020	2019	2018
Revenues	$ 11,202,672	$ 12,112,153	$ 11,171,423
Cost of services (including depreciation)	9,541,825	10,511,901	9,691,459
Gross profit	1,660,847	1,600,252	1,479,964
Equity in earnings of integral unconsolidated affiliates	11,303	—	—
Selling, general and administrative expenses	(975,074)	(955,991)	(857,574)
Amortization of intangible assets	(76,704)	(62,091)	(43,994)
Asset impairment charges	(8,282)	(13,892)	(49,375)
Change in fair value of contingent consideration liabilities	(719)	(13,404)	11,248
Operating income	611,371	554,874	540,269
Interest expense	(45,013)	(66,890)	(36,945)
Interest income	2,449	927	1,555
Other income (expense), net	2,539	83,376	(47,213)
Income before income taxes	571,346	572,287	457,666
Provision for income taxes	119,387	165,472	161,659
Net income	451,959	406,815	296,007
Less: Net income attributable to non-controlling interests	6,363	4,771	2,661
Net income attributable to common stock	$ 445,596	$ 402,044	$ 293,346
Earnings per share attributable to common stock:			
Basic	$ 3.15	$ 2.76	$ 1.92
Diluted	$ 3.07	$ 2.73	$ 1.90
Shares used in computing earnings per share:			
Weighted average basic shares outstanding	141,380	145,710	152,963
Weighted average diluted shares outstanding	145,247	147,534	154,226

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,		
	2020	2019	2018
Net income	$ 451,959	$ 406,815	$ 296,007
Other comprehensive income (loss), net of taxes:			
Foreign currency translation adjustment, net of tax of $0, $0 and $0	11,439	43,535	(84,484)
Other, net of tax of $865, $(200) and $(677)	(2,618)	695	1,831
Other comprehensive income (loss), net of taxes	8,821	44,230	(82,653)
Comprehensive income	460,780	451,045	213,354
Less: Comprehensive income attributable to non-controlling interests	6,363	4,771	2,661
Total comprehensive income attributable to common stock	$ 454,417	$ 446,274	$ 210,693

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,		
	2020	2019	2018
Cash Flows from Operating Activities:			
Net income	$ 451,959	$ 406,815	$ 296,007
Adjustments to reconcile net income to net cash provided by operating activities —			
Depreciation	225,256	218,107	202,519
Amortization of intangible assets	76,704	62,091	43,994
Asset impairment charges	8,282	13,892	49,375
Impairment of cost method investment	9,311	—	—
Change in fair value of contingent consideration liabilities	719	13,404	(11,248)
Equity in (earnings) losses of unconsolidated affiliates	(1,309)	(76,801)	52,867
Amortization of debt discount and issuance costs	5,126	1,870	1,270
(Gain) loss on sale of property and equipment	(3,056)	(5,797)	3,296
Provision for credit losses	3,656	11,249	7,169
Deferred income tax expense (benefit)	(60,016)	(7,919)	61,974
Non-cash stock-based compensation	91,641	52,013	52,484
Foreign currency and other (gain) loss and other non-cash items	(5,159)	(5,568)	(385)
Payments for contingent consideration liabilities	(14,506)	—	—
Changes in operating assets and liabilities, net of non-cash transactions	327,369	(156,805)	(400,533)
Net cash provided by operating activities	1,115,977	526,551	358,789
Cash Flows from Investing Activities:			
Capital expenditures	(260,052)	(261,762)	(293,595)
Proceeds from sale of property and equipment	35,390	31,142	31,780
Proceeds from insurance settlements related to property and equipment	542	1,964	714
Cash paid for acquisitions, net of cash, cash equivalents and restricted cash acquired	(292,573)	(387,966)	(94,917)
Proceeds from disposition of businesses	18,785	—	—
Investments in unconsolidated affiliates and other entities	(14,856)	(47,056)	(36,909)
Cash received from investments in unconsolidated affiliates and other entities	13,963	46,590	4,705
Cash paid for intangible assets	(522)	(508)	(14,448)
Net cash used in investing activities	(499,323)	(617,596)	(402,670)
Cash Flows from Financing Activities:			
Borrowings under credit facility	2,983,529	6,175,558	4,491,782
Payments under credit facility	(4,187,645)	(5,903,069)	(4,076,460)
Proceeds from notes offering	990,130	—	—
Payments on other long-term debt	(2,970)	(2,203)	(1,298)
Net borrowings (repayments) of short-term debt	(4,846)	(28,292)	33,790
Debt issuance and amendment costs	(11,089)	(2,309)	(1,976)
Payments for contingent consideration liabilities	(61,483)	—	—
Distributions to non-controlling interests, net of contributions received	(5,404)	(2,526)	(4,038)
Payments related to tax withholding for share-based compensation	(25,447)	(16,144)	(15,218)
Payments of dividends	(28,891)	(23,236)	—
Repurchase of common stock	(247,249)	(20,092)	(443,152)
Net cash provided by (used in) financing activities	(601,365)	177,687	(16,570)
Effect of foreign exchange rate changes on cash, cash equivalents and restricted cash	1,774	(153)	(68)
Net increase (decrease) in cash, cash equivalents and restricted cash	17,063	86,489	(60,519)
Cash, cash equivalents and restricted cash, beginning of year	169,745	83,256	143,775
Cash, cash equivalents and restricted cash, end of year	$ 186,808	$ 169,745	$ 83,256

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 Shares		Series G Preferred Stock		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Treasury Stock	Total Stockholders' Equity	Non-controlling Interests	Total Equity
	Shares	Amount	Shares	Amount	Shares	Amount							
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 ($0.04 per share)	—	—	—	—	—	—	—	(5,838)	—	—	(5,838)	—	(5,838)
Distributions to non-controlling interests	—	—	—	—	—	—	—	—	—	—	—	(4,038)	(4,038)
Buyout of 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 ($0.17 per share)	—	—	—	—	—	—	—	(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
Credit loss cumulative effect adjustment	—	—	—	—	—	—	—	(3,841)	—	—	(3,841)	—	(3,841)
Other comprehensive income	—	—	—	—	—	—	—	—	8,821	—	8,821	—	8,821
Acquisitions	1,338,746	—	—	—	—	—	57,289	—	—	—	57,289	—	57,289
Stock-based compensation activity	1,280,489	—	—	—	—	—	88,127	—	—	(21,095)	67,032	—	67,032
Exchange of exchangeable shares	36,183	—	(36,183)	—	—	—	—	—	—	—	—	—	—
Common stock repurchases	(6,679,545)	—	—	—	—	—	—	—	—	(249,949)	(249,949)	—	(249,949)
Dividends declared ($0.21 per share)	—	—	—	—	—	—	—	(30,543)	—	—	(30,543)	—	(30,543)
Distributions to non-controlling interests	—	—	—	—	—	—	—	—	—	—	—	(5,404)	(5,404)
Other	—	—	—	—	—	—	—	(516)	—	—	(516)	293	(223)
Net income	—	—	—	—	—	—	—	445,596	—	—	445,596	6,363	451,959
Balance at December 31, 2020	138,300,191	$ 2	—	$ —	—	$ —	$ 2,170,026	$ 3,264,967	$ (232,997)	$ (857,817)	$ 4,344,181	$ 4,791	$ 4,348,972

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., (together with its subsidiaries, Quanta), is a leading provider of specialty contracting services, delivering comprehensive infrastructure solutions for the electric and gas utility, communications, pipeline and energy industries in the United States, Canada, Australia and select other international markets. Quanta reports its results under two reportable segments: (1) Electric Power Infrastructure Solutions and (2) Underground Utility and Infrastructure Solutions.

Electric Power Infrastructure Solutions Segment

The Electric Power Infrastructure Solutions segment provides comprehensive network solutions to customers in the electric power and other industries. Services performed by the Electric Power Infrastructure Solutions segment generally include the design, new construction, upgrade and repair and maintenance of electric power transmission and distribution infrastructure and substation facilities along with other engineering and technical services. This includes solutions for utilities to implement system upgrades to modernize and harden the electric power grid in order to ensure its safety and enhance reliability. This segment also provides emergency restoration services, including the repair of infrastructure damaged by fire and 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 the engineering and construction services for the switchyards and transmission infrastructure needed to interconnect renewable energy generation, including solar, wind, hydro power and backup natural gas generation facilities. Engineering and construction services related to, among other things, micro-grids and battery storage are also performed in this segment. This segment also provides comprehensive design and construction solutions to wireline and wireless communications companies, cable multi-system operators and other customers within the communications industry (including services in connection with 5G wireless deployment); and the design, installation, maintenance and repair of commercial and industrial wiring. This segment also provides aviation services in support of the above services and includes the majority of the financial results of Quanta's 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 gas distribution and communications industries.

Underground Utility and Infrastructure Solutions Segment

The Underground Utility and Infrastructure Solutions segment provides comprehensive infrastructure solutions, including design, engineering, new construction, upgrade and repair and maintenance services, to customers involved in the transportation, distribution, storage and processing of natural gas, oil and other products. Services include the upgrade, new construction and repair and maintenance of natural gas systems for gas utility customers, as well as pipeline protection, integrity testing, rehabilitation and replacement. Quanta also provides catalyst replacement services, high-pressure and critical-path turnaround services, instrumentation and electrical services, piping, fabrication and storage tank services to the midstream and downstream industrial energy markets. This segment also provides engineering and construction services for pipeline systems, storage systems and compressor and pump stations and the fabrication of pipeline support systems and related structures and facilities, as well as trenching, directional boring and mechanized welding services related to the above services and in connection with electric power infrastructure solutions. To a lesser extent, this segment includes construction services for the offshore energy market and designs, installs and maintains fueling systems and water and sewer infrastructure.

Acquisitions

During the year ended December 31, 2020, Quanta acquired a contractor located in the United States that provides electric power distribution, transmission and substation maintenance and construction, directional boring and emergency restoration services; a professional engineering business located in the United States that provides infrastructure engineering and design services to electric utilities, gas utilities and communications services companies, as well as permitting and utility locating services; a business located in the United States that provides aviation services primarily for the utility industry; an electric power infrastructure business located in the United States that primarily provides underground conduit services; a business located in the United States that specializes in the deployment of short- and long-haul fiber optic cable and utilities; an industrial services business located in Canada that performs catalyst handling services, including changeover and shutdown maintenance, for customers in the refining and chemical industries; and a business located in the United States that provides heavy, civil, industrial and energy related services and specializes in the construction and maintenance of pipelines and metering stations.

During the year ended December 31, 2019, Quanta acquired an underground utility and infrastructure solutions 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 solutions business located in Canada.

During the year ended December 31, 2018, Quanta acquired an electrical infrastructure solutions 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 solutions businesses, all of which are located in the United States.

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 GAAP requires the use of estimates and assumptions by management in determining the reported amounts of assets and liabilities, disclosures of contingent assets and liabilities known to exist as of the date the financial statements are published, and the reported amounts of revenues and expenses recognized during the periods presented. Quanta reviews all significant estimates affecting its consolidated financial statements on a recurring basis and records the effect of any necessary adjustments prior to their publication. Judgments and estimates are based on Quanta's beliefs and assumptions derived from information available at the time such judgments and estimates are made. Uncertainties with respect to such estimates and assumptions are inherent in the preparation of financial statements. Estimates are primarily used in Quanta's assessment of the allowance for credit losses, 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's services include the design, new construction, upgrade and repair and maintenance of infrastructure in the electric power, communications and energy industries. These services may be provided pursuant to master service agreements (MSAs), repair and maintenance contracts and fixed price and non-fixed price construction 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, 2020 and 2019, the aggregate transaction price allocated to unsatisfied or partially satisfied performance obligations was approximately $3.99 billion and $5.30 billion, of which 71.2% and 59.5% 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 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, 2020, 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 can lead to positive changes in estimates on projects include successful execution through project risks, reduction of estimated project costs or increases of estimated revenues. Some of the factors that may lead to negative changes in estimates include concealed or unknown site conditions; changes to or disputes with customers regarding the scope of services; changes in estimates related to the length of time to complete a performance obligation; changes or delays with respect to permitting and regulatory requirements; changes in the cost of equipment, commodities, materials or labor; unanticipated costs or claims due to delays or failure to perform by customers or third parties; customer failure to provide required materials or equipment; errors in engineering, specifications or designs; project modifications; adverse weather conditions, natural disasters, and other emergencies (including the ongoing pandemic as a result of the novel coronavirus disease (COVID-19) that began in 2019); and performance and quality issues causing delay (including payment of liquidated damages) or 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, 2020 and 2019, Quanta had recognized revenues of $141.2 million and $170.0 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'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 contract 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, 2020, 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, 2019, 2018 and 2017.

Certain projects were materially impacted by changes to estimated contract revenues and/or project costs during the year ended December 31, 2020. During the year ended December 31, 2020, revenues and gross profit were favorably impacted by $20.8 million as a result of successful execution through project risks and close-out activities on a larger electric transmission project in the United States. Revenues and gross profit were also favorably impacted as a result of successful execution through project risks and close-out activities on certain larger pipeline projects in the United States. The favorable impact related to these larger pipeline projects was offset by increased costs on two larger pipeline projects in Canada that experienced severe weather conditions during the year ended December 31, 2020, both of which were substantially complete as of December 31, 2020. With respect to all of these larger pipeline projects, the aggregate net negative impact on gross profit related to work performed in prior periods was $10.0 million during the year ended December 31, 2020.

Additionally, during the year ended December 31, 2020, Quanta was pursuing the exit of its Latin American operations. These operations have been adversely impacted by the COVID-19 pandemic due to shelter-in-place restrictions and other work disruptions, and as a result Quanta accelerated various contract terminations and other activities in order to expedite cessation of operations in the region. The decision to accelerate the exit activities in 2020 materially changed certain contract estimates as of December 31, 2019 due to significant reductions in the volume of work to be performed, as well as lower productivity than expected. The majority of the impacts of these developments were not recoverable from the customers. These factors, as well as political and regulatory uncertainties and other customer challenges, resulted in changes in estimates on several projects and negatively impacted gross profit related to work performed in prior periods by $35.5 million in aggregate during year ended December 31, 2020. As of December 31, 2020, substantially all of the projects in Latin America that were active at the beginning of 2020 had been completed, and none of the remaining projects are individually expected to have a material negative impact on Quanta's gross profit. However, the primary risk that gross profit on the remaining projects could be negatively impacted further is the continuing uncertainty related to the potential duration and severity of the COVID-19 pandemic in the region.

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 in 2019 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 in 2019 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, 2020, this project was 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, 2020, this project had a contract value of approximately $407 million and was approximately 95% 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.

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,					
	2020		2019		2018	
By primary geographic location:						
United States	$ 9,618,951	85.8 %	$ 10,190,684	84.0 %	$ 8,575,341	78.6 %
Canada	1,252,365	11.2 %	1,436,720	11.9 %	1,984,214	16.4 %
Australia	200,664	1.8 %	187,915	1.6 %	377,453	3.1 %
Latin America and Other	130,692	1.2 %	296,834	2.5 %	234,415	1.9 %
Total revenues	$ 11,202,672	100.0 %	$ 12,112,153	100.0 %	$ 11,171,423	100.0 %

	Year Ended December 31,					
	2020		2019		2018	
By contract type:						
Unit-price contracts	$ 4,172,363	37.2 %	$ 4,193,295	34.6 %	$ 3,828,997	39.4 %
Cost-plus contracts	2,649,770	23.7 %	3,304,161	27.3 %	2,507,025	20.7 %
Fixed price contracts	4,380,539	39.1 %	4,614,697	38.1 %	4,835,401	39.9 %
Total revenues	$ 11,202,672	100.0 %	$ 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 47.9%, 50.0% and 57.7% of Quanta's revenues recognized during the years ended December 31, 2020, 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 to have 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, 2020	December 31, 2019	December 31, 2018
Contract assets	$ 453,832	$ 601,268	$ 576,891
Contract liabilities	$ 528,864	$ 606,146	$ 425,961

As referenced previously, contract assets and liabilities fluctuate period to period based on various factors, including, among others, changes in the number and size of projects in progress at period end and variability in billing and payment terms, such as up-front or advance billings, interim or milestone billings, or deferred billings. The decrease in contract assets from December 31, 2019 to December 31, 2020 was partially due to a decline in revenues related to contracts for which revenues are recognized over time. Additionally, Quanta's exit from and the close out of projects in Latin America also contributed to the reduction.

Revenues were positively impacted by $27.0 million during the year ended December 31, 2020 as a result of changes in estimates associated with performance obligations on fixed price contracts partially satisfied prior to December 31, 2019. During the year ended December 31, 2020, Quanta recognized revenue of approximately $491.5 million related to contract liabilities outstanding at December 31, 2019.

Current and Long-Term Accounts Receivable, Notes Receivable and Allowance for Credit Losses

As described in Note 3, Quanta adopted the new accounting standard for measuring credit losses effective January 1, 2020 utilizing the transition method that allows recognition of a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. Quanta's financial results for reporting periods beginning on or after January 1, 2020 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 net cumulative effect due to the adoption of the new standard was a $3.8 million reduction to retained earnings as of January 1, 2020, which represented a $5.1 million increase to allowance for credit losses, net of $1.2 million in deferred income taxes. The adjustment was based on an estimate of expected lifetime credit losses for financial instruments, primarily accounts receivable and contract assets. Although the adoption of the new standard did not have a material impact on Quanta's consolidated financial statements at the date of adoption, expected credit losses could change as a result of changes in credit loss experience, changes to specific risk characteristics of Quanta's portfolio of financial assets or changes to management's expectations of future economic conditions that affect the collectability of Quanta's financial assets. At the end of each quarter, management reassesses these factors, including any potential effects from the ongoing COVID-19 pandemic.

The assessment of the allowance for credit losses involves certain judgments and estimates. Management estimates the allowance balance using relevant available information from internal and external sources relating to past events, current conditions and reasonable and supportable forecasts. Expected credit losses are estimated by evaluating trends in historical write-off experience and applying historical loss ratios to pools of financial assets with similar risk characteristics. Quanta has determined that it has one pool for the purpose of calculating its historical credit loss experience.

Quanta's historical loss ratio and its determination of risk pools may be adjusted for changes in customer credit concentrations within its portfolio of financial assets, its customers' ability to pay, and other considerations such as changes to the market, regulatory or technological environments affecting its customers and the consistency of the current and forecasted economic conditions relative to the historical period used to derive historical loss ratios.

Additional allowance for credit losses is established for financial asset balances with specific customers where collectability has been determined to be improbable based on customer specific facts and circumstances. Quanta considers accounts receivable delinquent after 30 days but does not generally consider such amounts delinquent in its credit loss analysis unless the accounts receivable have been outstanding for at least 90 days. In addition to monitoring delinquent accounts, management monitors the credit quality of its receivables by, among other things, obtaining credit ratings of significant customers, assessing economic and market conditions and evaluating material changes to a customer's business, cash flows and financial condition. Should anticipated recoveries relating to receivables fail to materialize, including anticipated recoveries relating to bankruptcies or other workout situations, Quanta could experience reduced cash flows and losses in excess of current allowances provided.

Activity in Quanta's allowance for credit losses consisted of the following (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Balance at beginning of year	$ 9,398	$ 5,839	$ 4,465
Adoption of new credit loss standard	5,067	—	—
Charges to bad debt expense	3,656	11,249	7,169
Direct write-offs charged against the allowance	(1,575)	(7,690)	(5,795)
Balance at end of year	$ 16,546	$ 9,398	$ 5,839

Long-term accounts receivable are included within "Other assets, net" in the accompanying consolidated balance sheets. As of December 31, 2020 and 2019, long-term accounts receivable were $13.4 million and $12.4 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. Retainage balances with expected settlement dates within the next twelve months as of December 31, 2020 and 2019 were $306.3 million and $299.6 million, which 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, 2020 and 2019 were $88.2 million and $54.2 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, 2020, 2019 and 2018, unbilled receivables included in "Accounts receivable" were $472.3 million, $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 $53.6 million, $33.2 million and $40.1 million at December 31, 2020, 2019 and 2018.

Cash and Cash Equivalents

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

	December 31,	
	2020	2019
Cash and cash equivalents held in domestic bank accounts	$ 156,122	$ 130,771
Cash and cash equivalents held in foreign bank accounts	28,498	34,027
Total cash and cash equivalents	$ 184,620	$ 164,798

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, 2020 and 2019, cash equivalents were $98.0 million and $37.8 million and consisted primarily of money market investments and money market mutual funds and are discussed further in Fair Value Measurements below.

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

	December 31,	
	2020	2019
Cash and cash equivalents held by domestic joint ventures	$ 7,714	$ 6,518
Cash and cash equivalents held by foreign joint ventures	3,973	16
Total cash and cash equivalents held by joint ventures	11,687	6,534
Cash and cash equivalents not held by joint ventures	172,933	158,264
Total cash and cash equivalents	$ 184,620	$ 164,798

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 $225.3 million, $218.1 million and $202.5 million for the years ended December 31, 2020, 2019 and 2018.

Accrued capital expenditures were $11.3 million and $10.0 million as of December 31, 2020 and 2019. 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 impairment charges of $8.3 million during the year ended December 31, 2020 related to the exit of its Latin American operations and due to the planned sale of certain equipment. Quanta also recorded asset impairment charges 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" as of December 31, 2018, $5.0 million of which remained in the accompanying December 31, 2020 consolidated balance sheet.

Debt Issuance and Amendment Costs Related to Senior Credit Facility

Capitalized debt issuance and amendment costs related to Quanta's senior 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 2020, 2019 and 2018, Quanta incurred $11.1 million, $2.3 million and $2.0 million of debt issuance and amendment costs related to amendments of the credit agreement for its senior credit facility. As of December 31, 2020 and 2019, capitalized debt issuance and amendment costs related to Quanta's senior credit facility were $10.3 million and $17.2 million, with accumulated amortization of $0.6 million and $10.5 million. For the years ended December 31, 2020, 2019 and 2018, amortization expense related to capitalized debt issuance and amendment costs related to Quanta's senior credit facility was $5.1 million, $1.9 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 Solutions Division and the Underground Utility and Infrastructure Solutions 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 a reporting 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 generally determines the fair value of its reporting units using a weighted combination of the income approach (discounted cash flow method) and market multiple 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. However, Quanta determined the fair value of its reporting units as of December 31, 2020 using only the income approach due to the impact of the challenged energy market and the exacerbating effect of the COVID-19 pandemic during 2020, which has continued into 2021. Quanta determined that the use of market multiple valuations applied to 2020 and 2021 financial results would not yield valuations reflective of fair market value.

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 and historical EBITDA average. The transaction multiples are based on observed purchase transactions for similar businesses adjusted for size, volatility and risk. The public company multiples are based on peer group multiples adjusted for size, volatility and risk. For the market guideline public company method, Quanta adds a reasonable control premium, which is estimated as the premium that would be appropriate to convert the reporting unit value to a controlling interest basis.

As of December 31, 2020, the inherent assumptions and estimates used in developing future cash flows and market valuations include projected revenues and margins and weighted average costs of capital. As of December 31, 2019 and 2018, the inherent assumptions and estimates used in developing future cash flows and market valuations include projected revenues and margins, weighted average cost of capital and market multiples. 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, 2020, 2019 and 2018:

	2020	2019	2018
Years of cash flows before terminal value	5 years	5 years	5 years
Weighted average cost of capital	12.5% to 13.5%	12.5%	12.0% to 15.0%
Transaction multiple(s) applied to EBITDA	6.0 to 9.0	6	6.5 to 9.0
Guideline public company multiple(s) applied to EBITDA	N/A	6.5	6.5 to 9.5
Five-year revenue compounded annual growth rate(s)	-8% to 26%	-9%	-14% to 8%
Weighting of three methods:			
Discounted cash flows	100%	70%	70%
Market multiple	—%	15%	15%
Market capitalization	—%	15%	15%

The currently challenged energy market and recent oil price volatility, as well as the exacerbating effect of the COVID-19 pandemic resulted in significantly lower revenues during the year ended December 31, 2020 as compared to the previous year for the reporting units for which a quantitative assessment was performed. The range of compounded annual growth rates in 2020 reflects Quanta's expectation of a recovery over the five-year period used in the goodwill model.

In connection with the annual goodwill assessment performed during the fourth quarter of 2020, Quanta assessed qualitative factors to determine whether it was necessary to perform a quantitative fair value impairment analysis and identified certain reporting units for which a quantitative goodwill impairment assessment was deemed appropriate based on financial performance indicators. The subsequent quantitative analysis indicated that the fair value of each 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 2020. In connection with the 2019 and 2018 annual goodwill assessments, Quanta assessed qualitative factors to determine whether it was necessary to perform a quantitative fair value impairment analysis and also identified certain reporting units for which quantitative goodwill impairment assessments were deemed appropriate based on financial performance indicators. The subsequent quantitative analyses indicated that the fair values of the reporting units were in excess of their carrying amounts. Accordingly, Quanta did not record any impairment charges related to goodwill during the fourth quarters of 2019 or 2018.

Although no goodwill impairment charges were recorded during the year ended December 31, 2020, 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 fair value of the reporting units for which a quantitative impairment test was performed, three reporting units within Quanta's Underground Utility and Infrastructure Solutions Division would have fair values below their carrying amounts.

With respect to reporting units within Quanta's Underground Utility and Infrastructure Solutions Division, the potential impact of the energy market challenges and the COVID-19 pandemic is uncertain and depends on numerous factors, and therefore the negative impact could continue or increase in future periods. In particular, due to the recent significant decline in commodity prices and volatility in commodity production volumes, the effect of which has been exacerbated by the COVID-19 pandemic, two Canadian pipeline-related businesses and a United States material handling services business with aggregate goodwill and intangible asset balances totaling $99.8 million and $19.5 million have an increased risk of goodwill impairment in the near and medium term. Management considered the sensitivity of its fair value estimates to changes in certain valuation assumptions for these reporting units. After taking into account a 10% decrease in fair value, these reporting units would have fair values below their carrying amounts. In addition, a specialized industrial services business located in the United States with goodwill and intangible asset balances totaling $303.0 million and $53.3 million has experienced lower demand for certain services during the year ended December 31, 2020, as customers have reduced and deferred regularly scheduled maintenance due to lack of demand for refined products, particularly certain transportation related fuels. Management considered the sensitivity of its fair value estimates to changes in certain valuation assumptions for this reporting unit. After taking into account a 10% decrease in fair value, the reporting unit would have a fair value in excess of its carrying amount; however, uncertainty as to the timing and extent of recovery of demand for refined products poses an increased risk of goodwill impairment to this reporting unit. Quanta will continue to monitor the impact of these events, and should any of its reporting units suffer additional declines in actual or forecasted financial results, the risk of goodwill impairment would increase.

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 customer relationship intangible assets include future revenues, discount rates and customer attrition rates. The following table presents the range and weighted average based on acquisition date fair value for discount and attrition rates used in the valuation of customer relationship intangible assets during the years ended December 31, 2020, 2019 and 2018:

	2020		2019		2018	
	Range	Weighted Average	Range	Weighted Average	Range	Weighted Average
Discount rates	19% to 25%	20%	19% to 24%	24%	20% to 27%	25%
Customer attrition rates	10% to 43%	13%	5% to 37%	6%	20% to 33%	22%

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 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.

As a result of the currently challenged energy market, including the significant decline in commodity prices during 2020 and the volatility in commodity production volumes, the effect of which has been exacerbated by the COVID-19 pandemic, Quanta assessed the expected negative impacts related to its intangible assets, particularly intangible assets associated with reporting units within the Underground Utility and Infrastructure Solutions Division. Quanta concluded that such impacts are not likely to result in intangible asset impairments at this time. As a result, no intangible asset impairment was recognized during the year ended December 31, 2020. However, the potential impact of the energy market challenges and of the COVID-19 pandemic is uncertain and depends on numerous factors, and therefore the negative impact on certain of Quanta's reporting units and related intangible assets could increase in future periods. Quanta will continue to monitor the impact of these events and should any of the reporting units suffer additional declines in actual or forecasted financial results, the risk of intangible asset impairment would increase.

Leases

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.

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. 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 initial non-cancelable lease term is used. Quanta generally uses its incremental borrowing rates to determine the present value of future minimum lease payments.

Certain real estate and equipment arrangements contain both lease and non-lease components (e.g., maintenance services). Quanta does not separate lease components from their associated non-lease components for such arrangements and accounts for both lease and non-lease components under the lease accounting guidance.

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 solutions 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. 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. Quanta's share of net income or losses of unconsolidated equity method investments is included within operating income in the accompanying consolidated statements of operations when the investee is operationally integral to the operations of Quanta and is reported as "Equity in earnings (losses) of integral unconsolidated affiliates." Quanta's share of net income or losses of unconsolidated equity method investments that are not operationally integral to the operations of Quanta are included in "Other income (expense), net" below operating income in the accompanying consolidated statements of operations. Equity method 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 any such 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. During the year ended December 31, 2020, Quanta recognized impairment losses of $8.7 million related to certain non-integral equity method investments primarily due to the decline in commodity prices and production volumes during 2020. These impairment losses are included in "Other income (expense), net" in the accompanying consolidated statements of operations for the year ended December 31, 2020.

Investments in entities of 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. Earnings on investments accounted for using the cost method of accounting are recognized as dividends are declared. These earnings and any impairments of cost method investments are reported in "Other income (expense), net" in the accompanying consolidated statements of operations.

As part of Quanta's investment strategy, Quanta formed a partnership in 2017 with select investors to invest in certain specified infrastructure projects, and 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, 2020, Quanta's investment balance related to this partnership was $21.4 million. In October 2019, due to certain management changes at the registered investment adviser, the partnership entered into a period during which the investors and Quanta evaluated the partnership, and at the end of such period in April 2020, the investment period for any future investments ended.

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 accounted for this interest as an equity-method investment. The limited partnership contracted with a Quanta subsidiary to perform the engineering, procurement and construction (EPC) services for the project, and the Quanta subsidiary recognized revenue and related cost of services as performance progressed on the project. However, due to Quanta's ownership interest, a proportional amount of the EPC profit was deferred until the electric transmission line and related substations were constructed and ownership of the assets 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 non-integral 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, 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.

Quanta owns a 30% interest in a water and gas pipeline infrastructure contractor located in Australia, which includes. preferential liquidation rights. This investment is accounted for using the cost method of accounting and had an investment balance of $12.7 million as of December 31, 2020. Through October 2020, Quanta had, but did not exercise, an option to acquire the remaining 70% interest of the company at an agreed price based on a multiple of the company’s earnings during a designated performance period that ended April 30, 2020. Based on this option price, Quanta determined that its investment was impaired and recorded an impairment charge of $9.3 million during the three months ended June 30, 2020. Such impairment is included in “Other income (expense), net” in the accompanying consolidated statements of operations.

As a result of the currently challenged energy market, including the significant decline in commodity prices during 2020 and the volatility in commodity production volumes, the effect of which has been exacerbated by the COVID-19 pandemic, Quanta assessed the expected negative impacts related to certain of its investments, particularly investments dependent on the energy market. This assessment contributed in part to management’s decision to record the impairments related to certain non-integral equity method investments and the water and gas pipeline infrastructure contractor in Australia described above. Additionally, the potential impact of the energy market challenges and the COVID-19 pandemic remains uncertain and may change based on numerous factors, which could further negatively impact these and other of Quanta’s investments. Quanta will continue to monitor the potential impacts of these events, and should any investments suffer additional declines in actual or forecasted financial results, additional impairments may be required. See Notes 11 and 14 for additional information related to investments.

Puerto Rico Joint Venture

During the three months ended June 30, 2020, a joint venture in which Quanta owns a 50% interest, LUMA Energy, LLC (LUMA), was selected for a 15-year operation and maintenance agreement to operate, maintain and modernize the approximately 18,000-mile electric transmission and distribution system in Puerto Rico. The 15-year operation and maintenance period is scheduled to begin following an approximately one-year transition period that is expected to end in mid-2021. During the transition period, LUMA will complete numerous steps necessary to transition operation and maintenance from the current operator and receives a fixed transition services fee, payable in monthly installments, and is reimbursed for costs and expenses. During the operation and maintenance period, LUMA will continue to be reimbursed for costs and expenses and will receive a fixed annual management fee, with the opportunity to receive additional annual performance-based incentive fees. LUMA will not assume ownership of any electric transmission and distribution system assets and will not be responsible for operation of the power generation assets. Quanta’s ownership interest and participation in LUMA is accounted for as an equity method investment due to Quanta’s equal ownership and management of LUMA with its joint venture partner. LUMA is operationally integral to the operations of Quanta, and therefore Quanta’s share of LUMA’s net income or losses is reported within operating income in “Equity in earnings (losses) of integral unconsolidated affiliates.” As of December 31, 2020, Quanta’s investment balance related to LUMA was $10.9 million, and Quanta had receivables from LUMA and its other integral unconsolidated affiliate of $14.8 million.

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, 2020, the total amount of unrecognized tax benefits relating to uncertain tax positions was $33.2 million, a decrease of $7.7 million from December 31, 2019. This decrease resulted from changes in prior year positions and settlements of $3.3 million primarily associated with the close of certain U.S. and non-U.S. tax audits and $8.7 million due to the expiration of U.S. federal and state statutes of limitations, partially offset by a $4.4 million increase in reserves for uncertain tax positions expected to be taken in 2020. Quanta and certain subsidiaries remain under examination by various U.S. state and 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 $11.9 million as a result of settlement of these examinations or as a result of the expiration of certain statute of limitations periods.

U.S. federal and state and foreign income tax laws and regulations are voluminous and often ambiguous. As such, Quanta is required to make many subjective assumptions and judgments regarding its tax positions that could materially affect amounts recognized in future consolidated balance sheets, statements of operations and statements of comprehensive income. For example, the Tax Cuts and Jobs Act of 2017 (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 were exchangeable on a one-for-one basis with shares of Quanta common stock, have been included in the calculation of weighted average shares outstanding for basic and diluted earnings per share attributable to common stock for the portion of the periods that they were outstanding. Additionally, unvested stock-based awards that contain non-forfeitable rights to dividends or dividend equivalents (participating securities) have been included in the calculation of basic and diluted earnings per share attributable to common stock for the portion of the periods that the awards were outstanding. Diluted earnings per share attributable to common stock is computed using the weighted average number of shares of common stock outstanding during the period adjusted for all potentially dilutive common stock equivalents, except in cases where the effect of the common stock equivalents would be antidilutive.

Insurance

Quanta is insured for, among other things, employer's liability, workers' compensation, auto liability, aviation and general liability claims. Deductibles for the employer's liability and workers' compensation programs are $5.0 million per occurrence, and deductibles for the auto liability and general liability programs are $15.0 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 $0.8 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 and Multiemployer Pension Plans

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 RSU awards is determined based on the number of units granted and the closing price of Quanta's common stock on the date of grant. The grant date fair value of the PSUs is determined as follows: (i) for the portion of the awards based on company performance metrics, by multiplying the number of units granted by the closing price of Quanta's common stock on the date of grant and (ii) for the portion of the awards based on relative total shareholder return, by utilizing 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 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.

Goodwill and Other Intangible Assets

As discussed in the *Goodwill* and *Other Intangible Assets* sections within this Note 2, 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

Quanta also uses fair value measurements in connection with the valuation of its investments in private company equity interests. 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).

Financial Instruments

The carrying amounts of cash equivalents, accounts receivable, contract assets, accounts payable and accrued expenses and contract liabilities 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, 2020 and 2019, as all values were based on unadjusted quoted prices for identical assets in an active market that Quanta has the ability to access.

Contingent Consideration Liabilities

As of December 31, 2020 and 2019, 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, payable in the event certain performance objectives are achieved by the acquired businesses during designated post-acquisition periods. 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 settled certain contingent consideration liabilities with $76.0 million of cash payments and the issuance of 4,277 shares of Quanta common stock during the year ended December 31, 2020. Aggregate fair values of these outstanding contingent consideration liabilities and their classification in the accompanying consolidated balance sheets were as follows (in thousands):

	December 31, 2020	December 31, 2019
Accounts payable and accrued expenses	$ 3,466	$ 77,618
Insurance and other non-current liabilities	7,503	6,542
Total contingent consideration liabilities	$ 10,969	$ 84,160

The majority of Quanta's outstanding contingent consideration liabilities are subject to a maximum payment amounts, which totaled $13.9 million as of December 31, 2020.

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. 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.

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. These changes are reflected in "Change in fair value of contingent consideration liabilities" in the accompanying consolidated statements of operations.

Long-term Debt

The carrying amount of variable rate debt, which includes borrowings under Quanta's senior credit facility, approximates fair value. The fair value of Quanta's 2.900% Senior Notes due October 1, 2030 was $1.08 billion at December 31, 2020. The fair value of the senior notes is based on the quoted market prices for the same issue and are categorized as Level 1 liabilities. See Note 7 for additional information regarding Quanta's senior credit facility and the senior notes.

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 has had a material impact on Quanta's consolidated balance sheet, there has not been 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 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 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.

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 amended the impairment model to utilize an expected credit loss methodology in place of the incurred loss methodology for financial instruments, including accounts receivable and contract assets, and off-balance sheet credit exposures. The amendment requires entities to consider a broader range of information to estimate expected credit losses, which often results in earlier recognition of losses. The update also requires 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.

Quanta adopted the new accounting standard for measuring credit losses effective January 1, 2020 utilizing the transition method that allows recognition of a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. Quanta's financial results for reporting periods beginning on or after January 1, 2020 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 net cumulative effect due to the adoption of the new standard was a $3.8 million reduction to retained earnings as of January 1, 2020, which represented a $5.1 million increase to allowance for credit losses, net of $1.2 million in deferred income taxes. The adjustment was based on an estimate of expected lifetime credit losses for financial instruments, primarily accounts receivable and contract assets. Although the adoption of the new standard did not have a material impact on Quanta's consolidated financial statements at the date of adoption, expected credit losses could change as a result of changes to credit loss experience, specific risk characteristics of Quanta's portfolio of financial assets or management's expectations of future economic conditions that affect the collectability of Quanta's financial assets. Management continues to periodically assess these factors, including any potential effects from the COVID-19 pandemic, and incorporates any changes in its estimate of credit losses.

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 have been removed, such as the valuation processes for Level 3 fair value measurements, and other disclosure requirements have been 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. Quanta adopted this guidance effective January 1, 2020, and it did not have a material impact on its consolidated financial statements or disclosures.

Accounting Standards Not Yet Adopted

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 will adopt the guidance effective January 1, 2021, and it is not expected to have a material impact on Quanta's consolidated financial statements at the date of adoption.

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 does not currently have any equity securities that would be impacted by this standard and will adopt the guidance effective January 1, 2021.

4. ACQUISITIONS:

The results of the acquired businesses have been included in Quanta's consolidated financial statements beginning on the respective acquisition dates. During the year ended December 31, 2020, Quanta acquired a contractor located in the United States that provides electric power distribution, transmission and substation maintenance and construction, directional boring and emergency restoration services; a professional engineering business located in the United States that provides infrastructure engineering and design services to electric utilities, gas utilities and communications services companies, as well as permitting and utility locating services; a business located in the United States that provides aviation services primarily for the utility industry; an electric power infrastructure business located in the United States that primarily provides underground conduit services; a business located in the United States that specializes in the deployment of short- and long-haul fiber optic cable and utilities; an industrial services business located in Canada that performs catalyst handling services, including changeover and shutdown maintenance, for customers in the refining and chemical industries; and a business located in the United States that provides heavy, civil, industrial and energy related services and specializes in the construction and maintenance of pipelines and metering stations. The aggregate consideration for these acquisitions was $351.7 million paid or payable in cash (subject to certain adjustments) and 1,334,469 shares of Quanta common stock, which had a fair value of $57.1 million as of the respective acquisition dates. Additionally, one of the acquisitions includes the potential payment of up to $6.9 million of contingent consideration, payable if the acquired business achieves certain performance objectives over a five-year post-acquisition period. Based on the estimated fair value of the contingent consideration, Quanta recorded $2.3 million of liabilities as of the acquisition date. The results of the industrial services business and the business that specializes in the construction and maintenance of pipelines and metering stations have generally been included in the Underground Utility and Infrastructure Solutions segment and the results of the remaining businesses generally included in the Electric Power Infrastructure Solutions segment.

On August 30, 2019, Quanta acquired The Hallen Construction Co., Inc. (Hallen), a underground utility and infrastructure solutions 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 solutions business located in Canada. The aggregate consideration for these acquisitions was $395.3 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. The results of Hallen have generally been included in the Underground Utility and Infrastructure Solutions segment and the results of the other acquired businesses have generally been included in the Electric Power Infrastructure Solutions segment.

During the year ended December 31, 2018, Quanta acquired an electrical infrastructure solutions 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 solutions businesses include the potential payment of up to $18.0 million of contingent consideration, payable if the acquired businesses achieve certain performance objectives over five- and three-year post-acquisition periods. Based on the estimated fair value of the contingent consideration, Quanta recorded $16.5 million of liabilities as of the respective acquisition dates. The results of the acquired businesses have generally been included within the Electric Power Infrastructure Solutions segment.

The following table summarizes the aggregate consideration paid or payable as of December 31, 2020 for the acquisitions completed in 2020 and 2019 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 is finalizing its fair value assessments for the acquired assets and assumed liabilities related to businesses acquired during 2020, and further adjustments to the purchase price allocations may occur. As of December 31, 2020, the estimated fair values of the net assets acquired were preliminary, with possible updates primarily related to tax estimates and inventory. Consideration amounts are also subject to the finalization of closing working capital adjustments and the completion of conditions precedent in order to close on agreements for the purchase real property related to certain of the businesses acquired in 2020. The following table summarizes the fair value of total consideration transferred or estimated to be transferred and the fair value of assets acquired and liabilities assumed (in thousands).

	2020	2019
Consideration:		
Cash paid or payable	$ 351,671	$ 395,258
Value of Quanta common stock issued	57,119	1,791
Contingent consideration	2,250	—
Fair value of total consideration transferred or estimated to be transferred	$ 411,040	$ 397,049
Accounts receivable	$ 74,848	$ 112,142
Contract assets	8,919	11,869
Other current assets	51,836	14,290
Property and equipment	133,065	60,133
Other assets	14	149
Identifiable intangible assets	96,826	192,786
Contract liabilities	(10,324)	(11,856)
Other current liabilities	(27,156)	(73,698)
Deferred tax liabilities, net	(3,185)	(12,414)
Other long-term liabilities	—	(5,345)
Total identifiable net assets	324,843	288,056
Goodwill	86,197	112,132
Fair value of net assets acquired	411,040	400,188
Bargain purchase gain	—	(3,139)
Fair value of total consideration transferred or estimated to be transferred	$ 411,040	$ 397,049

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 solutions business in Canada that occurred during the year ended December 31, 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 2020, 2019 and 2018 strategically expanded Quanta’s domestic and international underground utility and infrastructure solutions and domestic and international electric power infrastructure solutions and communications service offerings, which Quanta believes contributes to the recognition of the goodwill. Approximately $75.6 million, $82.1 million, and $21.6 million of goodwill is expected to be deductible for income tax purposes related to acquisitions completed in 2020, 2019 and 2018.

The following table summarizes the estimated fair values of identifiable intangible assets for the acquisitions completed in 2020 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	$ 81,154	6.1
Backlog	4,022	1.4
Trade names	7,654	14.4
Non-compete agreements	3,996	5.0
Total intangible assets subject to amortization	$ 96,826	6.5

The following unaudited supplemental pro forma results of operations for Quanta, which incorporate the acquisitions completed in 2020 and 2019, 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,		
	2020	2019	2018
Revenues	$ 11,400,807	$ 12,844,508	$ 11,894,866
Gross profit	$ 1,708,844	$ 1,761,317	$ 1,635,777
Selling, general and administrative expenses	$ (998,283)	$ (1,027,254)	$ (913,392)
Amortization of intangible assets	$ (86,721)	$ (95,185)	$ (79,454)
Net income	$ 459,890	$ 434,593	$ 332,973
Net income attributable to common stock	$ 453,527	$ 429,822	$ 330,312
Earnings per share:			
Basic	$ 3.19	$ 2.92	$ 2.16
Diluted	$ 3.11	$ 2.89	$ 2.14

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 2020 as if they occurred January 1, 2019, the historical results of the acquisitions completed in 2019 as if they occurred January 1, 2018 and the historical results of the acquisitions completed in 2018 as if they occurred January 1, 2017. These pro forma combined historical results were adjusted for the following: a reduction of interest expense as a result of the repayment of outstanding indebtedness of the acquired businesses; an increase in interest expense as a result of the cash consideration paid; an increase in amortization expense due to the incremental intangible assets recorded; changes in depreciation expense to adjust acquired property and equipment to the acquisition date fair value and to conform with Quanta's accounting policies; an increase in the number of outstanding shares of Quanta common stock; and reclassifications to conform the acquired businesses' presentation to Quanta's accounting policies. The pro forma combined results of operations do not include any adjustments to eliminate the impact of acquisition-related costs or any cost savings or other synergies that resulted or may result from the acquisitions. As noted above, the pro forma results of operations do not purport to be indicative of the actual results that would have been achieved by the combined company for the periods presented or that may be achieved by the combined company in the future.

Revenues of $133.5 million and a loss before income taxes of $1.3 million, which included $17.5 million of acquisition-related costs, are included in Quanta's consolidated results of operations for the year ended December 31, 2020 related to the acquisitions completed in 2020. Revenues of $223.3 million and income before income taxes of $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 $71.1 million and a loss before income taxes of $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.

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 Solutions Division	Underground Utility and Infrastructure Solutions Division	Total
Balance at December 31, 2017:			
Goodwill	$ 1,272,527	$ 693,905	$ 1,966,432
Accumulated impairment	—	(97,832)	(97,832)
	1,272,527	596,073	1,868,600
Goodwill related to acquisitions completed in 2018	56,337	—	56,337
Purchase price allocation adjustments	51	—	51
Foreign currency translation adjustments	(15,837)	(9,272)	(25,109)
Balance at December 31, 2018:			
Goodwill	1,313,078	683,284	1,996,362
Accumulated impairment	—	(96,483)	(96,483)
	1,313,078	586,801	1,899,879
Goodwill related to acquisitions completed in 2019	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)
	1,365,163	657,512	2,022,675
Goodwill related to acquisitions completed in 2020	79,889	6,308	86,197
Purchase price allocation adjustments	1,730	19	1,749
Foreign currency translation adjustments	2,992	7,401	10,393
Balance at December 31, 2020:			
Goodwill	1,449,774	768,868	2,218,642
Accumulated impairment	—	(97,628)	(97,628)
	$ 1,449,774	$ 671,240	$ 2,121,014

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, 2020				As of December 31, 2019		
	Remaining Weighted Average Amortization Period in Years	Intangible Assets	Accumulated Amortization	Intangible Assets, Net	Intangible Assets	Accumulated Amortization	Intangible Assets, Net
Customer relationships	5.6	$ 616,875	$ (277,647)	$ 339,228	$ 532,808	$ (213,915)	$ 318,893
Backlog	1.3	149,769	(145,476)	4,293	144,704	(141,580)	3,124
Trade names	13.8	101,533	(32,471)	69,062	93,396	(26,145)	67,251
Non-compete agreements	3.1	47,333	(36,973)	10,360	43,281	(32,868)	10,413
Patented rights and developed technology	3.5	22,486	(21,894)	592	22,719	(20,682)	2,037
Curriculum	7.4	12,233	(3,113)	9,120	11,712	(2,696)	9,016
Total intangible assets subject to amortization	6.8	950,229	(517,574)	432,655	848,620	(437,886)	410,734
Engineering license		3,000	—	3,000	3,000	—	3,000
Total intangible assets		$ 953,229	$ (517,574)	$ 435,655	$ 851,620	$ (437,886)	$ 413,734

Amortization expense for intangible assets was $76.7 million, $62.1 million and $44.0 million for the years ended December 31, 2020, 2019 and 2018.

The estimated future aggregate amortization expense of intangible assets subject to amortization as of December 31, 2020 is set forth below (in thousands):

Year Ending December 31:	
2021	$ 84,748
2022	77,119
2023	68,319
2024	55,357
2025	43,805
Thereafter	103,307
Total	$ 432,655

6. PER SHARE INFORMATION:

The amounts used to compute basic and diluted earnings per share attributable to common stock consisted of the following (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Amounts attributable to common stock:			
Net income attributable to common stock	$ 445,596	$ 402,044	$ 293,346
Weighted average shares:			
Weighted average shares outstanding for basic earnings per share attributable to common stock	141,380	145,710	152,963
Effect of dilutive unvested non-participating stock-based awards	3,867	1,824	1,263
Weighted average shares outstanding for diluted earnings per share attributable to common stock	145,247	147,534	154,226

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 were 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 included 1.6 million, 2.8 million and 2.6 million weighted average participating securities for the years ended December 31, 2020, 2019 and 2018.

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:

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

	Estimated Useful Lives in Years	December 31, 2020	December 31, 2019
Land	N/A	$ 69,389	$ 67,560
Buildings and leasehold improvements	5-30	249,106	231,920
Operating equipment and vehicles	1-25	2,297,120	2,068,644
Office equipment, furniture and fixtures and information technology systems	3-10	244,113	228,329
Construction work in progress	N/A	20,900	26,236
Finance lease assets and rental purchase options (see Note 9)	5-20	52,160	14,162
Property and equipment, gross		2,932,788	2,636,851
Less — Accumulated depreciation and amortization		(1,372,132)	(1,250,197)
Property and equipment, net of accumulated depreciation		$ 1,560,656	$ 1,386,654

Other assets, net consisted of the following (in thousands):

	December 31, 2020	December 31, 2019
Receivable related to terminated telecommunications project in Peru	$ 119,648	$ 119,648
Long-term retainage receivable, net	88,234	54,235
Investments in unconsolidated affiliates	84,367	89,568
Investments held related to deferred compensation plan	55,855	45,273
Long-term insurance receivables	35,164	34,785
Deferred tax assets	17,685	12,545
Long-term accounts receivable, net	13,367	12,427
Deferred financing costs related to senior credit facility, net	9,695	6,695
Other non-current assets	11,698	18,088
Other assets, net	$ 435,713	$ 393,264

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

	December 31,	
	2020	2019
Accounts payable, trade	$ 798,023	$ 798,718
Accrued compensation and related expenses	378,002	316,237
Accrued insurance, current portion	80,926	69,307
Income and franchise taxes payable	32,315	58,353
Unearned revenues, current portion	53,562	33,192
Sales and use taxes payable	30,587	28,721
Contingent consideration liabilities, current portion	3,466	77,618
Other accrued expenses	132,913	107,413
Accounts payable and accrued expenses	$ 1,509,794	$ 1,489,559

8. DEBT OBLIGATIONS:

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

	December 31,	
	2020	2019
2.900% Senior Notes due 2030	$ 1,000,000	$ —
Borrowings under senior credit facility	148,508	1,346,290
Other long-term debt	46,981	13,275
Finance leases	2,228	957
Unamortized discount and debt issuance costs related to senior notes	(12,892)	—
Total long-term debt obligations	1,184,825	1,360,522
Less — Current maturities of long-term debt	10,531	68,327
Total long-term debt obligations, net of current maturities	$ 1,174,294	$ 1,292,195

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

	December 31,	
	2020	2019
Short-term debt	$ 4,233	$ 6,542
Current maturities of long-term debt	10,531	68,327
Current maturities of long-term debt and short-term debt	$ 14,764	$ 74,869

2.900% Senior Notes Due 2030

On September 22, 2020, Quanta issued $1.00 billion aggregate principal amount of 2.900% Senior Notes due October 1, 2030 (the senior notes). Quanta received proceeds of $986.7 million from the offering, net of the original issue discount, underwriting discounts and debt issuance costs, and used such proceeds, together with cash on hand, to voluntarily prepay the $1.21 billion of term loans then-outstanding under Quanta's credit agreement for its senior credit facility (the credit agreement).

Interest on the senior notes of $14.5 million is payable semi-annually in arrears on April 1 and October 1 of each year, commencing April 1, 2021. The senior notes are Quanta's senior unsecured obligations and rank equally in right of payment with Quanta's existing and future senior indebtedness and senior in right of payment to all future subordinated indebtedness of Quanta (subject to applicable law). The senior notes are effectively subordinated to all secured indebtedness of Quanta to the extent of the value of the assets securing such indebtedness and are structurally subordinated to all liabilities, including trade payables, of Quanta's subsidiaries.

Quanta may redeem all or a portion of the senior notes at any time prior to July 1, 2030 at a price equal to 100% of the principal amount plus a make-whole premium and accrued and unpaid interest, and at any time on or after July 1, 2030 at a price equal to 100% of the principal amount plus accrued and unpaid interest, in each case as further specified by terms of the senior notes and the indenture and supplemental indenture governing the senior notes (together, the indenture). Additionally, upon the occurrence of a Change of Control Triggering Event (as defined in the indenture), unless Quanta has exercised its right to redeem the senior notes in full by giving irrevocable notice to the trustee, each noteholder will have the right to require Quanta to purchase all or a portion of such holder's senior notes at a purchase price equal to 101% of the principal amount thereof plus any accrued and unpaid interest.

The indenture also contains customary events of default and covenants that, among other things, limit Quanta's ability to incur liens securing indebtedness, to engage in certain sale and leaseback transactions with respect to certain properties and to sell all or substantially all of its assets or merge or consolidate with or into other companies.

Senior Credit Facility

On September 22, 2020, Quanta entered into an amendment to the credit agreement that, among other things, increased the aggregate revolving commitments from $2.14 billion to $2.51 billion and extended the maturity date for the revolving commitments from October 31, 2022 to September 22, 2025. Pursuant to the amendment, the pledge of capital stock of certain Quanta subsidiaries and the liens on the collateral that secured the obligations under the credit agreement were released, and all of Quanta's subsidiaries that were guarantors of the obligations under the credit agreement were released from their guarantees of such obligations. In addition, the amendment removed the collateral reinstatement provision that would have applied in the event Quanta's corporate credit rating from either Moody's Investors Service, Inc or Standard & Poor's Financial Services LLC were to fall below an investment grade rating. As referenced above, Quanta used the net proceeds from the offering of the senior notes, together with cash on hand, to voluntarily prepay all the term loans then-outstanding under the credit agreement in the aggregate principal amount of $1.21 billion.

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 commitments, 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) additional amounts 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.

Subject to compliance with the financial covenants described below, the entire amount available under the credit facility may be used by Quanta for revolving loans and letters of credit in U.S. dollars and certain alternative currencies, subject to a $900.0 million sublimit for Financial Letters of Credit (as defined in the credit agreement). Up to $800.0 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. 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.

As of December 31, 2020, Quanta had $148.5 million of outstanding revolving loans under the senior credit facility. Of the total outstanding borrowings, $114.7 million were denominated in Canadian dollars and $33.8 million were denominated in Australian dollars. As of December 31, 2020, Quanta also had $348.3 million of letters of credit issued under the senior credit facility, of which $231.0 million were denominated in U.S. dollars and $117.3 million were denominated in currencies other than the U.S. dollar, primarily Canadian dollars. As of December 31, 2020, Quanta also had $18.2 million of letters of credit issued by a financial institution that ceased to be a lender under the senior credit facility subsequent to the September 2020 amendment to the credit agreement, which are collateralized by a $19.1 million letter of credit issued by a lender under the senior credit facility. As of December 31, 2020, subject to the applicable sublimits, the remaining $2.01 billion of available commitments under the senior credit facility was available for loans or issuing new letters of credit in U.S. dollars and certain alternative currencies.

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

	Year Ended December 31,		
	2020	2019	2018
Maximum amount outstanding under the senior credit facility during the period	$ 2,023,326	$ 2,051,714	$ 1,300,401
Average daily amount outstanding under the senior credit facility	$ 1,091,091	$ 1,553,499	$ 914,012
Weighted-average interest rate of the senior credit facility	2.1 %	3.8 %	3.6 %

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. 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%. Quanta is also subject to a commitment fee of 0.275% to 0.425%, based on its Consolidated Leverage Ratio, on any unused availability under the senior credit facility. Prior to the amendment on September 22, 2020, Quanta was subject to a commitment fee of 0.200% to 0.400%.

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. 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 3.5 to 1.0 (except that in connection with certain permitted acquisitions in excess of $200.0 million, such ratio is 4.0 to 1.0 for the fiscal quarter in which the acquisition is completed and the four subsequent fiscal quarters) and (ii) a minimum Consolidated Interest Coverage Ratio of 3.0 to 1.0. As of December 31, 2020, Quanta was in compliance with all of the financial covenants 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 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 senior 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 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 and terminate the commitments under the credit agreement.

As referenced above, Quanta voluntarily prepaid the aggregate term loans then-outstanding on September 22, 2020. Quanta had 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 then-outstanding revolving loans under the credit agreement. Term loans bore interest at rates generally consistent with the revolving loans borrowed in U.S. dollars, except that the additional amount over the Eurocurrency Rate was 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 $16.1 million on the term loans from December 2019 through June 2020.

9. LEASES:

Quanta primarily leases land, buildings, vehicles, construction equipment and office equipment. As of December 31, 2020, the majority of Quanta's leases had remaining lease terms not exceeding 9.8 years. Certain leases include options to extend their terms in increments of up to five 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, 2020	Year Ended December 31, 2019
Finance lease cost:			
Amortization of lease assets	Depreciation (1)	$ 1,234	$ 1,393
Interest on lease liabilities	Interest expense	107	64
Operating lease cost	Cost of services and Selling, general and administrative expenses	116,672	121,767
Short-term and variable lease cost (2)	Cost of services and Selling, general and administrative expenses	656,649	837,244
Total lease cost		$ 774,662	$ 960,468

(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 year ended December 31, 2018, rent expense related to operating leases was $309.7 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 years ended December 31, 2020 and 2019 in the table above.

Additionally, Quanta has entered into arrangements with certain related parties, typically employees of Quanta who are the former owners of acquired businesses, to lease certain real property and facilities that continue to be utilized by Quanta subsequent to an acquisition. Quanta utilizes third party market valuations to evaluate rental rates for these properties and facilities, and the lease agreements generally have remaining lease terms of up to ten years, subject to renewal options. Related party lease expense was $14.3 million, $16.7 million and $14.0 million for the years ended December 31, 2020, 2019 and 2018.

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

Lease type	Classification	December 31, 2020	December 31, 2019
Assets:			
Operating lease right-of-use assets	Operating lease right-of-use assets	$ 256,845	$ 284,369
Finance lease assets	Property and equipment, net of accumulated depreciation	2,370	1,043
Total lease assets		$ 259,215	$ 285,412
Liabilities:			
Current:			
Operating	Current portion of operating lease liabilities	$ 85,134	$ 92,475
Finance	Current maturities of long-term debt and short-term debt	846	440
Non-current:			
Operating	Operating lease liabilities, net of current portion	178,822	196,521
Finance	Long-term debt, net of current maturities	1,382	517
Total lease liabilities		$ 266,184	$ 289,953

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, 2020 and 2019, the assets recorded, net of accumulated depreciation, totaled $45.7 million and $11.8 million.

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

	As of December 31, 2020		
	Operating Leases	Finance Leases	Total
2021	$ 94,166	$ 920	$ 95,086
2022	68,284	690	68,974
2023	47,872	493	48,365
2024	29,362	264	29,626
2025	18,685	—	18,685
Thereafter	30,311	—	30,311
Total future minimum operating and finance lease payments	288,680	2,367	291,047
Less imputed interest	(24,724)	(139)	(24,863)
Total lease liabilities	$ 263,956	$ 2,228	$ 266,184

Future minimum lease payments for short-term leases, which are not recorded in the consolidated balance sheets due to Quanta's accounting policy election, were $13.6 million as of December 31, 2020. 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.

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

	As of December 31, 2020
Weighted average remaining lease term (in years):	
Operating leases	4.28
Finance leases	3.06
Weighted average discount rate:	
Operating leases	4.2 %
Finance leases	4.1 %

Quanta has also guaranteed the residual value under 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, 2020, the maximum guaranteed residual value of this equipment was $779.1 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, 2020, Quanta had additional operating lease obligations of $3.4 million for leases that had not yet commenced and that are expected to commence in 2021 or 2022 and have lease terms of one to seven years.

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 effective tax rate and a remeasurement of its deferred tax assets and liabilities. Quanta completed its analysis of the Tax Act, and the adjustments determined during the measurement period were included within "Net income" as an adjustment to "Provision for income taxes" on Quanta's consolidated statements of operations and 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 that were Quanta's provisional estimate, utilizing the information that was available at the time. 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, and decreased the estimated benefit associated with entity restructuring and recapitalization transactions by $1.8 million based on actual 2017 earnings and profit balances. Additionally, as a result of subsequent regulations, Quanta also recorded a valuation allowance of $43.5 million against foreign tax credits during 2018. 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.

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

	Year Ended December 31,		
	2020	2019	2018
Income before income taxes:			
Domestic	$ 632,791	$ 550,676	$ 318,635
Foreign	(61,445)	21,611	139,031
Total	$ 571,346	$ 572,287	$ 457,666

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

	Year Ended December 31,		
	2020	2019	2018
Current:			
Federal	$ 134,538	$ 121,214	$ 50,306
State	45,610	35,329	26,170
Foreign	(745)	16,848	23,209
Total current tax provision	179,403	173,391	99,685
Deferred:			
Federal	(46,251)	7,379	62,482
State	(3,850)	(1,776)	(4,152)
Foreign	(9,915)	(13,522)	3,644
Total deferred tax provision (benefit)	(60,016)	(7,919)	61,974
Total provision for income taxes	$ 119,387	$ 165,472	$ 161,659

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,		
	2020	2019	2018
Provision at the statutory rate	$ 119,983	$ 120,180	$ 96,110
Increases (decreases) resulting from —			
State taxes	31,791	23,399	18,504
Employee per diems, meals and entertainment	10,680	13,817	11,949
Valuation allowance on deferred tax assets	(31,138)	35,761	48,862
Foreign taxes	(9,641)	(21,565)	(2,621)
Stock-based compensation	(3,109)	(1,863)	(1,449)
Contingency reserves, net	(2,125)	(3,173)	(2,619)
Taxes on unincorporated joint ventures	(1,093)	(930)	(578)
Tax Cuts and Jobs Act	—	—	(6,295)
Entity restructuring and recapitalization efforts	—	—	(4,424)
Other	4,039	(154)	4,220
Total provision for income taxes	$ 119,387	$ 165,472	$ 161,659

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,	
	2020	2019
Deferred income tax liabilities:		
Property and equipment	$ (236,256)	$ (208,751)
Goodwill	(85,467)	(72,244)
Leased assets	(77,344)	(73,861)
Customer holdbacks	(30,457)	(11,882)
Other intangibles	(4,438)	(11,384)
Other book/tax accounting method differences	—	(1,801)
Total deferred income tax liabilities	(433,962)	(379,923)
Deferred income tax assets:		
Net operating loss carryforwards	82,817	78,310
Lease liabilities	76,826	74,044
Accruals and reserves	70,335	36,372
Tax credits	42,202	46,621
Stock and incentive compensation	36,590	26,045
Deferred tax benefits on unrecognized tax positions	10,108	16,542
Other	9,617	3,933
Subtotal	328,495	281,867
Valuation allowance	(43,255)	(104,178)
Total deferred income tax assets	285,240	177,689
Total net deferred income tax liabilities	$ (148,722)	$ (202,234)

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

	December 31,	
	2020	2019
Deferred income taxes:		
Assets	$ 17,685	$ 12,545
Liabilities	$ (166,407)	(214,779)
Total net deferred income tax liabilities	$ (148,722)	$ (202,234)

The valuation allowances for deferred income tax assets at December 31, 2020, 2019 and 2018 were $43.3 million, $104.2 million and $67.6 million. These valuation allowances relate to state and foreign net operating loss carryforwards and foreign tax credits. The net changes in the total valuation allowance for each of the years ended December 31, 2020, 2019 and 2018 were a decrease of $60.9 million, an increase of $36.6 million and an increase of $48.3 million. The valuation allowances were 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, 2020, Quanta had state and foreign net operating loss carryforwards, the tax effect of which was $88.1 million. These carryforwards will expire as follows: 2021, $0.5 million; 2022, $0.2 million; 2023, $3.2 million; 2024, $1.0 million; 2025, $7.4 million; and $75.8 million thereafter. A valuation allowance of $42.3 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 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,		
	2020	2019	2018
Balance at beginning of year	$ 40,878	$ 41,110	$ 36,229
Additions based on tax positions related to the current year	4,398	7,708	6,231
Additions for tax positions of prior years	—	1,200	9,377
Reductions for tax positions of prior years	(2,410)	—	(2,870)
Reductions for audit settlements	(930)	(3,205)	—
Reductions resulting from a lapse of the applicable statute of limitations periods	(8,717)	(5,935)	(7,857)
Balance at end of year	$ 33,219	$ 40,878	$ 41,110

For the year ended December 31, 2020, the $12.1 million of aggregate reductions were primarily due to the favorable settlement of U.S. and Canadian tax audits and the expiration of U.S. federal and state statutes of limitations. 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 statutes 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 statutes of limitations.

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,		
	2020	2019	2018
Unrecognized tax benefits	$ 33,219	$ 40,878	$ 41,110
Portion that, if recognized, would reduce tax expense and effective tax rate	30,868	40,695	40,977
Accrued interest on unrecognized tax benefits	5,204	6,240	5,459
Accrued penalties on unrecognized tax benefits	14	14	631
Reasonably possible reduction to the balance of unrecognized tax benefits in succeeding 12 months	$0 to $11,859	$0 to $6,268	$0 to $9,541
Portion that, if recognized, would reduce tax expense and effective tax rate	$0 to $10,217	$0 to $5,693	$0 to $8,224

Quanta classifies interest and penalties within the provision for income taxes. Quanta recognized interest income of $0.7 million, interest expense of $0.8 million and interest expense of $0.1 million in the provision for income taxes for the years ended December 31, 2020, 2019 and 2018.

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 2020 and 2019, a nominal amount and 0.4 million exchangeable shares were exchanged for Quanta common stock, and as of December 31, 2020, no exchangeable shares remained outstanding.

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 with respect to RSUs and PSUs that are settled in common stock are typically satisfied by Quanta making tax payments and withholding the number of common shares having a value equal to the tax withholding obligation that is due on the date of vesting or settlement (as applicable). With respect to these liabilities, Quanta withheld 0.6 million shares of Quanta common stock during the year ended December 31, 2020, which had a market value of $25.5 million, 0.5 million shares of Quanta common stock during the year ended December 31, 2019, which had a market value of $17.4 million, and 0.4 million shares of Quanta common stock during the year ended December 31, 2018, which had a market value of $15.2 million. These shares and the related costs to acquire them were accounted for as adjustments to the balance of treasury stock.

Notional amounts recorded related to deferred compensation plans

For RSUs and PSUs that vest but the settlement of which is deferred under a deferred compensation plan, Quanta records a notional amount to “Treasury stock” and an offsetting amount to “Additional paid-in capital.” 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 were a reduction to treasury stock of $4.4 million, an increase to treasury stock of $3.0 million and an increase to treasury stock of $2.5 million during the years ended December 31, 2020, 2019 and 2018.

Stock repurchases

During the second quarter of 2017, Quanta's Board of Directors approved a stock repurchase program that authorized Quanta to purchase up to $300.0 million of its outstanding common stock, which was completed during 2018. 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. In August 2020, Quanta's Board of Directors authorized Quanta to repurchase, from time to time through June 30, 2023, up to an additional $500.0 million in shares of its outstanding common stock under a new stock repurchase program. As of December 31, 2020, an aggregate $536.8 million remained under the stock repurchase programs.

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, 2020	6,680	$ 249,949
December 31, 2019	376	$ 11,954
December 31, 2018	13,917	$ 451,290

Repurchases under the repurchase programs 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 credit facility, and other factors. Quanta is not obligated to acquire any specific amount of common stock, and the repurchase programs may be modified or terminated by Quanta's Board of Directors at any time at its sole discretion and without notice.

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, 2020, 2019 and 2018, cash payments related to stock repurchases were $247.2 million, $20.1 million and $443.2 million.

Non-controlling Interests

Quanta holds interests in various entities through both joint venture entities that provide infrastructure-related 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 entered into through the partnership structure Quanta formed with certain infrastructure investors. Quanta has determined that certain of these joint ventures where Quanta provides the majority of the infrastructure services, which management believes most significantly influences the economic performance of such joint ventures, are VIEs. Management has concluded that Quanta is the primary beneficiary of these joint ventures and has accounted for each on a consolidated basis. The other parties' equity interests in these joint ventures have been accounted for as "Non-controlling interests" in Quanta's consolidated balance sheets. Net income attributable to the other participants in the amounts of $6.4 million, $4.8 million and $2.7 million for the years ended December 31, 2020, 2019 and 2018 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 $13.2 million and $12.0 million at December 31, 2020 and 2019. The carrying amount of investments held by the non-controlling interests in these VIEs at December 31, 2020 and 2019 was $4.8 million and $3.5 million. During the years ended December 31, 2020, 2019 and 2018, net distributions to non-controlling interests were $5.4 million, $2.5 million and $4.0 million. There were no other material changes in equity as a result of transfers to/from the non-controlling interests during the years ended December 31, 2020, 2019 or 2018. 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 2020, 2019 and 2018 (in thousands, except per share amounts):

Declaration Date	Record Date	Payment Date	Dividend Per Share	Dividends Declared
December 11, 2020	January 4, 2021	January 15, 2021	$ 0.06	$ 8,933
August 26, 2020	October 1, 2020	October 15, 2020	$ 0.05	$ 7,244
May 28, 2020	July 1, 2020	July 15, 2020	$ 0.05	$ 7,182
March 26, 2020	April 6, 2020	April 15, 2020	$ 0.05	$ 7,184
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 equal to the cash dividend payable on account of the underlying Quanta common stock. 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 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 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. Holders of exchangeable shares of certain Canadian subsidiaries of Quanta, while such exchangeable shares were outstanding, received a cash dividend per exchangeable share equal to the cash dividend per share paid to Quanta common stockholders.

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 and cash flows from operations; current and anticipated capital requirements and expansion plans; the current and potential impact of the COVID-19 pandemic and other market, industry, economic and political conditions; 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

The 2019 Plan was approved by Quanta's stockholders in May 2019 and 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 subsequent to stockholder approval of the 2019 Plan. All awards subsequent to stockholder approval of the 2019 Plan have been and will be made pursuant to the 2019 Plan and applicable award agreements. Awards made under the 2011 Plan prior to approval of the 2019 Plan remain subject to the terms of the 2011 Plan and applicable award agreements.

RSUs to be Settled in Common Stock

During the years ended December 31, 2020, 2019 and 2018, Quanta granted 2.0 million, 2.1 million and 1.6 million RSUs to be settled in common stock, with weighted average grant date fair values of $39.91, $35.62 and $34.37 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 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, 2020, 2019 and 2018, vesting activity consisted of 1.3 million, 1.3 million and 1.4 million RSUs settled in common stock with an approximate fair value at the time of vesting of $51.6 million, $48.7 million and $48.6 million, respectively.

A summary of the activity for RSUs to be settled in common stock for the year ended December 31, 2020 is as follows (shares in thousands):

	Shares	Weighted Average Grant Date Fair Value (Per share)
Unvested at December 31, 2019	3,265	$35.34
Granted	2,029	$39.91
Vested	(1,269)	$35.69
Forfeited	(156)	$36.67
Unvested at December 31, 2020	3,869	$37.57

During the years ended December 31, 2020, 2019 and 2018, Quanta recognized $55.7 million, $45.5 million and $43.9 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, 2020, there was $80.9 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 2.38 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 company performance metrics established by the Compensation Committee of Quanta's Board of Directors, including financial and operational goals and 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, 2020, 2019 and 2018, Quanta granted 0.4 million, 0.4 million and 0.3 million PSUs to be settled in common stock, with weighted average grant date fair values of $34.60, $40.15 and $38.28 per unit, respectively. The grant date fair values of the PSUs were determined as follows: (i) for the portion of the awards based on company financial and operational performance metrics, by multiplying the number of units granted by the closing price of Quanta's common stock on the date of grant and (ii) for the portion of the awards based on total shareholder return, by utilizing a Monte Carlo simulation valuation methodology. The Monte Carlo simulation valuation methodology applied the following key inputs:

	2020	2019	2018
Valuation date price based on March 26, 2020, March 8, 2019 and February 28, 2018 closing stock prices of Quanta common stock	$31.49	$35.19	$34.44
Expected volatility	34 %	25 %	34 %
Risk-free interest rate	0.35 %	2.43 %	2.39 %
Term in years	2.76	2.81	2.84

Quanta recognizes expense, net of estimated forfeitures, for PSUs based on the forecasted achievement of the company financial and operational performance metrics and forecasted performance with respect to relative total shareholder return, 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. During the years ended December 31, 2020, 2019 and 2018, Quanta recognized $35.9 million, $6.5 million and $8.6 million in compensation expense associated with PSUs. Such expense is recorded in "Selling, general and administrative expenses." Included in compensation expense associated with PSUs during the year ended December 31, 2020 was a charge of $14.0 million to correct the valuation of certain performance-based stock awards during the years 2017 to 2019, $7.2 million of which related to 2019 and $5.7 million of which related to 2018. Quanta assessed the materiality of the prior period error and determined that the error was immaterial to both the current and prior period financial statements.

During the year ended December 31, 2020, 0.2 million PSUs vested, and 0.5 million shares of common stock were earned and either issued or deferred for future issuance in connection with PSUs. 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 the year ended December 31, 2018, 0.1 million PSUs vested, and 0.1 million shares of common stock were earned and either issued or deferred for future issuance in connection with PSUs.

RSUs to be Settled in Cash

Certain RSUs granted by Quanta are settled solely in cash. These cash-settled RSUs are intended to provide plan participants with cash performance incentives that are substantially equivalent to the risks and rewards of 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 $9.4 million, $5.9 million and $5.0 million for the years ended December 31, 2020, 2019 and 2018. Such expense is recorded in "Selling, general and administrative expenses." RSUs that are anticipated to be settled in cash are not included in the calculation of weighted average shares outstanding for earnings per share, and the estimated earned value of such RSUs is classified as a liability. Quanta paid $4.3 million, $5.4 million and $5.9 million to settle liabilities related to cash-settled RSUs in the years ended December 31, 2020, 2019 and 2018. Accrued liabilities for the estimated earned value of outstanding RSUs to be settled in cash were $8.7 million and $4.3 million at December 31, 2020 and 2019.

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 34% of Quanta's employees at December 31, 2020 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 a projected minimum funding deficiency exists). Plans in these classifications must adopt remedial 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 of the plans under the PPA and whether the plans are subject to a funding improvement or rehabilitation plan or contribution surcharges. The most recent PPA zone status available in 2020 and 2019 relates to the plans' fiscal year-ends in 2019 and 2018. Forms 5500 were not yet available for the plan years ending in 2020. 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 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.

Fund	Employee Identification Number/ Pension Plan Number	PPA Zone Status		Subject to Financial Improvement/ Rehabilitation Plan	Contributions (in thousands)			Surcharge Imposed	Expiration Date of Collective Bargaining Agreement
		2020	2019		2020	2019	2018		
National Electrical Benefit Fund	53-0181657	Green	Green	No	$ 40,902	$ 44,414	$ 35,399	No	Varies through August 2025
Excavators Union Local 731 Pension Fund	13-1809825	Green	Green	No	14,310	6,697	—	No	April 2022
Central Pension Fund of the IUOE & Participating Employers	36-6052390	Green	Green	No	8,467	11,638	9,246	No	Varies through June 2023
Eighth District Electrical Pension Fund	84-6100393	Green	Green	No	4,272	5,939	3,332	No	Varies through August 2023
Pipeline Industry Pension Fund	73-6146433	Green	Green	No	3,654	9,376	10,132	No	Varies through June 2023
Operating Engineers' Local 324 Pension Fund	38-1900637	Red	Red	Yes	2,629	4,315	2,310	Yes	Varies through June 2023
Locals 302 & 612 of the IUOE-Employers Construction Industry Retirement Plan	91-6028571	Green	Green	No	2,368	2,392	2,620	No	Varies through May 2021
Laborers Pension Trust Fund for Northern California	94-6277608	Green	Green	No	2,328	2,823	3,652	No	June 2023
Local 697 IBEW and Electrical Industry Pension Fund	51-6133048	Green	Green	No	1,840	3,717	2,656	No	May 2025
Plumbers and Pipefitters National Pension Fund	52-6152779	Yellow	Yellow	Yes	1,453	1,162	2,734	No	Varies through March 2023
Teamsters National Pipe Line Pension Plan	46-1102851	Green	Green	No	1,380	3,039	3,318	No	Varies through June 2023
Pension Trust Fund for Operating Engineers	94-6090764	Yellow	Yellow	Yes	1,177	956	1,922	Yes	June 2021
Laborers National Pension Fund	75-1280827	Red	Red	Yes	638	1,910	2,051	Yes	June 2023
West Virginia Laborers Pension Trust Fund	55-6026775	Green	Green	No	548	1,693	3,321	No	June 2023
Michigan Laborers' Pension Plan	38-6233976	Yellow	Yellow	Yes	512	1,491	1,061	Yes	March 2025
International Union of Operating Engineers Local 132 Pension Fund	55-6015364	Green	Green	No	168	1,289	3,367	No	June 2023
Laborers District Council of W PA Pension Fund	25-6135576	Yellow	Yellow	Yes	77	1,194	1,029	No	June 2023
Employer-Teamsters Local Nos 175 & 505 Pension Trust Fund	55-6021850	Red	Red	Yes	48	530	1,209	Yes	June 2023
All other plans - U.S.					28,447	23,171	28,314		
All other plans - Canada [(1)]					6,760	6,451	8,518		
Total contributions					$121,978	$134,197	$126,191		

(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.

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, 2019 and 2018. Forms 5500 were not yet available for these plans for the year ended December 31, 2020.

Pension Fund	Plan Years in which Quanta Contributions Were Five Percent or More of Total Plan Contributions
National Electrical Benefit Fund	2019 and 2018
Eighth District Electrical Pension Fund	2019 and 2018
Pipeline Industry Pension Fund	2019 and 2018
Local 697 I.B.E.W. and Electrical Industry Pension Fund	2019 and 2018
Teamsters National Pipe Line Pension Plan	2019 and 2018
West Virginia Laborers Pension Trust Fund	2019 and 2018
I.B.E.W. Local 456 Pension Plan	2019 and 2018
Local Union No. 9 I.B.E.W. and Outside Contractors Pension Fund	2019 and 2018
International Union of Operating Engineers Local 132 Pension Fund	2018
Employer-Teamsters Local Nos 175 & 505 Pension Trust Fund	2018

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 $188.6 million, $201.3 million and $174.7 million for the years ended December 31, 2020, 2019 and 2018. Total contributions made to all of these multiemployer 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.

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 $45.9 million, $41.4 million and $33.4 million for the years ended December 31, 2020, 2019 and 2018.

Deferred Compensation Plans

Quanta maintains non-qualified deferred compensation plans pursuant to which non-employee directors and certain key employees may defer receipt of some or all of their cash compensation and/or settlement of certain 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 such plan. Matching contributions vest immediately, and discretionary employer contributions may be 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 matching contributions to the eligible participants' accounts under the deferred compensation plans of $1.3 million, $1.1 million and $1.1 million during the years ended December 31, 2020, 2019 and 2018 and made no discretionary contributions during the years ended December 31, 2020, 2019 and 2018. At December 31, 2020 and 2019, obligations under these plans, including amounts contributed by Quanta, were $58.2 million and $47.3 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, 2020 and 2019, these investments were primarily comprised of company-owned life insurance policies, had fair market values of $56.5 million and $45.8 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-related services under specific customer contracts and partially owned entities that own, operate and/or maintain certain infrastructure assets. 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-related 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 also formed a partnership in 2017 with select investors to invest in certain specified infrastructure projects, and 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. Quanta’s investment balance related to this partnership was $21.4 million as of December 31, 2020. In October 2019, due to certain management changes at the registered investment adviser, the partnership entered into a period during which the investors and Quanta evaluated the partnership, and at the end of such period in April 2020, the investment period for any future investments ended.

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, 2020, Quanta had $69.7 million of production orders with expected delivery dates in 2021. 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 damage, environmental liabilities, wage and hour and other employment-related damages, punitive damages, consequential damages, civil penalties or other losses, or injunctive or declaratory relief. With respect to all such lawsuits, claims and proceedings, Quanta records a reserve when it is probable that a liability has been incurred and the amount of loss can be reasonably estimated. In addition, Quanta discloses matters for which management believes a material loss is at least reasonably possible. Except as otherwise stated below, none of these proceedings are expected to have a material adverse effect on Quanta’s consolidated financial position, results of operations or cash flows. In all instances, management has assessed the matter based on current information and made a judgment concerning its potential outcome, giving due consideration to the nature of the claim, the amount and nature of damages sought and the probability of success. Management’s judgment may prove materially inaccurate, and such judgment is made subject to the known uncertainties of litigation.

Peru Project Dispute

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

During the construction phase, the project experienced numerous challenges and delays, primarily related to issues which Quanta believes were outside of the control of and not attributable to Redes, including, among others, weather-related issues, local opposition to the project, permitting delays, the inability to acquire clear title to certain required parcels of land and other delays which Quanta believes were attributable to FITEL/PRONATEL. In response to various of these challenges and delays, Redes 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. In August 2020, Redes received a formal claim from PRONATEL for liquidated damages in the amount of approximately $44 million, which represents the U.S. dollar equivalent of the amount asserted based on the December 31, 2020 exchange rate.

In May 2019, Redes filed for arbitration before the Court of International Arbitration of the International Chamber of Commerce (ICC) against PRONATEL and the MTC. In the arbitration, Redes claims that PRONATEL: (i) breached and wrongfully terminated the contracts; (ii) wrongfully executed the advance payment bonds and the performance bonds; and (iii) 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 breach and improper termination of the contracts (including construction costs caused by the delays and costs related to the transfer of the networks). The amount claimed by Redes in this arbitration is approximately $190 million. The arbitration hearing on the merits is presently scheduled to take place in November 2021.

As of the date of the contract terminations, Redes had incurred costs of approximately $157 million related to the design and 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 transfer of the networks (as completed at the time of the contract terminations) to PRONATEL, which was required upon termination of the contracts and was completed in 2020, PRONATEL and the MTC are able to possess the networks, for which PRONATEL has paid approximately $100 million while also 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. In connection with PRONATEL exercising the bonds, Redes was not afforded the opportunity to provide evidence of its proper use of the advance payments for project expenditures. 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 believes Redes is entitled to all amounts described in the claims above and intends to vigorously pursue those claims in this pending arbitration proceeding. However, as a result of the contract terminations and the inherent uncertainty involved in arbitration proceedings and recovery of amounts owed, there can be no assurance that Redes will prevail on those claims or in defense of liquidated damages claims or any other claims that may be asserted by PRONATEL. As a result, during the three months ended June 30, 2019, Quanta recorded a charge to earnings of $79.2 million, which included a reduction of previously recognized earnings on the project, a reserve against a portion of the project costs incurred through the project termination date, an accrual for a portion of the alleged liquidated damages, and the estimated costs to complete the project turnover and close out the project. The reduction of previously recognized earnings on the project included $14.5 million related to the correction of prior period errors associated with the determination of total estimated project costs and the resulting revenue recognized. Quanta assessed the materiality of the prior period errors and determined that the errors were immaterial individually and in the aggregate to its previously issued financial statements.

As of December 31, 2020, after taking into account the above charge, Quanta had a contract receivable of approximately $120 million related to the project, which includes the approximately $87 million PRONATEL collected through exercise of the advance payment bonds. The contract receivable from PRONATEL is included in “Other assets, net” in the accompanying consolidated balance sheet as of December 31, 2020.

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. In connection with these rights, in May 2020 Quanta’s Dutch subsidiary delivered to the Peruvian government an official notice of dispute arising from the termination of the contracts and related acts by PRONATEL (which are attributable to Peru) under the Agreement on the Encouragement and Reciprocal Protection of Investments between the Kingdom of the Netherlands and the Republic of Peru (Investment Treaty). The Investment Treaty protects Quanta’s subsidiary’s indirect ownership stake in Redes and the project, and provides for rights and remedies distinct from the ICC arbitration. In December 2020, Quanta’s Dutch subsidiary filed a request for the institution of an arbitration proceeding against Peru with the International Centre for Settlement of Investment Disputes (ICSID) related to Peru’s breach of the Investment Treaty, which was registered by ICSID in January 2021. In the ICSID arbitration, Quanta’s Dutch subsidiary claims, without limitation, that Peru: (i) treated the subsidiary’s investment in Redes and the project unfairly and inequitably; and (ii) effectively expropriated the subsidiary’s investment in Redes and the project. In addition, Quanta’s Dutch subsidiary is seeking full compensation for all damages arising from Peru’s actions, including but not limited to (i) the fair market value of the investment and/or lost profits; (ii) attorneys’ fees and arbitration costs; (iii) other related costs and damages and (iv) pre- and post-award interest.

If Quanta is not successful in these pending 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 status of the pending arbitration proceedings, 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 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. The lawsuits relating to these claims have been consolidated and are pending in the Tulsa County District Court in Oklahoma. 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, 2020, 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. During 2019 and 2020, the parties filed additional summary judgment and other motions and a bench trial on liability and damages was held. Liability and damages for significantly all claims have been determined by the trial court, subject to issuance of a final order, with the amount of liability for TNS, including interest through the date of the trial court’s orders, expected to be approximately $9.5 million. This amount includes damages and interest, but does not include attorneys’ fees or costs, which are yet to be determined. 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.

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

The final amount of liability, if any, payable in connection with this matter remains the subject of pending litigation and will ultimately depend on various factors, including the outcome of Quanta's appeal of the trial court's rulings on liability and damages, the final determination with respect to any additional damages owed by Quanta, and the solvency of the staffing agencies. Based on review and analysis of the trial court's rulings on liability, Quanta does not believe, at this time, that it is probable this matter will result in a material loss. However, if Quanta is unsuccessful in this litigation and the staffing agencies are unable to fund damages owed to class members, Quanta believes the range of reasonably possible loss to Quanta upon final resolution of this matter could be up to approximately $9.5 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, 2020, 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 other responsible parties 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 financial condition, 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 and Australia. While Quanta generally has certain statutory lien rights with respect to services provided, Quanta is subject to potential credit risk related to business, economic and financial market conditions that affect these customers and locations, which has been heightened as a result of the unfavorable and uncertain economic and financial market conditions resulting from the ongoing COVID-19 pandemic and the significant decline in commodity prices and volatility in commodity production volumes. 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 Corporation and its primary operating subsidiary, Pacific Gas and Electric Company (together, PG&E), one of Quanta's largest customers, filed for bankruptcy protection under Chapter 11 of the U.S. Bankruptcy Code, as amended, which resulted in the delay in collection of approximately $165 million of billed and unbilled receivables. During the bankruptcy case, the bankruptcy court approved the early assumption by PG&E of certain contracts with subsidiaries of Quanta, and PG&E subsequently assumed its remaining contracts with Quanta's subsidiaries as part of its Chapter 11 plan of reorganization, which was confirmed by the bankruptcy court in June 2020. As of December 31, 2020, substantially all of Quanta's pre-petition receivables had been paid. Additionally, a customer within Quanta's Underground Utility and Infrastructure Solutions segment encountered financial difficulties during 2020 that resulted in nonpayment of certain receivables owed, and as a result of which Quanta decided to foreclose the liens on the pipeline asset in order to recover the outstanding amounts.

No customer represented 10% or more of Quanta's consolidated revenues for the years ended December 31, 2020, 2019 or 2018, and no customer represented 10% or more of Quanta's consolidated net receivable position at December 31, 2020 or 2019.

Insurance

As discussed in Note 2, Quanta carries various insurance policies. As of December 31, 2020 and 2019, the gross amount accrued for employer's liability, workers' compensation, auto liability, general liability and group health claims totaled $319.5 million and $287.6 million, with $238.0 million and $212.9 million considered to be long term and included in "Insurance and other non-current liabilities." Related insurance recoveries/receivables as of December 31, 2020 and 2019 were $35.6 million and $35.1 million, of which $0.4 million and $0.3 million are included in "Prepaid expenses and other current assets" and $35.2 million and $34.8 million are included in "Other assets, net."

Quanta renews its insurance policies on an annual basis, and therefore deductibles and levels of insurance coverage may change in future periods. In addition, insurers may cancel Quanta's coverage or determine to exclude certain items from coverage, or Quanta 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, Quanta's overall risk exposure would increase, which could negatively affect its results of operations, financial condition and cash flows. For example, due to the increased occurrence and future risk of wildfires in California and other areas in the western United States, Australia and other locations, insurers have reduced coverage availability and increased the cost of insurance coverage for such events in recent years. As a result, Quanta's level of insurance coverage for wildfire events decreased, including in connection with annual insurance renewals in the spring of 2020 and 2019, and the levels of coverage may not be sufficient to cover potential losses. Quanta's third-party insurers could also decide to further reduce or exclude coverage for wildfires or other events in connection with its insurance renewal in the spring of 2021 and/or in the future. In any such event, Quanta's overall risk exposure would increase, which could negatively affect its financial condition, results of operations and cash flows.

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 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, 2020, Quanta had $348.3 million in outstanding letters of credit under its senior 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 2021. Quanta expects to renew the majority of the letters of credit related to the casualty insurance program for subsequent one-year periods upon maturity. As of December 31, 2020, Quanta also had $18.2 million of letters of credit issued by a financial institution that ceased to be a lender under the senior credit facility subsequent to the September 2020 amendment to the credit agreement, and such letters of credit are collateralized by a $19.1 million letter of credit issued by a lender in the senior credit facility. 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.

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. In certain circumstances, 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. Quanta may also be required to post letters of credit in favor of the sureties, which would reduce the borrowing availability under its senior credit facility. Under Quanta's underwriting, continuing indemnity and security agreement with its sureties, Quanta had also granted security interests in certain of its assets as collateral for its obligations to the sureties. However, in connection with the September 2020 amendment to the credit agreement, these security interests were automatically released. On September 22, 2020, Quanta also entered into an amendment to the underwriting, continuing indemnity and security agreement that further documented this release and removed the collateral reinstatement provision in the agreement that would have applied in the event Quanta's corporate credit rating from either of Moody's Investors Service, Inc. or Standard & Poor's Financial Services LLC were to fall below an investment grade rating.

Quanta has not been required to make any material reimbursements to its sureties for bond-related costs except related to the exercise of approximately $112 million advance payment and performance bonds in 2019 in connection with the terminated telecommunications project in Peru, as set forth in *Legal Proceedings – Peru Project Dispute* 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. As of December 31, 2020, Quanta is 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 Quanta's bonded operating activity. As of December 31, 2020, the total amount of the outstanding performance bonds was estimated to be approximately $3.7 billion. Quanta's estimated maximum exposure as it relates to the value of the performance bonds outstanding is lowered on each bonded project as the cost to complete is reduced, and each commitment under a performance bond generally extinguishes concurrently with the expiration of its related contractual obligation. The estimated cost to complete these bonded projects was approximately $1.4 billion as of December 31, 2020.

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 – Maurepas Project Dispute* 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 compensation benefits. Certain employment agreements also contain clauses that require the potential payment of specified amounts to such employees upon the occurrence of a defined change in control event.

Collective Bargaining Agreements and Multiemployer Pension Plans

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 Pension Protection Act of 2006 may require Quanta to make additional contributions to its multiemployer pension plans if they become underfunded, and these additional contributions will be determined based on Quanta's union employee payrolls. Special funding and operational rules are 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's future contribution obligations and potential withdrawal liability exposure could vary based on the investment and actuarial performance of the multiemployer pension plans to which it contributes and other factors, which could be negatively impacted as a result of the unfavorable and uncertain economic and financial market conditions resulting from the ongoing COVID-19 pandemic and related issues. 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. To the extent Quanta is subject to material withdrawal liabilities in the future, such liability could adversely affect its business, financial condition, results of operations or cash flows.

Deferred Compensation Plans

Quanta maintains certain non-qualified deferred compensation plans as further described in Note 13.

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. For example, 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 Solutions and (2) Underground Utility and Infrastructure Solutions. 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 Solutions Division and the Underground Utility and Infrastructure Solutions Division. These internal divisions are closely aligned with the reportable segments, and operating units are assigned to divisions based on the predominant type of work performed.

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

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

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

	Year Ended December 31,		
	2020	2019	2018
Revenues:			
Electric Power Infrastructure Solutions	$ 7,773,343	$ 7,121,837	$ 6,415,562
Underground Utility and Infrastructure Solutions	3,429,329	4,990,316	4,755,861
Consolidated revenues	$ 11,202,672	$ 12,112,153	$ 11,171,423
Operating income (loss):			
Electric Power Infrastructure Solutions	$ 826,325	$ 591,177	$ 628,286
Underground Utility and Infrastructure Solutions	170,074	332,011	204,178
Corporate and non-allocated costs	(385,028)	(368,314)	(292,195)
Consolidated operating income	$ 611,371	$ 554,874	$ 540,269
Depreciation:			
Electric Power Infrastructure Solutions	$ 121,848	$ 108,295	$ 96,300
Underground Utility and Infrastructure Solutions	85,981	90,953	89,046
Corporate and non-allocated costs	17,427	18,859	17,173
Consolidated depreciation	$ 225,256	$ 218,107	$ 202,519

Quanta decided to pursue an exit of its operations in Latin America. Electric Power Infrastructure Solutions revenues included $7.6 million, $63.2 million and $96.1 million related to Latin American operations for the years ended December 31, 2020, 2019 and 2018. Latin American revenues for the year ended December 31, 2019 reflect the reversal of $48.8 million of revenues in connection with the terminated telecommunications project in Peru, a portion of which related to prior periods. Electric Power Infrastructure Solutions operating income included $74.0 million, $85.7 million and $8.1 million of operating losses related to Latin American operations for the years ended December 31, 2020, 2019 and 2018. Included in the Latin American operating loss for the year ended December 31, 2019 was a $79.2 million charge associated with the termination of the large telecommunications project in Peru, which included the $48.8 million decrease in revenues described above and a $30.4 million increase in cost of services. See *Legal Proceedings — Peru Project Dispute* in Note 14 for additional information on 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 2020, 2019, and 2018, Quanta derived $1.58 billion, $1.92 billion and $2.60 billion of its revenues from foreign operations. Of Quanta's foreign revenues, 79%, 75% and 76% were earned in Canada during the years ended December 31, 2020, 2019 and 2018. In addition, Quanta held property and equipment of $336.4 million and $314.1 million in foreign countries, primarily Canada, as of December 31, 2020 and 2019.

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,		
	2020	2019	2018
Accounts and notes receivable	$ 71,058	$ (214,580)	$ (475,919)
Contract assets	153,832	(12,317)	(92,838)
Inventories	9,860	52,168	(28,131)
Prepaid expenses and other current assets	83,518	(60,475)	(40,187)
Accounts payable and accrued expenses and other non-current liabilities	115,569	39,419	247,897
Contract liabilities	(84,370)	174,230	(23)
Other, net [(1)]	(22,098)	(135,250)	(11,332)
Net change in operating assets and liabilities, net of non-cash transactions	$ 327,369	$ (156,805)	$ (400,533)

[(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 terminated telecommunications project in Peru. See *Legal Proceedings — Peru Project Dispute* in Note 14 for additional information on this matter.

Reconciliations 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 are as follows (in thousands):

	December 31,			
	2020	2019	2018	2017
Cash and cash equivalents	$ 184,620	$ 164,798	$ 78,687	$ 138,285
Restricted cash included in “Prepaid expenses and other current assets”	1,275	4,026	3,286	5,106
Restricted cash included in “Other assets, net”	913	921	1,283	384
Total cash, cash equivalents, and restricted cash reported in the statements of cash flows	$ 186,808	$ 169,745	$ 83,256	$ 143,775

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

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

	Year Ended December 31,	
	2020	2019
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	$ (115,597)	$ (119,357)
Operating cash flows from finance leases	$ (108)	$ (64)
Financing cash flows from finance leases	$ (1,198)	$ (1,835)
Lease assets obtained in exchange for lease liabilities:		
Operating leases	$ 69,721	$ 96,550
Finance leases	$ 1,384	$ 691

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

	Year Ended December 31,		
	2020	2019	2018
Cash (paid) received during the period for -			
Interest paid	$ (32,142)	$ (64,805)	$ (34,935)
Income taxes paid	$ (231,186)	$ (116,467)	$ (112,895)
Income tax refunds	$ 18,119	$ 7,474	$ 5,209

During the year ended December 31, 2020, Quanta contributed certain assets that had a fair value of $6.1 million as partial consideration for the purchase of an investment and recorded a note receivable of $4.7 million as partial consideration for the sale of another investment. 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.

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, 2020, 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* of this Annual Report 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* of this Annual Report 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, 2020 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 the definitive proxy statement related to our 2021 Annual Meeting of Stockholders, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2020 fiscal year.

ITEM 11. *Executive Compensation*

The information required by this Item 11 is incorporated by reference to the definitive proxy statement related to our 2021 Annual Meeting of Stockholders, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2020 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 the definitive proxy statement related to our 2021 Annual Meeting of Stockholders, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2020 fiscal year.

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

The information required by this Item 13 is incorporated by reference to the definitive proxy statement related to our 2021 Annual Meeting of Stockholders, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2020 fiscal year.

ITEM 14. *Principal Accounting Fees and Services*

The information required by this Item 14 is incorporated by reference to the definitive proxy statement related to our 2021 Annual Meeting of Stockholders, which is to be filed with the SEC pursuant to the Exchange Act within 120 days following the end of our 2020 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
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)
4.3	—	Indenture, dated as of September 22, 2020, between Quanta Services, Inc. and U.S. Bank National Association, as trustee (previously filed as Exhibit 4.1 to the Company's Form 8-K filed September 25, 2020 and incorporated herein by reference)
4.4	—	First Supplemental Indenture, dated as of September 22, 2020, between Quanta Services, Inc. and U.S. Bank National Association, as trustee (previously filed as Exhibit 4.2 to the Company's Form 8-K filed September 25, 2020 and incorporated herein by reference)
4.5	—	Form of 2.900% Senior Notes due 2030 (previously filed as Exhibit 4.3 to the Company's Form 8-K filed September 25, 2020 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)

Exhibit No.		Description
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)
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*	—	Employment Agreement dated March 31, 2020, effective as of April 1, 2020, by and between Quanta Services, Inc. and James Redgie Probst (previously filed as Exhibit 10.1 to the Company's Form 10-Q filed May 8, 2020 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*	—	Quanta Services, Inc. Term Sheet for 2020 Annual Incentive Plan – Corporate Employees, Quanta Services, Inc. Term Sheet for 2020 Senior Leadership Long-Term Incentive Plan and Quanta Services, Inc. Term Sheet for Discretionary Plan –All Employees (previously filed as Exhibit 10.1 to the Company's Form 8-K filed April 1, 2020 and incorporated herein by reference)
10.21*	—	Director Compensation Summary, revised as of May 27, 2020 and effective as of May 28, 2020 (previously filed as Exhibit 10.1 to the Company’s Form 8-K filed June 2, 2020 and incorporated herein by reference)
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)

Exhibit No.		Description
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)
10.30	—	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)
10.31	—	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)
10.32	—	Sixth Amendment to Fourth Amended and Restated Credit Agreement, dated as of September 22, 2020, 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 September 25, 2020 and incorporated herein by reference)
10.33	—	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)
10.34	—	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)
10.35	—	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)
10.36	—	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)
10.37	—	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)
10.38	—	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)

Exhibit No.		Description
10.39	—	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)
10.40	—	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-Q for the quarter ended June 30, 2018 filed August 7, 2018 and incorporated herein by reference)
10.41	—	Eighth Amendment to Underwriting, Continuing Indemnity and Security Agreement, dated as of September 22, 2020, 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 10.2 to the Company's Form 8-K filed September 25, 2020 and incorporated herein by reference)
21.1ˆ	—	Subsidiaries
23.1ˆ	—	Consent of PricewaterhouseCoopers LLP
31.1ˆ	—	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
31.2ˆ	—	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.INSˆ	—	The following financial statements from the Company's Annual Report on Form 10-K for the year ended December 31, 2020, 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, 2020, formatted in Inline XBRL (included as Exhibit 101)

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* Management contracts or compensatory plans or arrangements

ˆ 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.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, Quanta Services, Inc. has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Houston, State of Texas, on February 26, 2021.

QUANTA SERVICES, INC.

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

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

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Earl C. Austin, Jr. and Derrick A. Jensen, each of whom may act without joinder of the other, as their true and lawful attorneys-in-fact and agents, each with full power of substitution and resubstitution, for such person and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or their substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Report has been signed by the following persons in the capacities indicated on February 26, 2021.

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. Wyrsch	Director

Directors

Director Name and Principal Position / Experience	
Earl C. (Duke) Austin, Jr.	President, Chief Executive Officer, and Chief Operating Officer of Quanta
Doyle N. Beneby	President and Chief Executive Officer of Midland Cogeneration Venture [2, 4]
J. Michal Conaway	Former Chief Financial Officer of Fluor Corporation [3, 4]
Vincent D. Foster	Executive Chairman and Former Chief Executive Officer of Main Street Capital Corporation [1, 4]
Bernard Fried	Principal of BF Consulting and Former Chief Executive Officer of Plastikon Industries, Inc. [1, 2]
Worthing F. Jackman	President and Chief Executive Officer of Waste Connections, Inc. [1, 2]
David M. McClanahan	Chairman of the Board of Quanta and Former President and Chief Executive Officer of CenterPoint Energy, Inc.
Margaret B. Shannon	Former Vice President and General Counsel of BJ Services Company [3, 4]
Pat Wood, III	Chief Executive Officer of Hunt Energy Network and Former Chairman of the Federal Energy Regulatory Commission [3, 4]
Martha B. Wyrsch	Former Executive Vice President and General Counsel of Sempra Energy [2, 3]

1 - Audit Committee, 2 - Compensation Committee, 3 - Governance and Nominating Committee, 4 - Investment Committee

Executive Officers

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

Derrick A. Jensen
Chief Financial Officer

Paul C. Gregory
President – Underground Utility and Infrastructure Division and Chief Strategy Officer

J. Redgie Probst
President – Electric Power Division

Donald C. Wayne
Executive Vice President and General Counsel

Jayshree Desai
Chief Corporate Development Officer

Nicholas M. Grindstaff
Vice President – Finance and Treasurer

Dorothy Upperman
Vice President – Tax

Investor Information

New York Stock Exchange
Last year, our Annual CEO Certification, without qualifications, was timely submitted to the NYSE. Also, we have filed the certifications required under The Sarbanes-Oxley Act of 2002 as exhibits to our Form 10-K.

Ticker Symbol | PWR

Transfer Agent
American Stock Transfer & Trust Company, LLC
6201 15th Avenue
Brooklyn, New York 11219
718.921.8200

Auditors
PricewaterhouseCoopers LLP
1000 Louisiana Street, Suite 5800
Houston, Texas 77002
713.356.4000

Investor Relations
Kip Rupp, CFA, Vice President – Investor Relations
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