UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-K

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

For the fiscal year ended December 31, 2019

or

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

For the transition period from to

Commission file number 1-06732

COVANTA HOLDING CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**95-6021257**
(State or Other Jurisdiction of Incorporation or Organization)	*(I.R.S. Employer Identification Number)*

445 South Street	**Morristown NJ**	**07960**
(Address of Principal Executive Office)		*(Zip Code)*

Registrant's telephone number, including area code: (862) 345-5000
Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Class A common stock	**CVA**	**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 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 and post such files). Yes ☑ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☑

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting 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. (Check one):

Large Accelerated Filer	Accelerated filer	Non-accelerated filer	Smaller reporting company	Emerging growth company
☑	☐	☐ (Do not check if a smaller rep orting company)	☐	☐

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

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

As of June 30, 2019, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was $2.1 billion. The aggregate market value was computed by using the closing price of the common stock as of that date on the New York Stock Exchange. (For purposes of calculating this amount only, all directors and executive officers of the registrant have been treated as affiliates.)

Class	Outstanding at February 14, 2020
Common Stock, $0.10 par value	131,430,105

Documents Incorporated By Reference:

Part of Form 10-K of Covanta Holding Corporation	Documents Incorporated by Reference
Part III	Portions of the Proxy Statement to be filed with the Securities and Exchange Commission in connection with the 2020 Annual Meeting of Stockholders.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Certain statements in this Annual Report on Form 10-K may constitute "forward-looking" statements as defined in Section 27A of the Securities Act of 1933 (the "Securities Act"), Section 21E of the Securities Exchange Act of 1934 (the "Exchange Act"), the Private Securities Litigation Reform Act of 1995 (the "PSLRA") or in releases made by the Securities and Exchange Commission ("SEC"), all as may be amended from time to time. Such forward-looking statements involve known and unknown risks, uncertainties and other important factors that could cause the actual results, performance or achievements of Covanta Holding Corporation and its subsidiaries ("Covanta") or industry results, to differ materially from any future results, performance or achievements expressed or implied by such forward-looking statements. Statements that are not historical fact are forward-looking statements. Forward-looking statements can be identified by, among other things, the use of forward-looking language, such as the words "plan," "believe," "expect," "anticipate," "intend," "estimate," "project," "may," "will," "would," "could," "should," "seeks," or "scheduled to," or other similar words, or the negative of these terms or other variations of these terms or comparable language, or by discussion of strategy or intentions. These cautionary statements are being made pursuant to the Securities Act, the Exchange Act and the PSLRA with the intention of obtaining the benefits of the "safe harbor" provisions of such laws. Covanta cautions investors that any forward-looking statements made by us are not guarantees or indicative of future performance. Important factors, risks and uncertainties that could cause actual results to differ materially from those forward-looking statements include, but are not limited to:

- seasonal or long-term fluctuations in the prices of energy, waste disposal, scrap metal and commodities;
- our ability to renew or replace expiring contracts at comparable prices and with other acceptable terms;
- adoption of new laws and regulations in the United States and abroad, including energy laws, environmental laws, tax laws, labor laws and healthcare laws;
- failure to maintain historical performance levels at our facilities and our ability to retain the rights to operate facilities we do not own;
- our ability to avoid adverse publicity or reputational damage relating to our business;
- advances in technology;
- difficulties in the operation of our facilities, including fuel supply and energy delivery interruptions, failure to obtain regulatory approvals, equipment failures, labor disputes and work stoppages, and weather interference and catastrophic events;
- difficulties in the financing, development and construction of new projects and expansions, including increased construction costs and delays;
- our ability to realize the benefits of long-term business development and bear the cost of business development over time;
- limits of insurance coverage;
- our ability to avoid defaults under our long-term contracts;
- performance of third parties under our contracts and such third parties' observance of laws and regulations;
- concentration of suppliers and customers;
- geographic concentration of facilities;
- increased competitiveness in the energy and waste industries;
- changes in foreign currency exchange rates;
- limitations imposed by our existing indebtedness and our ability to perform our financial obligations and guarantees and to refinance our existing indebtedness;
- exposure to counterparty credit risk and instability of financial institutions in connection with financing transactions;
- the scalability of our business;
- our ability to attract and retain talented people;
- failures of disclosure controls and procedures and internal controls over financial reporting;
- our ability to utilize net operating loss carryforwards;
- general economic conditions in the United States and abroad, including the availability of credit and debt financing;
- restrictions in our certificate of incorporation and debt documents regarding strategic alternatives; and
- other risks and uncertainties affecting our business described in *Item 1A. Risk Factors* of this Annual Report on Form 10-K and in other filings by Covanta with the SEC.

Although we believe that our plans, intentions and expectations reflected in or suggested by such forward-looking statements are reasonable, actual results could differ materially from a projection or assumption in any of our forward-looking statements. Our future financial condition and results of operations, as well as any forward-looking statements, are subject to change and inherent risks and uncertainties. The forward-looking statements contained in this Annual Report on Form 10-K are made only as of the date hereof and we do not have, or undertake, any obligation to update or revise any forward-looking statements whether as a result of new information, subsequent events or otherwise, unless otherwise required by law.

AVAILABILITY OF INFORMATION

Information about Covanta is available on the Company's website at www.covanta.com. On this website, Covanta makes available, free of charge, its annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports. All such reports are available as soon as reasonably practicable after they are electronically filed with, or electronically furnished to, the SEC. Printed copies of these documents may be requested, free of charge, by contacting the Corporate Secretary, Covanta, 445 South Street, Morristown, NJ 07966, telephone 973-345-5000. The information contained on Covanta's website is not part of this Annual Report on Form 10-K and is not incorporated by reference in this document. References to website addresses are provided as inactive textual references only. The SEC also maintains a website at www.sec.gov that contains reports, proxy and information statements, and other information regarding the Company that have been filed electronically with the SEC, including this Form 10-K.

PART I

Item 1. *BUSINESS*

The terms "we," "our," "ours," "us," "Covanta" and "Company" refer to Covanta Holding Corporation and its subsidiaries and the term "Covanta Energy" refers to our subsidiary Covanta Energy, LLC and its subsidiaries.

About Covanta Holding Corporation

We are organized as a holding company, which was incorporated in Delaware on April 16, 1992. We conduct all of our operations through subsidiaries, which are engaged predominantly in the business of waste and energy services.

Our mission is to provide sustainable waste and energy solutions. We seek to do this through a variety of service offerings, including our core business of owning and operating infrastructure for the conversion of waste to energy (known as "energy-from-waste" or "EfW").

EfW facilities produce energy through the combustion of non-hazardous municipal solid waste ("MSW") in specially-designed power plants. Most of our facilities are "mass-burn" facilities, which combust the MSW on an as-received basis without any pre-processing such as shredding, sorting or sizing. The process reduces the waste to an inert ash while extracting ferrous and non-ferrous metals for recycling. In addition to our mass-burn facilities, we own and/or operate additional facilities that use other processes or technologies, such as refuse-derived fuel facilities which process waste prior to combustion.

EfW serves two key markets as both a sustainable waste management solution that is environmentally superior to landfilling and as a source of clean energy that reduces overall greenhouse gas ("GHG") emissions. EfW is considered renewable under the laws of many states and under federal law. Our facilities are critical infrastructure assets that allow our customers, which are principally municipal entities, to provide an essential public service through sustainable practices.

Our EfW facilities earn revenue from the disposal of waste, generally under long-term contracts, the generation of electricity, and from the sale of metals recovered during the EfW process. We operate and/or have ownership positions in 41 EfW facilities, the majority of which are in North America. In total, these facilities process approximately 21 million tons of solid waste annually, equivalent to 9% of the post-recycled MSW generated in the United States. Our facilities produce approximately 10 million megawatt hours ("MWh") of baseload electricity annually. We also operate waste management infrastructure, including 14 waste transfer stations, 20 material processing facilities, four landfills (primarily for ash disposal), one metals processing facility, and one ash processing facility (currently in start-up and testing phase), all of which are complementary to our core EfW business.

Outside of North America, we operate and/or have equity interests in EfW projects in Ireland, Italy, the United Kingdom and China (our projects in the United Kingdom and China are currently in development and/or under construction). We intend to pursue additional international EfW projects where the regulatory and market environments are attractive. For additional information see *Execution on Strategy* below, and *Item 8. Financial Statements and Supplementary Data- Note 3. New Business and Asset Management*. Ownership and operation of facilities in foreign countries potentially involves greater political and financial uncertainties than we experience in the United States, as described below and discussed in *Item 1A. Risk Factors*.

We have one reportable segment, which comprises our entire operating business. Additional information about our reportable segment and our operations by geographic area is contained in *Item 8. Financial Statements And Supplementary Data — Note 1. Organization and Summary of Significant Accounting Policies*.

Environmental Benefits of Energy-from-Waste

We believe that EfW offers solutions to public sector leaders around the world for addressing two key issues: sustainable management of waste and renewable energy generation. We believe that the environmental benefits of EfW, as an alternative to landfilling, are clear and compelling: by processing municipal solid waste in EfW facilities, we reduce GHG emissions, lower the risk of groundwater contamination, and conserve land. EfW facilities reduce GHG emissions by displacing fossil-fuel fired grid electricity, recycling metals, and diverting MSW from landfills, which are the 3rd largest source of man-made methane, a GHG over 80 times more potent than carbon dioxide ("CO2") over a 20-year period. At the same time, EfW generates clean, reliable energy from a renewable fuel source, thus reducing dependence on fossil fuels, the combustion of which is itself a major contributor of GHG emissions. The United States Environmental Protection Agency ("EPA"), using lifecycle tools such as its own Municipal Solid Waste Decision Support Tool, has found that, on average, approximately one ton of CO2-equivalent is reduced relative to landfilling for every ton of waste processed. We believe that EfW is also an important component of business and community efforts to divert post-recycled waste from landfills as part of their GHG, zero-waste-to-landfill, circular economy, and other sustainability initiatives. EfW facilities also represent key community infrastructure, providing local, reliable and sustainable waste management and energy services. As public planners and commercial and industrial companies address their needs for more environmentally sustainable waste management and energy generation in the years ahead, we believe that EfW will be an increasingly attractive alternative.

Other Environmental Services Offerings

In addition to our core EfW business, we offer a variety of sustainable waste management solutions in response to customer demand, including on site clean-up services, wastewater treatment, pharmaceutical and healthcare solutions, reverse distribution, transportation and logistics, recycling and depackaging. Together with our processing of non-hazardous "profiled waste" for purposes of assured destruction or sustainability goals in our EfW facilities, we offer these services under our Covanta Environmental Solutions ("CES") brand. Through acquisitions and organic growth initiatives, we have expanded our network of facilities to enable us to provide a range of services to industrial customers for the treatment, recycling and/or disposal of their non-hazardous materials. These businesses are highly synergistic with our existing profiled waste business, offer us the opportunity to expand the geographical sourcing of our waste streams and expand our presence in the environmental services sector, allowing us to drive higher margin profiled waste volumes into our EfW facilities and access additional revenue growth opportunities.

STRATEGY

Each of our service offerings responds to customer demand for sustainable waste management services that are superior to landfilling according to the “waste hierarchy" and assists our customers in meeting their own zero-waste, zero-waste-to-landfill, circular economy, and other sustainability goals. As indicated above, each of our service offerings is focused on providing cost effective and sustainable solutions that leverage our extensive network of EfW facilities and transfer stations in North America.

We intend to pursue our mission through the following key strategies:

- *Preserve and grow the value of our existing portfolio.* We intend to maximize the long-term value of our existing portfolio of facilities by continuously improving safety, health and environmental performance, working to provide superior customer service, continuing to operate at our historic production levels, maintaining our facilities in optimal condition, extending waste and service contracts, and conducting our business more efficiently. We intend to achieve organic growth by expanding our customer base, service offerings and metal recovery, adding waste, service or energy contracts, investing in and enhancing the capabilities of our existing assets, and deploying new or improved technologies, systems, processes and controls, all targeted at increasing revenue or reducing costs.

- *Expand through project development and/or acquisitions in selected attractive markets.* We seek to grow our portfolio, primarily through development of new facilities or businesses, competitive bids for new contracts, and acquisitions, where we believe that market opportunities will enable us to utilize our skills and/or invest our capital at attractive risk-adjusted rates of return. We focus these efforts in markets where we currently have projects in operation or under construction, and in other markets with strong economic fundamentals and predictable legal and policy support. In addition to our focus on EfW and related waste sourcing activities, we are seeking to expand our environmental service offerings through both organic growth and acquisitions. We believe that our approach to these opportunities is highly-disciplined, both with regard to our required rates of return on invested capital and the manner in which potential acquired businesses or new projects will be structured and financed.

- *Develop and commercialize new technology.* We believe that our efforts to protect and expand our business will be enhanced by the development of additional technologies in such fields as recycling, alternative waste treatment processes, combustion controls, emission controls and residue recycling, reuse or disposal. We have advanced our research and development efforts in some of these areas relevant to our EfW business, and have patents and patents pending for advances in controlling emissions.

- *Advocate for public policy favorable to EfW and other sustainable waste and materials management solutions.* We seek to educate policymakers and regulators about the environmental and economic benefits of EfW and advocate for policies and regulations that appropriately reflect these benefits. Our business is highly regulated, and as such we believe that it is critically important for us, as an industry leader, to play an active role in the debates surrounding potential policy developments that could impact our business.

- *Maintain a focus on sustainability.* Providing sustainable waste, materials, and energy services to our customers is the cornerstone of our business. Our corporate culture is focused on the triple bottom line of sustainability (people, planet, prosperity) in support of our mission. In addition to robust financial reporting, we are committed to transparently reporting our environmental, social and governance standards, policies, and performance through our corporate sustainability report, which can be found on our Company website. We seek to continuously improve our performance across these aspects to remain an industry leader.

- *Allocate capital efficiently for long-term shareholder value.* We plan to allocate capital to maximize shareholder value by: investing in our existing businesses to maintain and enhance assets; investing in new projects and strategic acquisitions that offer attractive returns on invested capital and further our strategic goals; and consistently returning capital to our shareholders.

EXECUTION ON STRATEGY

Consistent with our strategy, we have executed on the following during 2019:

Capital Allocation

Our key capital allocation activities in 2019 included the following:

- $135 million declared in dividends to stockholders; and

- $56 million for growth investments, including $14 million for business development in the UK and China, $19 million to service a newly operational marine transfer station under our New York City waste transport and disposal agreement, and $22 million for various organic growth investments, which included our Total Ash Processing System ("TAPS") located in Fairless Hills, Pennsylvania.

Business Development

UK Joint Venture

Under our joint development arrangement with Green Investment Group Limited ("GIG"), we have executed on the following:

- In February 2020, we reached financial close on the Newhurst Energy Recovery Facility ("Newhurst"), a 350,000 metric ton-per-year, 42 megawatt EfW facility under construction in Leicestershire, England. Newhurst is our third investment in the UK with our strategic partner, GIG. The facility is expected to commence commercial operations in 2023.

- In March 2019, we reached financial close on the Rookery South Energy Recovery Facility ("Rookery"), a 545,000 metric ton per-year, 60 megawatt EfW facility under construction in Bedfordshire, England. Rookery is our second investment in the UK with our strategic partner, GIG. Construction commenced during 2019 and Rookery is expected to commence operations in 2022.

Other Business Development

We have executed on the following during 2019:

- In December 2019, we made an equity investment in a venture that signed a concession agreement with Zhao County, China for the construction and operation of a new 1,200 ton-per-day EfW facility. The facility will provide a sustainable waste solution to the county and nearby jurisdictions and will be approximately 200 miles from Beijing. The project is being developed jointly by Covanta and a strategic local partner. Construction is expected to begin in early 2020 with completion in less than two years.

  Our initial contribution into this entity totaled RMB 36 million ($5 million) and amounted to a 26% ownership stake which is accounted for under the equity method of accounting. Pursuant to the agreement, we are required to contribute an additional RMB 61 million ($9 million) by the end of 2021 and our eventual ownership interest in the venture is expected to be 49%.

- In March 2019, we commenced operations at the East 91st Street Marine Transfer Station ("MTS"). The MTS is the second in a pair of marine transfer stations under a 20-year waste transport and disposal agreement between Covanta and New York City's Department of Sanitation.

- We began participation in New Jersey's Basic Generation Services program. Under this program we will sell electricity to The Public Service Electric and Gas Company (PSE&G), a regulated gas and electric utility company serving the state of New Jersey, for a portion of the state's residential and small business electric load requirements for the next three years. Participating in this program enables us to match our power generation to power demand that is proximate to our facilities at a fixed price.

- In January 2019, we commenced construction of our first Total Ash Processing System located in Fairless Hills, Pennsylvania, adjacent to our existing metal processing facility. This technology separates the combined ash from EfW facilities into its component parts enabling increased recycling of small metal fractions and the recovery of aggregate for reuse as construction material while reducing the volume of ash requiring landfill disposal. The plant is entering a start-up and test phase in the first quarter of 2020 and production levels are expected to ramp up through the year.

Contract Extensions

We reached agreements to extend several material contracts in 2019, including:

- Our waste contract with the town of Babylon through 2035, with mutual termination rights in 2028;
- Our waste contract with Fairfax County through 2026; and
- Our waste service agreement with Marion County for one additional year through 2020.

Other Significant Events

During 2018, we commenced a fleet optimization program with the goals of improving overall operating profit and cash flow from our portfolio, reducing risk, and focusing resources on our most profitable and strategically important businesses. We identified a population of EfW facilities where local market conditions, operating and maintenance costs, and other factors challenge facility economics, and we began exploring strategic alternatives for these assets, which may include contract renegotiation, sale, or facility closure. We anticipate that this program will continue over the next several years.

The following activities have occurred in 2019 as part of this effort:

- We ceased operations at our EfW facility in Warren County, New Jersey; and

- We divested our interests in the following:
  - our EfW facilities in Pittsfield and Springfield, Massachusetts
  - a transfer station in Wallingford, Connecticut; and
  - a hydroelectric facility located in the state of Washington.

Sustainability Goals

We continued to advance our performance against a series of sustainability goals aligned with our business goals and mission. Set in the areas of safety and health, environment, materials management, human resources and community affairs, each goal has an assigned champion on our senior leadership team to ensure their full integration into our business. We believe attaining these goals helps us respond to our customers' increasing interest in sustainability and the sustainable solutions we provide, mitigate certain risks, and gain a competitive advantage in business development opportunities.

ENERGY-FROM-WASTE-PROJECTS

Our EfW projects generate revenue primarily from three sources: (1) fees charged for operating facilities or processing waste received; (2) the sale of electricity and/or steam; and (3) the sale of ferrous and non-ferrous metals that are recovered from the waste stream as part of the EfW process. We may also generate additional revenue from the construction, expansion or upgrade of a facility, when a public sector client owns the facility. Our customers for waste services or facility operations are principally public sector entities, though we also market disposal capacity at certain facilities to commercial customers. Our facilities primarily sell electricity, either to utilities at contracted rates or, in situations where a contract is not in place, at prevailing market rates in regional markets (primarily PJM, NEPOOL and NYISO in the Northeastern United States), and in some cases sell steam directly to industrial users.

We also operate and/or have ownership positions in environmental services businesses, transfer stations, and landfills (primarily for ash disposal) that are ancillary and complementary to our EfW projects and generate additional revenue from disposal or service fees.

EfW Contract Structures

Most of our EfW projects were developed and structured contractually as part of competitive procurement processes conducted by public sector entities. As a result, many of these projects have common features. However, each contractual agreement is different, reflecting the specific needs and concerns of a client community, applicable regulatory requirements and/or other factors.

Our EfW projects can generally be divided into three categories, based on the applicable contract structure at a project as described in the table below. Notwithstanding distinctions among these general classifications in contract structures, in all cases we focus on a consistent set of performance indicators to optimize service to customers and operating results, including: (i) boiler availability; (ii) safety and environmental performance measures; (iii) tons processed; (iv) megawatt hours and/or steam sold; and (v) recycled metal tons recovered and sold.

The following summarizes the typical contractual and economic characteristics of the three project structures our EfW projects located in North America:

	Tip Fee	Service Fee (Covanta Owned)	Service Fee (Client Owned)
Number of facilities:	18	3	18
Client(s):	Host community and municipal and commercial waste customers	Host community, with limited merchant capacity in some cases	Dedicated to host community exclusively
Waste or service revenue:	Per ton "tipping fee"	Fixed fee, with performance incentives and inflation escalation	
Energy revenue:	Covanta retains 100%	Share with client (Covanta retains approximately 20% on average)	
Metals revenue:	Covanta retains 100%	Share with client (Covanta typically retains approximately 50%)	
Operating costs:	Covanta responsible for all operating costs	Pass through certain costs to client (e.g. ash disposal)	
Project debt service:	Covanta project subsidiary responsible	Paid by client explicitly as part of service fee	Client responsible for debt service
After service contract expiration:	N/A	Covanta owns the facility; clients have certain rights set forth in contracts; facility converts to Tip Fee or remains Service Fee with new terms	Client owns the facility; extend with Covanta or tender for new contract

We are principally responsible for capital costs in facilities that we own; however, client communities may have a contractual obligation to fund a portion of certain capital costs, particularly if required by a change in law. We also may be required to participate in capital improvements for non-owned facilities that we operate, which would be accounted for as operating expense. In contracts with our client communities, we agree to operate the facility and meet minimum performance standards. Typically, these include waste processing, energy efficiency standards, energy production and environmental standards. Unexcused failure to meet these requirements or satisfy the other material terms of our agreement, may result in damages charged to us or, if the breach is substantial, continuing and unremedied, termination of the applicable agreement. If one or more contracts were terminated for our default, these contractual damages may be material to our cash flow and financial condition. To date, we have not incurred material liabilities under such performance guarantees.

Contracted and Merchant Revenue

We generated 76% of our waste and service revenue in 2019 under contracts at set rates, while 24% was generated at prevailing market prices. Our waste disposal / service contracts expire at various times between 2020 and 2036. As of December 31, 2019, the volume weighted average contract life of our service fee contracts and tip fee contracts is 9 and 6 years, respectively. Our energy contracts expire at various times between 2020 and 2034. As our contracts expire, we become subject to greater market risk in maintaining and enhancing our revenue. To date, we have been successful in extending the majority of our existing contracts to operate EfW facilities owned by public sector clients. We project the percentage of 2020 contracted waste and service revenue to approximate 2019 levels.

As our waste service agreements at facilities that we control expire, we intend to seek replacement or additional contracts, and because project debt on these facilities will be paid off at such time, we expect to be able to offer rates that will attract sufficient quantities of waste while providing acceptable revenue to us. The expiration of existing energy contracts at these facilities will require us to sell our output either into the local electricity grid at prevailing rates or pursuant to new contracts. We expect that multi-year contracts for waste supply at these facilities will continue to be available on acceptable terms in the marketplace, at least for a substantial portion of facility capacity, as municipalities continue to value long-term committed and sustainable waste disposal capacity. We also expect that an increasing portion of system capacity will be contracted on a shorter-term basis, and so we will have more frequent exposure to waste market risk. We expect that multi-year contracts for energy sales will generally be less available than in the past, thereby increasing our exposure to energy market prices upon expiration. As our existing contracts have expired and our exposure to market energy prices has increased, we entered into hedging arrangements in order to mitigate our exposure to near-term (one to three years) revenue fluctuations in energy markets, and we expect to continue to do so in the future. Our efforts in this regard will involve only mitigation of price volatility for the energy we produce in order to limit our energy revenue "at risk," and will not involve speculative energy trading.

See *Item 1A. Risk Factors — Our results of operations may be adversely affected by market conditions existing at the time our contracts expire.* Over time, we will seek to renew, extend or sign new waste and service contracts and pursue opportunities with commercial customers and municipalities that are not necessarily stakeholders in our facilities in order to maintain a significant majority of our waste and service revenue (and EfW fuel supply) under multi-year contracts.

In addition, we are focused on expanding our environmental service offerings through both organic growth and acquisitions. The acquisitions will allow us to establish a greater presence in the environmental services sector, expand the geographical sourcing of our waste streams and drive non-hazardous profiled waste volumes into our EfW facilities. These acquired businesses typically accept waste under short-term contractual arrangements.

Summary information regarding our energy-from-waste operations located in North America is provided in the following table:

			Design Capacity			
		Location	Waste Processing (TPD)	Gross Electric (MW)	Nature of Interest	Service Contract Expiration
	TIP FEE STRUCTURES					
1.	Fairfax County [(1)]	Virginia	3,000	93.0	Owner/Operator	
2.	Southeast Massachusetts [(1)(2)]	Massachusetts	2,700	78.0	Owner/Operator	
3.	Delaware Valley [(1)]	Pennsylvania	2,688	87.0	Owner/Operator	
4.	Hempstead	New York	2,505	72.0	Owner/Operator	
5.	Indianapolis [(3)]	Indiana	2,362	6.5	Owner/Operator	
6.	Niagara [(3)]	New York	2,250	50.0	Owner/Operator	
7.	Essex County [(1)]	New Jersey	2,277	66.0	Owner/Operator	
8.	Haverhill [(1)]	Massachusetts	1,650	44.6	Owner/Operator	
9.	Union County [(1)]	New Jersey	1,440	42.1	Lessee/Operator	
10.	Plymouth [(1)]	Pennsylvania	1,216	32.0	Owner/Operator	
11.	Tulsa [(1)(3)]	Oklahoma	1,125	16.8	Owner/Operator	
12.	Camden [(1)]	New Jersey	1,050	21.0	Owner/Operator	
13.	Alexandria/Arlington [(1)]	Virginia	975	22.0	Owner/Operator	
14.	Stanislaus County [(1)]	California	800	22.4	Owner/Operator	
15.	Southeast Connecticut [(1)]	Connecticut	689	17.0	Owner/Operator	
16.	Bristol [(1)]	Connecticut	650	16.3	Owner/Operator	
17.	Lake County	Florida	528	14.5	Owner/Operator	
18.	Babylon [(4)]	New York	750	16.8	Owner/Operator	
	SERVICE FEE (COVANTA OWNED) STRUCTURES					
19.	Onondaga County	New York	990	39.2	Owner/Operator	2035
20	Huntington	New York	750	24.3	Owner/Operator	2024
21.	Marion County	Oregon	550	13.1	Owner/Operator	2020
	SERVICE FEE (CLIENT OWNED) STRUCTURES					
22.	Pinellas County	Florida	3,150	75.0	Operator	2024
23.	Miami-Dade County [(1)(2)]	Florida	3,000	77.0	Operator	2023
24.	Honolulu [(2)(5)]	Hawaii	2,950	90.0	Operator	2032
25.	Lee County [(5)]	Florida	1,836	57.3	Operator	2024
26.	Montgomery County [(1)(5)]	Maryland	1,800	63.4	Operator	2026
27.	Hillsborough County	Florida	1,800	46.5	Operator	2029
28.	Long Beach	California	1,380	36.0	Operator	2024
29.	York County [(1)]	Pennsylvania	1,344	42.0	Operator	2035
30.	Palm Beach I	Florida	2,178	62.0	Operator	2029
31.	Palm Beach II	Florida	2,740	95.0	Operator	2035
32.	Lancaster County [(1) (3)]	Pennsylvania	1,200	33.1	Operator	2032
33.	Pasco County	Florida	1,050	29.7	Operator	2024
34	Harrisburg [(1)]	Pennsylvania	800	20.8	Operator	2032
35.	Burnaby	British Columbia, Canada	800	23.9	Operator	2025
36.	Huntsville [(3)]	Alabama	690	—	Operator	2023
37.	Kent County	Michigan	625	16.8	Operator	2023
38.	MacArthur	New York	486	12.0	Operator	2030
39.	Durham-York	Durham Region, Canada	480	17.4	Operator	2036
		SUBTOTAL	59,254	1,592.5		

(1) These facilities either sell electricity into the regional power pool at prevailing market rates or have contractual arrangements to sell electricity at prevailing market rates

(2) These facilities use a refuse-derived fuel technology.

(3) These facilities have been designed to export steam for sale. See table below for the equivalent electric output. The equivalent electric output is part of, not in addition to, the design capacity megawatts ("MW") listed in the table above.

Facility	Equivalent Electric Output (MW)
Niagara	66
Indianapolis	52
Tulsa	25
Huntsville	15
Lancaster	5

(4) This facility transitioned from a service fee (owned) to a tip fee contract on April 1, 2019.
(5) The client has a termination option under the service agreement.

Summary information regarding our equity investments in EfW projects outside of North America is provided in the following table:

			Design Capacity		
	Project	Location	Waste Processing (Metric TPD)	Gross Electric (MW)	Nature of Interest
1.	Dublin (1), (2)	Ireland	1,968	68.0	50% Owner/Operator
2.	Trezzo	Italy	500	18.0	13% Owner/JV Operator
3.	Earls Gate (1), (3)	UK	650	21.5	25% Owner (3)
4.	Rookery (1), (4)	UK	1,600	67.1	40% Owner/Operator (4)
5.	Zhao County EfW (5)	China	1,200	24.0	26% Owner (5)
		SUBTOTAL	5,918	198.6	

(1) For additional information see *Item 8. Financial Statements and Supplementary Data- Note 3. New Business and Asset Management,-Green Investment Group Limited ("GIG") Joint Ventures.*

(2) We have a 50% indirect ownership of Dublin EfW, through our 50/50 joint venture with GIG, Covanta Europe Assets Ltd.

(3) Facility currently under construction with operations expected to commence in early 2022. We have a 25% indirect ownership of Earls Gate, through our 50/50 joint venture with GIG, Covanta Green Jersey Assets Ltd., which owns 50% of Earls Gate.

(4) Facility currently under construction with operations expected to commence in mid-2022. We have a 40% indirect ownership of Rookery through our 50/50 joint venture with GIG, Covanta Green UK Ltd.

(5) Construction on the facility began in early 2020; completion is expected in less than two years. We have a 26% interest in Zhao County through our venture with Longking Energy Development Co. Ltd. For additional information see *Item 8. Financial Statements and Supplementary Data- Note 3. New Business and Asset Management,-Zhao County, China Venture* and *Note 19. Subsequent Events.*

MARKETS, COMPETITION AND BUSINESS CONDITIONS

Waste Services

Post-recycled municipal solid waste generation in the United States is approximately 250 million tons per year, of which the EfW industry processes approximately 12% (of which we process approximately three-quarters).

EfW is an important part of the waste management infrastructure of the United States, particularly in regions with high population density but limited availability of land for landfilling, with 75 facilities currently in operation that collectively process approximately 29 million tons of post-recycled solid waste and serve the needs of over 30 million people and produce enough electricity for the equivalent of 1.3 million homes. The use of EfW is even more prevalent in Western Europe and many countries in Asia, such as China and Japan. Over 1,200 EfW facilities are in use today around the world, with a capacity to process approximately 260 million tons of waste per year. In the waste management hierarchies of the United States EPA and the European Union ("EU"), EfW is designated as a superior solution to landfilling.

Renewable Energy

Public policy in the United States, at both the state and national levels, has developed over the past several years in support of increased generation of renewable energy as a means of combating the potential effects of climate change, as well as increasing domestic energy security. Today in the United States, approximately 17% of electricity is generated from renewable sources, approximately 40% of which is hydroelectric power.

EfW is designated as renewable energy in 30 states, the District of Columbia, and Puerto Rico, as well as in several federal statutes and policies. Unlike most other renewable resources, EfW generation can serve base-load demand and is more often located near population centers where demand is greatest, minimizing the need for expensive incremental transmission infrastructure.

General Business Conditions

Economic - Changes in the economy affect the demand for goods and services generally, which affects overall volumes of waste requiring management and the pricing at which we can attract waste to fill available capacity. We receive the majority of our revenue under short- and long-term contracts, which limits our exposure to price volatility, but with adjustments intended to reflect changes in our costs. Where our revenue is received under other arrangements and depending upon the revenue source, we have varying amounts of exposure to price volatility.

The largest component of our revenue is waste revenue, which has generally been subject to less price volatility than our revenue derived from the sale of energy and metals. Waste markets tend to be affected, both with respect to volume and price, by local and regional economic activity, as well as state and local waste management policies.

At the same time, United States natural gas market prices influence electricity and steam pricing in regions where we operate, and thus affect our revenue for the portion of the energy we sell that is not under fixed-price contracts. Energy markets tend to be affected by regional supply and demand, as well as national economic activity and regulations.

The following are various published pricing indices relating to the US economic drivers that are relevant to those aspects of our business where we have market exposure; however, there is not a precise correlation between our results and changes in these metrics.

	As of December 31,			
	2019	2018	2017	2016
Consumer Price Index (1)	2.3%	1.9%	2.1%	2.1%
PJM Pricing (Electricity) (2)	$ 24.02	$ 34.75	$ 28.84	$ 24.85
NE ISO Pricing (Electricity) (3)	$ 31.20	$ 44.06	$ 33.27	$ 29.74
Henry Hub Pricing (Natural Gas) (4)	$ 2.57	$ 3.17	$ 2.99	$ 2.52
#1 HMS Pricing (Ferrous Metals) (5)	$ 252	$ 328	$ 268	$ 197
Scrap Metals - Old Cast Aluminum Scrap (6)	$ 0.42	$ 0.57	$ 0.61	$ 0.57

(1) Represents the year-over-year percent change in the Headline CPI number. The Consumer Price Index (CPI-U) data is provided by the US Department of Labor Bureau of Labor Statistics.
(2) Average price per MWh for full year. Pricing for the PJM PSEG Zone is provided by the PJM ISO.
(3) Average price per MWh for full year. Pricing for the Mass Hub Zone is provided by the NE ISO.
(4) Average price per MMBtu for full year. The Henry Hub Pricing data is provided by the Natural Gas Weekly Update, Energy Information Administration, Washington, DC.
(5) Average price per gross ton for full year. The #1 Heavy Melt Steel ("HMS") composite index ($/gross ton) price is published by American Metal Market.
(6) Average price per pound for full year. Calculated using the high price of Old Cast Aluminum Scrap ($/lb.) published by American Metal Market.

Seasonal - Our quarterly operating income within the same fiscal year typically differs substantially due to seasonal factors, primarily as a result of the timing of scheduled plant maintenance. We conduct scheduled maintenance periodically each year, which requires that individual boiler and/or turbine units temporarily cease operations. During these scheduled maintenance periods, we incur material repair and maintenance expense and receive less revenue until the boiler and/or turbine units resume operations. This scheduled maintenance usually occurs during periods of off-peak electric demand and/or lower waste volumes, which can vary regionally. The scheduled maintenance period in the first half of the year (primarily first quarter and early second quarter) is typically the most extensive, while the third quarter scheduled maintenance period is the least extensive. Given these factors, we normally experience our lowest operating income from our projects during the first half of each year.

Our operating income may also be affected by seasonal weather extremes during summers and winters. Increased demand for electricity and natural gas during unusually hot or cold periods may affect certain operating expense and may trigger material price increases for a portion of the electricity and steam we sell.

Performance - Our EfW facilities have historically demonstrated consistent reliability; our average boiler availability was 91.4% in 2019. We have historically met our operating obligations without experiencing material unexpected service interruptions or incurring material increases in costs. In addition, with respect to many of our contracts, we generally have limited exposure for risks not within our control. Across our fleet of facilities, we operate and maintain a large number of combustion units, turbine generators, and air-cooled condensers, among other systems. On an ongoing basis, we assess the effectiveness of our preventative maintenance programs, and implement adjustments to those programs in order to improve facility safety, reliability and performance. These assessments are tailored to each facility's particular technologies, age, historical performance and other factors. As our facilities age, we expect that the scope of work required to maintain our portfolio of facilities will increase in order to replace or extend the useful life of facility components and to ensure that historical levels of safe, reliable performance continue. For additional information about such risks and damages that we may owe for unexcused operating performance failures, see *Item 1A. Risk Factors - Operation of our businesses involves significant risks, which could have an adverse effect on our cash flows and results of operations.* In monitoring and assessing the ongoing operating and financial performance of our businesses, we focus on certain key factors: tons of waste processed, electricity and steam sold, boiler availability, plant operating expense and safety and environmental performance.

Waste, Energy and Metals Markets - We compete in waste markets that are highly competitive. In the United States, the market for waste management is almost entirely price-driven and is greatly influenced by economic factors within regional waste markets. These factors include:

- regional population and overall waste production rates;
- the number of waste disposal sites (including principally landfills, other EfW facilities and transfer stations) in existence or in the planning or permitting process;
- the available disposal capacity (in terms of tons of waste per day) that can be offered by other regional disposal sites;
- the extent to which local governments seek to control transportation and/or disposal of waste within their jurisdictions;
- the extent to which local governments and businesses continue to value sustainable approaches to handling of wastes; and
- the availability and cost of transportation options (e.g., rail, inter-modal, trucking) to provide access to more distant disposal sites, thereby affecting the size of the waste market itself.

Waste service providers seek to obtain waste supplies for their facilities by competing on price (usually on a per-ton basis) with other service providers. At our facilities, where a service fee structure exists, we typically do not compete in this market because we do not have the contractual right to solicit merchant waste. At these facilities, the client community is responsible for obtaining the waste, if necessary by competing on price to obtain the tons of waste it has contractually promised to deliver to us. At our EfW facilities governed by tip fee structures and our waste procurement services businesses, we are responsible for obtaining waste supply, and therefore, actively compete in these markets to enter into spot, medium- and long-term contracts. These EfW projects are generally in densely-populated areas, with high waste generation rates and numerous large and small participants in the regional market. Our waste operations are largely concentrated in the northeastern United States. See *Item 1A. Risk Factors — Our waste operations are concentrated in one region and expose us to regional economic or market declines* for additional information concerning this geographic concentration. Certain of our competitors in these markets are vertically-integrated waste companies, which include waste collection operations, and thus have the ability to control supplies of waste, which may restrict our ability to offer services at attractive prices. Our business does not include traditional waste collection operations.

If a long-term contract expires and is not renewed or extended by a client community, our percentage of contracted processing capacity will decrease and we will need to compete in the regional market for waste supply at the facilities we own, from both municipal and commercial services. At that point, we will compete on price with landfills, transfer stations, other EfW facilities and other waste technologies that are then offering disposal or other services in the region.

Our sustainable service offerings seek to respond to increasing customer demand for environmentally preferred waste handling and disposal, as well as specific business risk mitigation requirements for certain materials. For these services, we compete with many large and small companies offering these services, in local and regional waste markets that are similarly influenced by the factors noted above which affect the broader waste markets.

We currently sell a portion of our electricity and other energy product output pursuant to contracts, and for this portion of our energy output we do not compete on price. For the portion of our energy output that we sell into competitive energy markets, we have entered into hedging arrangements in order to mitigate our exposure to price volatility, and we expect to continue to do so in the future. Our efforts in this regard involve only mitigation of price volatility for the energy we produce and will not involve speculative energy trading.

For the portion of our portfolio that is exposed to electricity markets, we expect prices will be driven by several factors including natural gas supply/demand conditions, regional electricity supply/demand factors, regional transmission and natural gas supply capacity and system conditions, weather conditions, and emerging environmental regulations. All of these factors will have national and regional impacts that affect electricity and steam prices.

Electricity and steam prices in the markets where the majority of our facilities are located are heavily impacted by movements in natural gas prices. The substantial increase in unconventional or shale gas supply has created downward pressure on gas prices relative to historical levels and therefore on prices for the electricity we sell that is not under contract. However, when demand for gas is high during certain seasons or weather conditions, the gas pipeline system has been limited in its ability to transport enough gas to certain regions, such as New England and California. As a result, gas prices can experience short-term spikes, and electricity prices follow.

Several long-term trends are expected to affect US natural gas prices; including shale gas production, storage capacity, liquefied natural gas exports, regulation, coal plant retirements, as well as industrial, transportation and residential demand. Furthermore, regional natural gas prices, especially in the Northeast are expected to be affected by changes in regional production and transportation capacity.

We generally enter into short-term contracts tied to floating market index prices for sales of recovered ferrous and non-ferrous metals with processors and end-users (i.e., mills). We compete with other suppliers who are generally not in the EfW industry and whose product may be less costly to process than metals from EfW sources. Recycled metal prices for both ferrous and non-ferrous materials are impacted directly and indirectly by tariff and trade actions by the US and other countries.

Markets for New Project Development - Market conditions for new EfW project development are generally more favorable in select International markets, such as the UK, as compared to the United States. This is due to a variety of factors which exist in these markets including higher prevailing market tip fees and/or energy revenues, the absence of available land for alternative disposal techniques (i.e., landfilling), and regulatory policy support which favors technologies such as EfW. Therefore, our ongoing EfW project development initiatives are generally outside of the United States. We have and expect to continue to pursue opportunities for project development in the United States, such as facilities for metals, ash processing and recycling, in order to enhance the efficiency and competitiveness of our EfW operations.

Brexit Implications - In March, 2017, the UK notified the EU of its intention to leave the EU (so-called “Brexit”). The parties negotiated a proposed agreement covering rights and obligations during a transition period and future relations between the UK on a range of issues, and on January 31, 2020, the UK formally severed political ties as part of the EU. The UK’s economic ties to the EU and other countries (including the US) are expected to remain in place pending renegotiated trade agreements to be settled during 2020. We have studied and consulted with local experts regarding the potential market and economic impacts of Brexit on the UK, with a particular focus on potential impacts to the waste and energy markets as they might affect our plans to expand our business with GIG. (For further information see *Item 8. Financial Statements and Supplementary Data - Note 3. New Business and Asset Management - Green Investment Group Limited (“GIG”) Joint Venture)*. The government of the UK has shown no indication of an intention to rollback or reverse its policy support for environmental protection generally, the renewables market, or for EfW specifically. As such, while Brexit may have some impact on construction costs for new UK EfW projects, we do not believe Brexit will materially impact the key market and economic drivers for investment in the combined pipeline of EfW projects we are pursuing jointly with GIG.

Technology, Research and Development

In our EfW business, we own and/or operate EfW facilities that utilize various technologies from several different vendors, including mass-burn combustion technologies and refuse-derived fuel technologies which include pre-combustion waste processing not required with a mass-burn design. As we continue our efforts to develop and/or acquire additional EfW projects internationally, we will consider mass-burn combustion and other technologies that best fit the needs of the local environment of a particular project.

In addition, we will continue to consider technologies better suited than mass-burn combustion for smaller scale applications, including gasification technologies.

We believe that all forms of EfW technologies offer an environmentally superior solution to post-recycled waste management and energy challenges faced by leaders around the world, and that our efforts to expand our business will be enhanced by the development of additional technologies in such fields as emission controls, residue disposal, alternative waste treatment processes, gasification, and combustion controls. We have advanced our research and development efforts in these areas and have developed new and cost-effective technologies that represented major advances in controlling NO_x emissions. These technologies, for which patents have been granted, have been tested at existing facilities and we are now operating and/or installing such systems at a number of our facilities. We intend to maintain a focus on research and development of technologies in these and other areas that we believe will enhance our competitive position, and offer new technical solutions to waste and energy problems that augment and complement our business.

A number of other companies are similarly engaged in new technology development focused on extracting energy from waste materials through a variety of technical approaches, including: gasification, pyrolysis or other combustion designs; converting waste to fuels or other commodities; or processing waste to enable co-firing in larger power plants or industrial boilers. Firms engaged in these activities generally are less well-capitalized than Covanta, although some engage in joint ventures with larger and well-capitalized companies. To date, we believe such efforts have not produced technologies that offer economically attractive alternatives in the absence of policy support.

REGULATION OF BUSINESS

Regulations Affecting Our Business

Environmental Regulations — General

Our business activities in the United States are extensively regulated pursuant to federal, state and local environmental laws. Federal laws, such as the Clean Air Act and Clean Water Act, and their state counterparts, govern discharges of pollutants to air and water. Other federal, state and local laws, as well as legal and regulatory regimes in international markets, comprehensively govern the generation, transportation, storage, treatment and disposal of solid and hazardous waste and also regulate the storage and handling of chemicals and petroleum products (such laws and regulations are referred to collectively as the “Environmental Regulatory Laws”).

Other federal, state and local laws, such as the Comprehensive Environmental Response Compensation and Liability Act (commonly known as “CERCLA” and collectively referred to with such other laws as the “Environmental Remediation Laws”) make us potentially liable on a joint and several basis for any on site or off site environmental contamination which may be associated with our activities and the activities at our sites. These include landfills we have owned, operated or leased, or at which there has been disposal of residue or other waste generated, handled or processed by our facilities. Some state and local laws also impose liabilities for injury to persons or property caused by site contamination. Some service agreements provide us with indemnification from certain liabilities.

The Environmental Regulatory Laws prohibit disposal of regulated hazardous waste at our municipal solid waste facilities. The service agreements recognize the potential for inadvertent and improper deliveries of hazardous waste and specify procedures for dealing with hazardous waste that is delivered to a facility. Under some service agreements, we are responsible for some costs related to hazardous waste deliveries. We have not incurred material hazardous waste disposal costs to date.

The Environmental Regulatory Laws also require that many permits be obtained before the commencement of construction and operation of any waste or renewable energy project, and further require that permits be maintained throughout the operating life of the facility. We can provide no assurance that all required permits will be issued or re-issued, and the process of obtaining such permits can often cause lengthy delays, including delays caused by third-party appeals challenging permit issuance. Our failure to meet conditions of these permits or of the Environmental Regulatory Laws can subject us to regulatory enforcement actions by the appropriate governmental authority, which could include fines, penalties, damages or other sanctions, such as orders requiring certain remedial actions or limiting or prohibiting operation. See *Item 1A. Risk Factors — Compliance with environmental laws, including changes to such laws, could adversely affect our results of operations.* To date, we have not incurred material penalties, been required to incur material capital costs or additional expense, or been subjected to material restrictions on our operations as a result of violations of Environmental Regulatory Laws or permit requirements.

While we believe that we are in compliance with existing Environmental Regulatory and Remediation Laws, we may be identified, along with other entities, as being among parties potentially responsible for contribution to costs associated with the correction and remediation of environmental conditions at disposal sites subject to CERCLA and/or analogous state Environmental Remediation Laws. Our ultimate liability in connection with such environmental claims will depend on many factors, including our volumetric share of waste, the total cost of remediation, and the financial viability of other companies that have also sent waste to a given site and, in the case of divested operations, our contractual arrangement with the purchaser of such operations.

The Environmental Regulatory Laws may change. New technology may be required or stricter standards may be established for the control of discharges of air or water pollutants, for storage and handling of petroleum products or chemicals, or for solid or hazardous waste or ash handling and disposal. Thus, as new technology is developed and proven, we may be required to incorporate it into new facilities or make major modifications to existing facilities. This new technology may be more expensive than the technology we use currently.

Environmental Regulations — Recent Developments

Domestic

Maximum Achievable Control Technology ("MACT") Rules — EPA is authorized under the Clean Air Act to issue rules periodically which tighten air emission requirements to achievable standards, as determined under a specified regulatory framework. EPA is required to establish these MACT rules for a variety of industries, including new and existing municipal waste combustion ("MWC") units, industrial boilers and solid waste incinerators. All of our facilities comply with all applicable MACT rules currently in effect.

EPA has an obligation to complete a combined Risk and Technology Review ("RTR") for the large MWC source category and will subsequently propose revised MWC MACT rules. While the scope of and timing for implementation of RTR for the MWC source category is uncertain, the resulting revised MWC MACT may lower existing MWC MACT emission limits for most, if not all, regulated air pollutants emitted by our facilities, and may require capital improvements and/or increased operating costs. We are unable at this time, to estimate the magnitude of such costs, which may be material, or to determine the potential impact on the profitability of our MWC facilities.

In some cases, the costs incurred to meet the revised MACT rules at facilities may be recovered from public sector clients and other users of our facilities through increased fees permitted to be charged under applicable contracts; however, to the extent we incur costs at other of our facilities to meet the applicable MACT rules, such costs are not subject to contractual recovery and instead will be borne directly by the affected facilities.

International

Implementation of a revised Best Available Techniques Reference Document for Waste Incineration (WI BREF) - In the EU, legislation affects our business primarily in the form of "Directives" which are binding on member states and which are implemented through national enabling legislation. The EU has finalized an Industrial Emissions Directive (the so-called "WI BREF Directive") which affects emissions from EfW facilities as of November 2019. Within four years from the WI BREF publication date of December 3, 2019, all existing WI facilities are required to revise their respective permits and incorporate the WI BREF directive requirements. A WI facility is considered to be existing if it is permitted even if it has not yet begun operations. The finalized WI BREF will also impact future permitting of new facilities in member states, as well as other jurisdictions that base their requirements on EU Directives (which would include the UK whether or not it leaves the EU). Based on the published WI BREF directive and the pending publication of a WI BREF interpretative document by the UK Environmental Agency, we do not believe that the WI BREF Directive will have a material adverse effect on any of the UK EfW projects or the Dublin EfW facility or our ability to execute on our plans to develop future EfW projects in the UK.

European Union Capacity Market GHG Limitations - In 2019, the European Parliament passed a new Directive on the internal market for electricity that sets fossil fuel CO2 intensity thresholds to determine eligibility to participate in the European capacity markets. Less efficient EfW facilities and those receiving wastes with high amount of fossil-based carbon (i.e. plastics) could exceed the thresholds. However, guidance on the rule provides individual member states flexibility to applying the thresholds for energy-from-waste facilities. Ireland's current calculation approach for carbon intensity accounts for the methane avoidance benefits of keeping waste of landfills and the UK has signaled it intends to continue to exclude waste from the definition of fossil fuel. Based on the guidance and the position taken to date by Ireland and the UK, we do not believe that the capacity mechanism directive will have a material impact on our current operations or our plans to develop EfW projects in the UK.

Energy Regulation

Our businesses are subject to the provisions of federal, state and local energy laws applicable to the development, ownership and operation of facilities located in the United States. The Federal Energy Regulatory Commission ("FERC"), among other things, regulates the transmission and the wholesale sale of electricity in interstate commerce under the authority of the Federal Power Act ("FPA"). In addition, under existing regulations, FERC determines whether an entity owning a generation facility is an Exempt Wholesale Generator ("EWG"), as defined in the Public Utility Holding Company Act of 2005 ("PUHCA 2005"). FERC also determines whether a generation facility meets the technical and other criteria of a Qualifying Facility (cogeneration facilities and other facilities making use of non-fossil fuel power sources, such as waste, which meet certain size and other applicable requirements, referred to as "QFs"), under the Public Utility Regulatory Policies Act of 1978, as amended ("PURPA"). Each of our United States generating facilities has either been determined by FERC to qualify as a QF or is otherwise exempt from the relevant regulations, or the subsidiary owning the facility has been determined to be an EWG.

Federal Power Act — The FPA gives FERC exclusive rate-making jurisdiction over the wholesale sale of electricity and transmission of electricity in interstate commerce. Under the FPA, FERC, with certain exceptions, regulates the owners of facilities used for the wholesale sale of electricity or transmission of electricity in interstate commerce as public utilities. The FPA also gives FERC jurisdiction to review certain transactions and numerous other activities of public utilities. Most of our QFs are currently exempt from FERC's rate regulation under the FPA because (i) the QF is 20 MW or smaller; (ii) its sales are made pursuant to a state regulatory authority's implementation of PURPA; (iii) the QF is owned by a municipality or subdivision thereof; or (iv) its sales are made pursuant to a contract executed on or before March 17, 2006. Our QFs that are not exempt, or that lose these exemptions from rate regulation, are or would be required to obtain market-based rate authority from FERC or otherwise make sales pursuant to rates on file with FERC.

Under the FPA, public utilities are required to obtain FERC's acceptance of their rate schedules for the wholesale sale of electricity. Our generating companies in the United States that are not otherwise exempt from FERC's rate regulation make sales of electricity pursuant to market-based rates or other rates authorized by FERC. With respect to our generating companies with market-based rate authorization, FERC has the right to suspend, revoke or revise that authority and require our sales of energy to be made on a cost-of-service basis if FERC subsequently determines that we can exercise market power, create barriers to entry, or engage in abusive affiliate transactions. In addition, amongst other requirements, our market-based rate sellers are subject to certain market behavior and market manipulation rules and, if any of our subsidiaries were deemed to have violated any one of those rules, such subsidiary could be subject to potential disgorgement of profits associated with the violation and/or suspension or revocation of market-based rate authority, as well as criminal and civil penalties. If the market-based rate authority for one (or more) of our subsidiaries was revoked or it was not able to obtain market-based rate authority when necessary, and it was required to sell energy on a cost-of-service basis, it could become subject to the full accounting, record keeping and reporting requirements of FERC. Even where FERC has granted market-based rate authority, FERC may impose various market mitigation measures, including price caps, bidding rules and operating restrictions where it determines that potential market power might exist and that the public interest requires such potential market power to be mitigated. A loss of, or an inability to obtain, market-based rate authority could have a material adverse impact on our business. We can offer no assurance that FERC will not revisit its policies at some future time with the effect of limiting market-based rate authority, regulatory waivers, and blanket authorizations.

Under the Energy Policy Act of 2005 ("EPAct 2005"), FERC has approved the North American Electric Reliability Corporation, or "NERC," to address the development and enforcement of mandatory reliability standards for the wholesale electric power system. Certain of our subsidiaries are responsible for complying with the standards in the regions in which we operate. NERC also has the ability to assess financial penalties for non-compliance. In addition to complying with NERC requirements, certain of our subsidiaries must comply with the requirements of the regional reliability council for the region in which that entity is located. Compliance with these reliability standards may require significant additional costs, and noncompliance could subject us to regulatory enforcement actions, fines, and increased compliance costs.

Public Utility Holding Company Act of 2005 — PUHCA 2005 provides FERC with certain authority over and access to books and records of public utility holding companies not otherwise exempt by virtue of their ownership of EWGs, QFs, and Foreign Utility Companies, as defined in PUHCA 2005. We are a public utility holding company, but because all of our generating facilities have QF status, are otherwise exempt, or are owned through EWGs, we are exempt from the accounting, record retention, and reporting requirements of PUHCA 2005 and FERC's right to access our books and records is limited in scope.

Public Utility Regulatory Policies Act — PURPA was passed in 1978 in large part to promote increased energy efficiency and development of independent power producers. PURPA created QFs to further both goals, and FERC is primarily charged with administering PURPA as it applies to QFs. FERC has promulgated regulations that exempt QFs from compliance with certain provisions of the FPA, PUHCA 2005, and certain state laws regulating the rates charged by, or the financial and organizational activities of, electric utilities. The exemptions afforded by PURPA to QFs from regulation under the FPA and most aspects of state electric utility regulation are of great importance to us and our competitors in the EfW and independent power industries.

PURPA also initially included a requirement that utilities must buy and sell power to QFs. Among other things, EPAct 2005 eliminated the obligation imposed on utilities to purchase power from QFs at an avoided cost rate where the QF has non-discriminatory access to wholesale energy markets having certain characteristics, including nondiscriminatory transmission and interconnection services. In addition, FERC has established a regulatory presumption that QFs with a capacity greater than 20 MW have non-discriminatory access to wholesale energy markets in most geographic regions in which we operate. As a result, many of our expansion, renewal and development projects must rely on competitive energy markets rather than PURPA's historic avoided cost rates in establishing and maintaining their viability.

RTOs and ISOs — Many of our projects operate in or have access to organized energy markets, known as regional transmission organizations ("RTOs") or independent system operators ("ISOs"). Each organized market subject to FERC jurisdiction administers centralized energy, capacity and ancillary services markets pursuant to tariffs approved by FERC. These tariffs and rules prescribe requirements on how the energy, capacity and ancillary service markets operate, how market participants bid, clear, are dispatched, make bilateral sales with one another, and how entities with market-based rates are compensated. Certain of these markets set prices, referred to as Locational Marginal Prices that reflect the value of energy, capacity or certain ancillary services, based upon geographic locations, transmission constraints, and other factors. Each market is subject to market mitigation measures designed to limit the exercise of market power. These market structures may affect the bidding, operation, dispatch and sale of energy, capacity and ancillary services from our projects that rely on competitive energy markets rather than PURPA's avoided cost rates.

Policy Debate Regarding Climate Change and Renewable Energy

The public and political debate over GHG emissions (principally CO_2 and methane) and their contribution to climate change continues both internationally and domestically. Any resulting regulations could in the future affect our business. As is the case with all combustion, our facilities emit CO_2, however EfW is recognized as creating net reductions in GHG emissions and is otherwise environmentally beneficial, because it:

- avoids CO_2 emissions from fossil fuel power plants;
- avoids methane emissions from landfills; and
- avoids GHG emissions from mining and processing metal because it recovers and recycles metals from waste.

In addition, EfW facilities are a resilient domestic source of baseload energy, preserve land, and are typically located close to the source of the waste and thus typically reduce fossil fuel consumption and air emissions associated with long-haul transportation of waste to landfills.

For policy makers at the local level who make decisions on sustainable waste management alternatives, we believe that using EfW instead of landfilling will result in significantly lower net GHG emissions, while also introducing more control over the cost of waste management and supply of local electrical power. We are actively engaged in encouraging policy makers at state and federal levels to enact legislation that supports EfW as a superior choice for communities to avoid both the environmental harm caused by landfilling waste, and reduce local reliance on fossil fuels as a source of energy.

Many of these same policy considerations apply equally to other renewable technologies. The extent to which such potential legislation and policy initiatives will affect our business will depend in part on whether EfW and our other renewable technologies are included within the range of clean technologies that could benefit from such legislation.

Several initiatives have been developed at the state or regional levels, and some initiatives exist in regions where we have projects. For example:

- The Regional Greenhouse Gas Initiative ("RGGI") is an operating regional "cap-and-trade" program focused on fossil fuel-fired electric generators which does not directly affect EfW facilities. We operate one fossil-fuel fired boiler at our Niagara facility included in the RGGI program.
- California's Global Warming Solutions Act of 2006 ("AB 32"), seeks to reduce GHG emissions in California to 1990 levels by 2020, through an economy-wide "cap-and-trade" program. EfW facilities were exempt from the cap-and-trade program through the end of 2017 but began incurring a compliance obligation in 2018. The current regulation provides transition assistance to EfW facilities. A resolution passed by the Board of the California Air Resources Board ("CARB") directs the agency to provide additional transition assistance to EfW facilities in a subsequent revision to the regulation. The specific degree of additional assistance to be provided is uncertain at this time.

- In 2019, the New York State legislature passed the Climate Leadership and Community Protection Act which put the state on the path to achieve net zero GHG emissions by 2050. The state is currently beginning the process of developing specific policies and regulations to implement the legislation. Given EfW's international recognition as a means of reducing GHG emissions from the waste management sector, we expect EfW facilities will have an important role to play in the transition to a net zero economy; however, the exact impact on our business in New York is uncertain at this time.

International Climate Change Policies

Certain international markets in which we compete have recently adopted regulatory or policy frameworks that encourage EfW projects as important components of GHG emission reduction strategies, as well as waste management planning and practice.

The European Union

Historically, the EU has adopted legislation which requires member states to reduce the utilization of and reliance upon landfill disposal, including (1) Directive 1999/31/EC concerning the landfill of waste (known as the "Landfill Directive") which imposes operational and technical controls on landfills and restricts, on a reducing scale, the amount of biodegradable municipal waste which member states may dispose of to landfill; and (2) Directive 2008/98/EC on waste (known as the revised "Waste Framework Directive") which enshrines the waste hierarchy to divert waste from landfill and underpins a preference for efficient energy-from-waste for the recovery of value from residual wastes.

In July 2018, the EU finalized its Circular Economy Package (CEP), amending several of the Directives described above to advance a more circular economy. Included within the CEP are the continued preference for efficient energy recovery over landfilling, increased targets for recycling and reuse, and new limits on landfilling.

Brexit Implications

With respect to the impact of Brexit in the UK, we have studied and consulted with local experts regarding the potential regulatory impacts, with a particular focus on potential impacts to the waste and energy markets as they might affect our plans to expand our business with GIG. (For further information see *Item 8. Financial Statements And Supplementary Data — Note 3. New Business and Asset Management — Green Investment Group Limited ("GIG") Joint Venture*). The government of the UK has shown no indication of an intention to rollback or reverse its policy support for environmental protection generally, the renewables market, or for EfW specifically, including with respect to the Directives described above. As such, while we can provide no assurance, we do not believe Brexit will materially impact the key regulatory drivers for investment in the combined pipeline of EfW projects we are pursuing jointly with GIG.

Employee Health and Welfare

We are subject to numerous regulations enacted to protect and promote worker health and welfare through the implementation and enforcement of standards designed to prevent illness, injury and death in the workplace. The primary law relating to employee health and welfare applicable to our business in the United States is the Occupational Safety and Health Act of 1970 ("OSHA"), which establishes certain employer responsibilities including maintenance of a workplace free of recognized hazards likely to cause illness, death or serious injury, compliance with standards promulgated by OSHA, and assorted reporting and record keeping obligations, as well as disclosure and procedural requirements. Various OSHA standards apply to certain aspects of our operations. Employee health and welfare laws governing our business in foreign jurisdictions include the Workplace Health and Safety Directive and the Directive concerning ionizing radiation in the EU, and various provisions of the Canada Labour Code and related regulations in Canada.

EMPLOYEES

As of December 31, 2019, we employed approximately 4,000 full-time employees, the majority of which were employed in the United States. Approximately 8% of our employees are covered by collective bargaining agreements with various expiration dates through 2024.

EXECUTIVE OFFICERS OF THE REGISTRANT

A list of our executive officers and their business experience follows. Ages shown are as of February 1, 2020.

Name and Title	Age	Experience
Stephen J. Jones President and Chief Executive Officer	58	President and Chief Executive Officer since 2015. Prior to joining Covanta, Mr. Jones was employed by Air Products and Chemicals, Inc. ("Air Products"), a global supplier of industrial gases, equipment and services from 1992 through 2014. Mr. Jones served as Senior Vice President and General Manager, Tonnage Gases, Equipment and Energy, from 2009 through 2014. Mr. Jones also served as Air Products' China President from 2011 through 2014 at Air Products' office in Shanghai. He was also a member of Air Products' Corporate Executive Committee from 2007 through 2014. Mr. Jones joined Air Products in 1992 as an attorney in the Law Group representing various business areas and functions and in 2007 he was appointed Senior Vice President, General Counsel and Secretary.
Bradford J. Helgeson Executive Vice President and Chief Financial Officer	43	Executive Vice President and Chief Financial Officer since 2013. Mr. Helgeson served as Vice President and Treasurer from 2007 to 2013. Prior to joining Covanta in 2007, Mr. Helgeson was Vice President, Finance and Treasurer at Waste Services, Inc., a publicly-traded environmental services company with operations in the United States and Canada, from 2004 to 2007. Prior to these roles, Mr. Helgeson held positions in the investment banking departments at Lehman Brothers from 2000 to 2004 and at Donaldson, Lufkin & Jenrette from 1998 to 2000.
Michael J. de Castro Executive Vice President, Supply Chain	57	Executive Vice President, Supply Chain since 2015. Mr. de Castro was employed by Air Products from 2006 to 2010, serving in various operational capacities including Director, Global Operations Americas. Mr. de Castro was Chief Executive Officer of Interstate Waste Services ("IWS") from 2010 to 2013 when he returned to Air Products, serving as Director, Global Operations Strategic Development and as Fulfillment Director in the Performance Materials Division. Prior to his tenure at IWS and Air Products, Mr. de Castro held a variety of positions at American Ref-Fuel Company for 16 years, including of Vice President, Operations.
Derek W. Veenhof Executive Vice President, Asset Management	53	Executive Vice President since 2013. Mr. Veenhof served as Senior Vice President (2011-2013) and Vice President (2007-2010) of Covanta commercial subsidiaries managing contracting and market development efforts in waste and metals recycling. From 2002 to 2006, Mr. Veenhof was Covanta's Area Manager responsible for the Metro NY, NJ and Philadelphia market areas. Mr. Veenhof joined Covanta in 1997, serving as the Niagara Facility Business Manager from 1997-2001.
Timothy J. Simpson Executive Vice President, General Counsel and Secretary	61	Executive Vice President, General Counsel and Secretary since 2007. Mr. Simpson served as Senior Vice President, General Counsel and Secretary from 2004 to 2007. Previously, he served as Senior Vice President, General Counsel and Secretary of Covanta Energy from March 2004 to October 2004. Mr. Simpson joined Covanta in 1992.
Matthew R. Mulcahy Executive Vice President and Head of Corporate Development	56	Executive Vice President and Head of Corporate Development since 2017. Mr. Mulcahy served as Senior Vice President and Head of Corporate Development for Covanta from 2012 to 2016 and Senior Vice President of Business Development from 2007 through 2011. From 2003 to 2007, Mr. Mulcahy served as Vice President of Covanta Secure Service and TransRiver Marketing, a Covanta subsidiary. From 2000 to 2003, Mr. Mulcahy was Covanta's Vice President, Project Implementation. Mr. Mulcahy joined Covanta in 1990.
Paul E. Stauder Senior Vice President and President, Covanta Environmental Solutions	54	Senior Vice President since 2016 and President of Covanta Environmental Solutions, a subsidiary of Covanta Energy, since 2015. Mr. Stauder served as Senior Vice President of Business Management for Covanta Energy from 2008 to 2014, with primary responsibility for all commercial and client aspects of Covanta's EFW facilities. Prior to that role, Mr. Stauder served in a number of positions with Covanta Energy, including Regional Vice President, overseeing EfW plants and independent power plants. Mr. Stauder joined Covanta in 1997.
Virginia D. Angilello Senior Vice President and Chief Human Resources Officer	50	Ms. Angilello was appointed Senior Vice President and Chief Human Resources Officer in 2018. Prior to joining Covanta, she worked for more than 17 years in roles of increasing responsibility at Honeywell International. Most recently, she served as Vice President, Human Resources for Performance Materials & Technologies (PMT), Integrated Supply Chain from 2015 to 2018. PMT was a $10 billion business within Honeywell, with more than 90 manufacturing facilities globally. Prior to this position she gained extensive experience in human resources leadership in both HR business partner and HR operations roles from 2007 - 2014, including having led the Honeywell HR Services, Global Operations teams.
Manpreet Grewal Vice President and Chief Accounting Officer	41	Vice President and Chief Accounting Officer since 2017. Prior to joining Covanta, he was the Senior Director, Global Financial & Operational Audits from 2016 through 2017 for Johnson Controls plc, a leading provider in building technologies and solutions globally. Prior to this position, Mr. Grewal spent 13 years working in a variety of finance and accounting roles at Tyco International plc, prior to Tyco's 2016 merger with Johnson Controls. From 2014 through 2015 Mr. Grewal was the Director, Internal Audit and from 2012 to 2013, he was the Sr. Manager, Accounting Research & Shared Processes for Tyco.

Item 1A. *RISK FACTORS*

The following risk factors could have a material adverse effect on our business, financial condition and results of operations.

Exposure to energy, waste disposal, recycled metal and commodity prices may affect our results of operations.

Some of the electricity and steam we sell and all of the recycled metals we sell, are subject to market price volatility. Changes in the market prices for electricity and steam in particular can be affected by changes in natural gas prices, weather conditions and other market variables, while recycled metals prices are affected by general economic conditions and global demand for construction, goods and services. Similarly, the portion of waste processing capacity which is not under contract may be subject to volatility, principally as a result of general economic activity and waste generation rates, as well as the availability of alternative disposal sites and the cost to transport waste to alternative disposal. Volatility with respect to each of these revenue categories could adversely impact our businesses' profitability and financial performance. We may not be successful in our efforts to mitigate our exposure to price swings relating to these revenue streams.

We may experience volatility in the market prices and availability of commodities we purchase, such as reagents, chemicals and fuel. Any price increase, delivery disruption or reduction in the availability of such supplies could affect our ability to operate the facilities and impair our cash flow and results of operations. We may not be successful in our efforts to mitigate our exposure to supply and price swings for these commodities.

Compliance with environmental laws, including changes to such laws, could adversely affect our results of operations.

Our businesses are subject to extensive environmental laws and regulations by federal, state, local and foreign authorities, primarily relating to air, waste (including residual ash from combustion) and water. Costs relating to compliance with these laws and regulations are material to our business. If our businesses fail to comply with these regulations, our cash flow and profitability could be adversely affected, and we could be subject to civil or criminal liability, damages and fines.

In addition, lawsuits or enforcement actions by federal, state, local and/or foreign regulatory agencies may materially increase our costs. Stricter environmental regulation of air emissions, solid waste handling or combustion, residual ash handling and disposal, and waste water discharge could materially affect our cash flow and profitability. Certain environmental laws make us potentially liable on a joint and several basis for the remediation of contamination at or emanating from properties or facilities we currently or formerly owned or operated or properties to which we arranged for the disposal of hazardous substances. Such liability is not limited to the cleanup of contamination we actually caused. We cannot provide any assurance that we will not incur liability relating to the remediation of contamination, including contamination we did not cause. For additional information on environmental regulation, see *Item 1. Business — Regulation of Business.*

Existing environmental laws and regulations have been and could be revised or reinterpreted, and future changes in environmental laws and regulations are expected to occur. This may materially increase the amount we must invest to bring our facilities into compliance, impose additional expense on our operations, limit our ability to operate at capacity, or at all, or otherwise impose structural changes to markets which would adversely affect our competitive positioning in those markets.

Contracts to provide new services or services through new or different methods involves significant risks, which could have an adverse effect on our cash flows and results of operations.

As we enter into contracts to provide new services or services through new or different methods, such as our waste transportation and disposal contract with New York City, our acquired environmental services businesses, or new facilities for processing metals and/or ash, we may face additional operating risks. These may include:

- performance by multiple contractors critical to our ability to perform under our new customer agreements;
- logistics associated with transportation of waste via barge, rail or other methods with which we have limited experience;
- reliance on joint venture parties or technology providers with whom we have limited experience; and
- risks associated with providing new materials handling or treatment services.

Operation of our businesses involves significant risks, which could have an adverse effect on our cash flows and results of operations.

The operation of our businesses involves many risks, including:

- supply or transportation interruptions;
- the breakdown, failure or unplanned maintenance or repair of equipment or processes;
- difficulty or inability to find suitable replacement parts for equipment;
- the unavailability of sufficient quantities of waste or fuel;
- fluctuations in the heating value of the waste we use for fuel at our EfW facilities;
- failure or inadequate performance by subcontractors;
- disruption in the transmission of electricity generated;
- labor disputes and work stoppages;
- unforeseen engineering and environmental problems;
- unanticipated cost overruns;
- weather interferences and catastrophic events including fires, explosions, earthquakes, droughts, pandemics and acts of terrorism; and
- the exercise of the power of eminent domain.

We cannot predict the impact of these risks on our business or operations. One or more of these risks, if they were to occur, could prevent us from meeting our obligations under our operating contracts and have an adverse effect on our cash flows and results of operations.

Our results of operations may be adversely affected by market conditions existing at the time our contracts expire.

For the EfW facilities that we own or lease, the contracts pursuant to which we provide waste services and sell energy output expire on various dates between 2020 and 2036. Expiration of these contracts subjects us to greater market risk in entering into new or replacement contracts at pricing levels that may not generate comparable revenue. We cannot assure that we will be able to enter into renewal or replacement contracts on favorable terms, or at all. We also expect that medium- and long-term contracts for sales of energy may be less available than in the past, and so after expiration of existing contracts we expect to sell our energy output either in short-term transactions or on a spot basis or pursuant to new contracts which may subject us to greater market risk in maintaining and enhancing revenue. As a result, following the expiration of our existing long-term contracts, we may have more exposure on a relative basis to market risk, and therefore revenue fluctuations, in energy markets than in waste markets.

Where we have leasehold interests, we cannot assure that market conditions prevailing when such interests expire will allow us to enter into an extension or that the terms available in the market at the time will be favorable to us.

Significant policy shifts from the Trump Administration could have a material adverse effect on us.

The Trump Administration has made substantial changes in the areas of fiscal and tax policy, regulatory oversight of businesses, and restrictions on free trade, including significant increases in tariffs on goods imported into the United States, particularly from China. These changes and other similar proposals espoused by President Trump may result in changes to social, political, regulatory and economic conditions in the United States or in laws and policies affecting investment in countries where we currently conduct business, including retaliatory tariffs imposed by those countries. In addition, these changes could result in additional costs associated with growing our international business, and negative sentiments towards the United States among non-US customers and among non-US employees or prospective employees. We cannot predict the impact, if any, of these changes to our business. However, it is possible that these changes could adversely affect our business. It is likely that while some policies adopted by the Trump administration will benefit us, others will negatively affect us.

Changes in public policies and legislative initiatives could materially affect our business and prospects.

There has been substantial debate recently in the United States and abroad in the context of environmental and energy policies affecting climate change, the outcome of which could have a positive or negative influence on our existing business and our prospects for growing our business. Congress and several states have considered legislation and/or regulations designed to increase the proportion of the nation's electricity that is generated from technologies considered "clean" or "renewable", through mandatory generation levels, tax incentives, and other means. For those sources of GHG emissions that are unable to meet the required limitations, such legislation could impose substantial financial burdens. The Trump administration has indicated that it generally favors traditional energy technologies. Our business and future prospects could be adversely affected if renewable technologies we use were either (i) disfavored in any new laws or regulations pursued by the Trump administration, or (ii) not included among those technologies identified in any final laws or regulations as favoring renewable technologies, or not included in the state plans to reduce carbon emissions, and therefore not entitled to the benefits of such laws, regulations, or plans.

Our substantial indebtedness could adversely affect our business, financial condition and results of operations and our ability to meet our payment obligations under our indebtedness.

The level of our consolidated indebtedness could have significant consequences on our future operations, including:
- making it difficult for us to meet our payment and other obligations under our outstanding indebtedness;
- limiting our ability to obtain additional financing to fund working capital, capital expenditures, new projects, acquisitions and other general corporate purposes;
- subjecting us to the risk of increased sensitivity to interest rate increases on indebtedness under our credit facilities;
- 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; 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 under our consolidated debt, and the price of our common stock.

We cannot assure that our cash flow from operations will be sufficient to service our indebtedness, which could have a material adverse effect on our financial condition.

Our ability to meet our obligations under our indebtedness depends on our ability to receive dividends and distributions from our subsidiaries in the future. This, in turn, is subject to many factors, some of which are beyond our control, including the following:

- the continued operation and maintenance of our facilities, consistent with historical performance levels;
- maintenance or enhancement of revenue from renewals or replacement of existing contracts and from new contracts to expand existing facilities or operate additional facilities;
- market conditions affecting waste disposal and energy pricing, as well as competition from other companies for contract renewals, expansions and additional contracts, particularly after our existing contracts expire;
- the continued availability of the benefits of our net operating loss carryforwards; and
- general economic, financial, competitive, legislative, regulatory and other factors.

We cannot assure that our business will generate cash flow from operations, or that future borrowings will be available to us under our credit facilities or otherwise, in an amount sufficient to enable us to meet our payment obligations under our outstanding indebtedness and to fund other liquidity needs. If we are not able to generate sufficient cash flow to service our debt obligations, we may need to refinance or restructure our debt, sell assets, reduce or delay capital investments, or seek to raise additional capital. If we are unable to implement one or more of these alternatives, we may not be able to meet our payment obligations under our outstanding indebtedness, which could have a material adverse effect on our financial condition.

Our credit facilities and the indentures for our other corporate debt contain covenant restrictions that may limit our ability to operate our business.

Our credit facilities and the indentures for our other corporate debt contain operating and financial restrictions and covenants that impose operating and financial restrictions on us and require us to meet certain financial tests. Complying with these covenant restrictions may limit our ability to engage in certain transactions or activities, including incurring additional indebtedness, making certain investments, and distributions, and selling certain assets.

As a result of these covenant restrictions, our ability to respond to changes in business and economic conditions and to obtain additional financing, if needed, may be restricted, and we may be prevented from engaging in transactions that might otherwise be beneficial to us.

Our ability to comply with these covenants is dependent on our future performance, which will be subject to many factors, some of which are beyond our control, including prevailing economic conditions. In addition, the failure to comply with these covenants may result in a default under our credit facilities and other corporate debt. Upon the occurrence of such an event of default, the lenders under our credit facilities could elect to declare all amounts outstanding under such credit facilities, together with accrued interest, to be immediately due and payable. If the lenders accelerate the payment of the indebtedness under our credit facilities, we cannot assure that the assets securing such indebtedness would be sufficient to repay in full that indebtedness and our other indebtedness, which could have a material adverse effect on our financial condition.

Dislocations in credit and capital markets and increased capital constraints on banks may make it more difficult for us to borrow money or raise capital needed to finance the construction of new projects, expand existing projects, acquire certain businesses and refinance our existing debt.

Our business is capital intensive, and we seek to finance a significant portion of our existing assets, as well as our investments in new assets, with debt capital to the extent that we believe such financing is prudent and accretive to stockholder value.

As of December 31, 2019, we had approximately $2.5 billion in long-term debt and project debt. Prolonged instability or deterioration in the bank credit and/or debt and equity capital markets may adversely affect our ability to obtain refinancing of our existing debt on favorable terms, or at all. Such circumstances could adversely affect our business, financial condition, and/or the share price of our common stock.

We intend to grow our business through the development of new projects, the expansion and/or enhancement of existing facilities, and opportunistic acquisitions of projects or businesses. Such investments may be large enough to require capital in excess of our cash on hand and availability under our existing credit facilities. Prolonged instability or deterioration in the credit markets may adversely impact our access to capital on terms that we find acceptable, thereby impacting our ability to execute our strategy to grow our business.

Our revenue and cash flows may decline if we are not successful in retaining rights or such rights terminate to operate facilities after our contracts expire.

We operate some facilities owned by public sector clients, under long-term contracts. If, when existing contracts expire, we are unable to reach agreement with our municipal clients on the terms under which they would extend our operating contracts, this may adversely affect our revenue, cash flow and profitability. We cannot assure that we will be able to enter into such contracts or that the terms available in the market at the time will be favorable to us.

At a limited number of facilities we operate that are owned by public sector clients, our clients have certain rights to terminate such contracts without cause. If any such terminations were to occur, this may adversely affect our revenue, cash flow and profitability. We cannot assure that such contract terminations will not occur in the future.

Development and construction of new projects and expansions may not commence as anticipated, or at all.

Development and construction involves many risks including:

- difficulties in identifying, obtaining and permitting suitable sites for new projects;
- the inaccuracy of our assumptions with respect to the cost of and schedule for completing construction;
- difficulty, delays or inability to obtain financing for a project on acceptable terms;
- delays in deliveries of, or increases in the prices of, equipment sourced from other countries;
- the unavailability of sufficient quantities of waste or other fuels for startup;
- permitting and other regulatory issues, license revocation and changes in legal requirements;
- labor disputes and work stoppages;
- unforeseen engineering and environmental problems;
- interruption of existing operations;
- unanticipated cost overruns or delays;
- weather interferences and catastrophic events including fires, explosions, earthquakes, droughts, pandemics and acts of terrorism; and
- reliance on third party contractors for performance.

In addition, new facilities have no operating history and may employ recently developed technology and equipment. A new facility may be unable to fund principal and interest payments under its debt service obligations or may operate at a loss. In certain situations, if a facility fails to achieve commercial operation, at certain levels or at all, termination rights in the agreements governing the facilities financing may be triggered, rendering all of the facility's debt immediately due and payable. As a result, the facility may be rendered insolvent and we may lose our interest in the facility.

Construction activities may cost more and take longer than we estimate.

The design and construction of new projects or expansions requires us to contract for services from engineering and construction firms, and make substantial purchases of equipment such as boilers, turbine generators and other components that require large quantities of steel to fabricate. These are complex projects that include many factors and conditions which may adversely affect our ability to successfully compete for new projects, or construct and complete such projects on time and within budget.

Our revenue and cash flows may be subject to greater volatility if we extend or renew our contracts under tip fee structures more often than service fee structures.

Our revenue and cash flows may be subject to greater volatility if we extend or renew our contracts under tip fee structures more often than under service fee structures. Due to the nature of tip fee structures, if that were to occur, we may be exposed to greater performance and price risk on the energy we sell.

Some of our EfW projects involve greater risk of exposure to performance levels which, if not satisfied, could result in materially lower revenue.

At our EfW facilities where tip fee structures exist, we receive 100% of the energy revenue they generate. As a result, if we are unable to operate these facilities at their historical performance levels for any reason, our revenue from energy sales could materially decrease.

Weakness in the economy may have an adverse effect on our revenue, cash flow and our ability to grow our business.

Our business is directly affected by economic slowdowns and general reduction in demand for goods and services. A weak economy generally results in reduced overall demand for waste disposal, recycled metal and energy production. Under such conditions, the pricing we are able to charge for our waste management services, and for our energy and recycled metals, may decline and/or experience increased volatility. In addition, many of our customers are municipalities and other public sector entities which may be adversely affected in an economic downturn due to reduced tax revenue. Consequently, some of these entities could be unable to pay amounts owed to us or renew contracts with us for similar volumes or at previous or increased rates.

Furthermore, lower prices for waste disposal and energy production, particularly in the absence of energy policies which encourage renewable technologies such as EfW, may also make it more difficult for us to sell waste and energy services at prices sufficient to allow us to grow our business through developing and building new projects. These factors could have a material adverse effect on our profitability and cash flow.

Changes in climate conditions could materially affect our business and prospects.

Significant changes in weather patterns and volatility could have a negative influence on our existing business and our prospects for growing our business. Such changes may cause episodic events (such as floods or storms) that are difficult to predict or prepare for, or longer-term trends (such as droughts or sea-level rise). These or other meteorological changes could lead to increased operating costs, capital expense, disruptions in facility operations or supply chains, changes in waste generation and interruptions in waste deliveries, limited availability of water for plant cooling operations, and changes in energy pricing, among other effects.

Our reputation could be adversely affected if we are unable to operate our businesses in compliance with laws, or if our efforts to grow our business results in adverse publicity.

If we encounter regulatory compliance issues in the course of operating our businesses, we may experience adverse publicity, which may intensify if such non-compliance results in civil or criminal liability. This adverse publicity may harm our reputation, and result in difficulties in attracting new customers, or retaining existing customers.

With respect to our efforts to grow and maintain our business globally, we sometimes experience opposition from advocacy groups or others intended to halt our development or on-going business. Such opposition is often intended to discourage third parties from doing business with us and may be based on misleading, inaccurate, incomplete or inflammatory assertions. Our reputation may be adversely affected as a result of adverse publicity resulting from such opposition. Such damage to our reputation could adversely affect our ability to grow and maintain our business.

Exposure to foreign currency fluctuations may affect our results from operations or construction costs of facilities we develop in international markets.

We have sought to participate in projects where the host country has allowed the convertibility of its currency into US dollars and repatriation of earnings, capital and profits subject to compliance with local regulatory requirements. As and if we grow our business in other countries and enter new international markets, we expect to invest substantial amounts in foreign currencies to pay for the construction costs of facilities we develop, or for the cost to acquire existing businesses or assets. Currency volatility in those markets, as well as the effectiveness of any currency hedging strategies we may implement, may impact the amount we are required to invest in new projects, as well as our reported results.

Our growth could strain our resources and cause our business to suffer.

We have made and may continue to plan and execute acquisitions and take other actions to grow our business. Acquisitions present significant challenges and risks relating to the integration of the business into the company. If we make acquisitions, it could place a strain on our management systems, infrastructure and resources, as well as present new or different risks to our business. We expect that we will need to continually evaluate and maintain our financial and managerial controls, reporting systems and procedures. We will also need to expand, train and manage our workforce worldwide. We can provide no assurances that the company will manage and integrate acquisitions successfully.

Changes in technology may have a material adverse effect on our profitability.

Our company and others have recognized the value of the traditional waste stream as a potential resource. Research and development activities are ongoing to provide alternative and more efficient technologies to manage waste, produce or extract by-products from waste, or to produce power. We and many other companies are pursuing these technologies, and capital is being invested to find new approaches to waste management, waste treatment, and renewable power generation. It is possible that this deployment of capital may lead to advances in these or other technologies which will reduce the cost of waste management or power production to a level below our costs and/or provide new or alternative methods of waste management or energy generation that become more accepted than those we currently utilize. Unless we are able to participate in these advances, any of these changes could have a material adverse effect on our revenue, profitability and the value of our existing facilities.

Our ability to optimize our operations depends in part on our ability to compete for and obtain solid waste for fuel for our facilities, and our failure to do so may adversely affect our financial results.

Our EfW facilities depend on solid waste for fuel, which provides a source of revenue. For some of our EfW facilities, the availability of solid waste to us, as well as the tipping fee that we charge to attract solid waste to our facilities, depends upon competition from a number of sources such as other EfW facilities, landfills and transfer stations competing for waste in the market area. In addition, we may need to obtain waste on a competitive basis as our long-term contracts expire at our owned facilities. There has been consolidation, and there may be further consolidation, in the solid waste industry that would reduce the number of solid waste collectors or haulers that are competing for disposal facilities or enable such collectors or haulers to use wholesale purchasing to negotiate favorable below-market rates. The consolidation in the solid waste industry has resulted in companies with vertically integrated collection activities and disposal facilities. Such consolidation may result in economies of scale for those companies, as well as the use of disposal capacity at facilities owned by such companies or by affiliated companies. Such activities can affect both the availability of waste to us for processing at some of our EfW facilities and market pricing, which could have a material adverse effect on our results of operations.

Our ability to successfully manage organizational, process and cost-efficiency initiatives could strain our resources and affect our profitability.

We have made and may continue to undertake organizational, process and cost efficiency changes intended to improve our business. These changes, which may include implementation of new systems and processes, staff adjustments and reassignments of responsibilities, are important to our business success. Failure or delay in implementing these actions, or ineffective implementation could strain our resources and systems, resulting in disruption to our business and/or adversely affecting our results.

Our businesses generate their revenue primarily under long-term contracts and must avoid defaults under those contracts in order to service their debt and avoid material liability to contract counterparties.

We must satisfy performance and other obligations under contracts governing EfW facilities. These contracts typically require us to meet certain performance criteria relating to amounts of waste processed, energy generation rates per ton of waste processed, residue quantity and environmental standards. Our failure to satisfy these criteria may subject us to termination of operating contracts. If such a termination were to occur, we would lose the cash flow related to the projects and incur material termination damage liability, which may be guaranteed by us. In circumstances where the contract has been terminated due to our default, we may not have sufficient sources of cash to pay such damages. We cannot assure that we will be able to continue to perform our respective obligations under such contracts in order to avoid such contract terminations, or damages related to any such contract termination, or that if we could not avoid such terminations that we would have the cash resources to pay amounts that may then become due.

We have provided guarantees and financial support in connection with our projects.

We are obligated to guarantee or provide financial support for our projects in one or more of the following forms:

- support agreements in connection with construction, service or operating agreement-related obligations;
- direct guarantees of certain debt relating to our facilities;
- contingent obligations to pay lease payment installments in connection with certain of our facilities;
- agreements to arrange financing for projects under development;
- contingent credit support for damages arising from performance failures;
- environmental indemnities; and
- contingent capital and credit support to finance costs, in most cases in connection with a corresponding increase in service fees, relating to uncontrollable circumstances.

Many of these contingent obligations cannot readily be quantified, but, if we were required to provide this support, it could have a material adverse effect on our cash flow, results of operations and financial condition.

Our businesses depend on performance by third parties under contractual arrangements.

Our waste and energy services businesses depend on a limited number of third parties to, among other things, purchase the electric and steam energy produced by our facilities, supply and deliver the waste and other goods and services necessary for the operation of our energy facilities, and purchase the metals we recover. The viability of our facilities depends significantly upon the performance by third parties in accordance with long-term and short-term contracts, and such performance depends on factors which may be beyond our control. If those third parties do not perform their obligations, or are excused from performing their obligations because of nonperformance by our waste and energy services businesses or other parties to the contracts, or due to force majeure events or changes in laws or regulations, our businesses may not be able to secure alternate arrangements on substantially the same terms, or at all. In addition, the bankruptcy or financial stability of third parties with whom we do business could result in nonpayment or nonperformance of that party’s obligations to us.

We are subject to counterparty and market risk with respect to transactions with financial and other institutions.

Following the expiration of our initial contracts to sell electricity from our projects, we expect to have on a relative basis more exposure to market risk, and therefore revenue fluctuations, in energy markets than in waste markets. Consequently, we may enter into futures, forward contracts, swaps or options with financial institutions to hedge our exposure to market risk in energy markets. We can provide no assurances as to the financial stability or viability of these financial and other institutions.

Concentration of suppliers and customers may expose us to heightened financial exposure.

Our waste and energy services businesses often rely on single suppliers and single customers at our facilities, exposing such facilities to financial risks if any supplier or customer should fail to perform its obligations.

For example, our businesses often rely on a single supplier to provide waste, fuel, water and other services required to operate a facility and on a single customer or a few customers to purchase all or a significant portion of a facility's output. The financial performance of these facilities depends on such customers and suppliers continuing to perform their obligations under their long-term agreements. A facility's financial results could be materially and adversely affected if any one customer or supplier fails to fulfill its contractual obligations and we are unable to find other customers or suppliers to produce the same level of profitability. We cannot assure that such performance failures by third parties will not occur, or that if they do occur, such failures will not have a material adverse effect on the cash flows or profitability of our businesses.

In addition, we rely on the public sector clients as a source not only of waste for fuel, but also of revenue from the fees for waste services we provide. Because our contracts with public sector clients are generally long-term, we may be adversely affected if the credit quality of one or more of our public sector clients were to decline materially.

Our waste operations are concentrated in one region and expose us to regional economic or market declines.

The majority of our waste disposal facilities are located in the northeastern United States, primarily along the Washington, D.C. to Boston, Massachusetts corridor. Adverse economic developments in this region could affect regional waste generation rates and demand for waste management services provided by us. Adverse market developments caused by additional waste processing capacity in this region could adversely affect waste disposal pricing. Either of these developments could have a material adverse effect on our profitability and cash generation.

Exposure to international economic and political factors may have a material adverse effect on our international businesses.

Our international operations expose us to political, legal, tax, currency, inflation, convertibility and repatriation risks, as well as potential constraints on the development and operation of potential business, any of which can limit the benefits to us from international projects.

The financing, development and operation of projects outside the United States can entail significant political and financial risks, which vary by country, including:

- changes in law or regulations;
- changes in electricity pricing;
- changes in foreign tax laws and regulations;
- changes in United States federal, state and local laws, including tax laws, related to foreign operations;
- compliance with United States federal, state and local foreign corrupt practices laws;
- changes in government policies or personnel;
- changes in general economic conditions affecting each country, including conditions in financial markets;
- changes in treaties among countries affecting importation of equipment or movement of people across borders;
- changes in labor relations in operations outside the United States;
- political, economic or military instability and civil unrest;
- expropriation and confiscation of assets and facilities; and
- credit quality of entities that pay for our services or purchase our power.

The legal and financial environment in foreign countries in which we currently own assets or projects could also make it more difficult for us to enforce our rights under agreements relating to such projects.

Any or all of the risks identified above with respect to our international projects could adversely affect our profitability and cash generation. As a result, these risks may have a material adverse effect on our business, consolidated financial condition and results of operations.

Our ability to execute on our new project pipeline in the United Kingdom may be disrupted by Brexit.

There is currently substantial uncertainty regarding whether any agreements negotiated as part of Brexit will have an adverse impact on the UK economy. Depending on a variety of factors, which we are currently unable to predict, Brexit could have adverse consequences on our ability to implement our development plans in the UK. This may include (i) disruptions in our ability to access the debt markets on favorable terms to finance our pipeline of new EfW projects in the UK, (ii) increases in our construction costs where they include importing equipment or use of non-UK labor pools, (iii) decreases in the value of our operating investments because of a devaluation of the British pound against other currencies, and (iv) other adverse consequences that we cannot presently predict because of material uncertainties in the path the execution of Brexit might take.

Risks Related to Information Systems Security

Our information systems, and those of our third-party service providers and vendors, are vulnerable to an increasing threat of continually evolving cybersecurity risks. These risks may take the form of malware, computer viruses, cyber threats, extortion, employee error, malfeasance, system errors or other types of risks, and may occur from inside or outside of our organization. Cybersecurity risk is increasingly difficult to identify and quantify and cannot be fully mitigated because of the rapid evolving nature of the threats, targets and consequences. Additionally, unauthorized parties may attempt to gain access to these systems or our information through fraud or other means of deceiving our third-party service providers, employees or vendors. Our operations depend, in part, on how well we and our suppliers protect networks, equipment, information technology ("IT") systems and software against damage from a number of threats. We have entered into agreements with third parties for hardware, software, telecommunications and other services in connection with our operations. Our operations depend on the timely maintenance, upgrade and replacement of networks, equipment, IT systems and software. However, if we are unable or delayed in maintaining, upgrading or replacing our IT systems and software, the risk of a cybersecurity incident could materially increase. Any of these and other events could result in information system failures, delays and/or increases in capital expenses. The failure of information systems or a component of information systems could, depending on the nature of any such failure, adversely impact our reputation and results of operations.

In addition, targeted attacks on our systems (or on systems of third parties that we rely on), failure or non-availability of a key IT system or a breach of security measures designed to protect our IT systems could result in disruptions to our operations through delays or the corruption and destructions of our data, personal injury, property damage, loss of confidential information or financial or reputational risks. As the threat landscape is ever-changing, we must make continuous mitigation efforts, including: risk prioritized controls to protect against known and emerging threats; tools to provide automated monitoring and alerting; and backup and recovery systems to restore systems and return to normal operations. However, there can be no assurance that our ability to monitor for or mitigate cybersecurity risks will be fully effective, and we may fail to identify cybersecurity breaches or discover them in a timely way.

Any significant compromise or breach of our data security, whether external or internal, or misuse of data, could result in significant costs, lost sales, fines and lawsuits, as well as damage to our reputation. In addition, as the regulatory environment related to information security, data collection and use, and privacy becomes increasingly rigorous, with new and constantly changing requirements applicable to our business, compliance with those requirements could also result in additional costs. As cyber threats continue to evolve, we may be required to expend additional resources to continue to modify or enhance protective measures or to investigate and remediate any security vulnerabilities.

Our reputation could be adversely affected if our businesses, or third parties with whom we have a relationship, were to fail to comply with United States or foreign anti-corruption laws or regulations.

Some of our projects and new business may be conducted in countries where corruption has historically penetrated the economy to a greater extent than in the United States. It is our policy to comply, and to require our local partners and those with whom we do business to comply, with all applicable anti-bribery laws, such as the US Foreign Corrupt Practices Act, and with applicable local laws of the foreign countries in which we operate. Our reputation may be adversely affected if we were reported to be associated with corrupt practices or if we or our local partners failed to comply with such laws. Such damage to our reputation could adversely affect our ability to grow our business.

Energy regulation could adversely affect our revenue and costs of operations.

Our waste and energy services businesses are subject to extensive energy regulations by federal, state and foreign authorities. We cannot predict whether the federal, state or foreign governments will modify or adopt new legislation or regulations relating to the solid waste or energy industries. The economics, including the costs, of operating our facilities may be adversely affected by any changes in these regulations or in their interpretation or implementation or any future inability to comply with existing or future regulations or requirements.

If our businesses lose existing exemptions under the Federal Power Act, the economics and operations of our energy projects could be adversely affected, including as a result of rate regulation by the Federal Energy Regulatory Commission with respect to our output of electricity, which could result in lower prices for sales of electricity and increased compliance costs. In addition, depending on the terms of the project's power purchase agreement, a loss of our exemptions could allow the power purchaser to cease taking and paying for electricity under existing contracts. Such results could cause the loss of some or all contract revenue or otherwise impair the value of a project and could trigger defaults under provisions of the applicable project contracts and financing agreements. Defaults under such financing agreements could render the underlying debt immediately due and payable. Under such circumstances, we cannot assure that revenue received, the costs incurred, or both, in connection with the project could be recovered through sales to other purchasers.

Failure to obtain regulatory approvals could adversely affect our operations.

Our waste and energy services businesses are continually in the process of obtaining or renewing federal, state, local and foreign approvals required to operate our facilities. We may not always be able to obtain all required regulatory approvals, and we may not be able to obtain any necessary modifications to existing regulatory approvals or maintain all required regulatory approvals. If there is a delay in obtaining any required regulatory approvals or if we fail to obtain and comply with any required regulatory approvals, the operation of our facilities or the sale of electricity to third parties could be prevented, made subject to additional regulation or subject our businesses to additional costs or a decrease in revenue.

The energy industry is becoming increasingly competitive, and we might not successfully respond to these changes.

We may not be able to respond in a timely or effective manner to the changes resulting in increased competition in the energy industry in global markets. These changes may include deregulation of the electric utility industry in some markets, privatization of the electric utility industry in other markets and increasing competition in all markets. To the extent competitive pressures increase and the pricing and sale of electricity assumes more characteristics of a commodity business, the economics of our business may be subject to greater volatility and we might not successfully respond to these changes.

Future impairment charges could have a material adverse effect on our financial condition and results of operations.

In accordance with accounting guidance, we evaluate long-lived assets and goodwill for impairment on an annual basis and whenever events or changes in circumstances, such as significant adverse changes in regulation, business climate or market conditions, could potentially indicate the carrying amount may not be recoverable. Significant reductions in our expected revenue or cash flows for an extended period of time resulting from such events could result in future asset impairment charges, which could have a material adverse impact on our financial condition and results of operations.

We cannot be certain that our NOLs will continue to be available to offset our federal tax liability.

As of December 31, 2019, we had $198 million of net operating loss carryforwards (“NOLs”). NOLs offset our consolidated taxable income and will expire in various amounts, if not used, between 2033 and 2037. The NOLs are also used to offset income from certain grantor trusts that were established as part of the reorganization in 1990 of certain of our subsidiaries engaged in the insurance business and are administered by state regulatory agencies. As the administration of these grantor trusts concludes, taxable income could result, utilizing a portion of our NOLs and accelerating the date on which we may be otherwise obligated to pay incremental cash taxes.

Our insurance and contractual protections may not always cover lost revenue, increased expense or contractual liabilities.

Although our businesses maintain insurance, obtain warranties from vendors, require contractors to meet certain performance levels and, in some cases, pass risks we cannot control to the service recipient or output purchaser, the proceeds of such insurance, warranties, performance guarantees or risk sharing arrangements may not be adequate to cover lost revenue, increased expense or contractual liabilities.

We depend on our senior management and key personnel and we may have difficulty attracting and retaining qualified professionals.

Our future operating results depend to a large extent upon the continued contributions of key senior managers and personnel. In addition, we are dependent on our ability to attract, train, retain and motivate highly skilled employees. However, there is significant competition for employees with the requisite level of experience and qualifications. If we cannot attract, train, retain and motivate qualified personnel, we may be unable to compete effectively and our growth may be limited, which could have a material adverse effect on our business, results of operations, financial condition and prospects and our ability to fulfill our debt obligations.

Our controls and procedures may not prevent or detect all errors or acts of fraud.

Any disclosure controls and procedures or internal controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must consider the benefits of controls relative to their costs. Inherent limitations within a control system include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by an unauthorized override of the controls. While the design of any system of controls is to provide reasonable assurance of the effectiveness of disclosure controls, such design is also based in part upon certain assumptions about the likelihood of future events, and such assumptions, while reasonable, may not take into account all potential future conditions. Accordingly, because of the inherent limitations in a cost effective control system, misstatements due to error or fraud may occur and may not be prevented or detected.

Failure to maintain an effective system of internal controls over financial reporting may have an adverse effect on our stock price.

We have in the past discovered, and may potentially in the future discover, areas of internal control over financial reporting that may require improvement. For example, in our current period we have concluded that we did not maintain effective internal controls over financial reporting because, in our information technology general controls, we had deficiencies which constituted a material weakness in controls with respect to certain systems that support our financial reporting processes. Whenever such a control deficiency is determined to exist, we could incur significant costs in remediation efforts implementing measures designed to ensure that the control deficiencies contributing to a material weakness are remediated. If we are unable to assert that our internal control over financial reporting is effective now or in any future period, whether as a result of a newly- determined deficiency or because remediation efforts are ongoing, or if our independent auditors are unable to express an opinion on the effectiveness of our internal controls, we could lose investor confidence in the accuracy and completeness of our financial reports, which could have an adverse effect on our stock price.

Provisions of our certificate of incorporation, our credit facilities and our other corporate debt could discourage an acquisition of us by a third party.

Certain provisions of our credit facilities and our other corporate debt could make it more difficult or more expensive for a third party to acquire us. Upon the occurrence of certain transactions constituting a fundamental change, holders of our credit facilities and our other corporate debt will have the right to require Covanta Holding or Covanta Energy, as the case may be, to repurchase their corporate debt or repay the facilities, as applicable. In addition, provisions of our certificate of incorporation and bylaws, each as amended, could make it more difficult for a third party to acquire control of us. For example, our certificate of incorporation authorizes our board of directors to issue preferred stock without requiring any stockholder approval, and preferred stock could be issued as a defensive measure in response to a takeover proposal. All these provisions could make it more difficult for a third party to acquire us or discourage a third party from acquiring us even if an acquisition might be in the best interest of our stockholders.

Item 1B. *UNRESOLVED STAFF COMMENTS*

None.

Item 2. *PROPERTIES*

As of December 31, 2019, we owned, had equity investments in and/or operated 83 facilities, primarily in North America, consisting of 41 EfW operations, 14 transfer stations, 20 material processing facilities, four landfills (primarily for ash disposal), two wood waste (biomass) energy projects, one regional metals recycling facility and one ash processing facility (currently in start-up and testing phase). Projects that we own or lease are conducted at properties, which we also own or lease, aggregating approximately 1,047 acres, of which 682 acres are owned and 365 acres are leased. We lease approximately 104,000 square feet for our headquarters in Morristown, New Jersey. In addition, we own 83 acres of undeveloped land in California. We operate projects outside of North America through our equity method investments and have offices located in Dublin, Ireland, UK and China. Our principal projects are described above under *Item 1. Business.*

Item 3. *LEGAL PROCEEDINGS*

For information regarding legal proceedings, see *Item 8. Financial Statements And Supplementary Data — Note 17. Commitments and Contingencies*, which information is incorporated herein by reference.

Item 4. ***MINE SAFETY DISCLOSURES***

Not applicable.

PART II

Item 5. *MARKET FOR THE REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES*

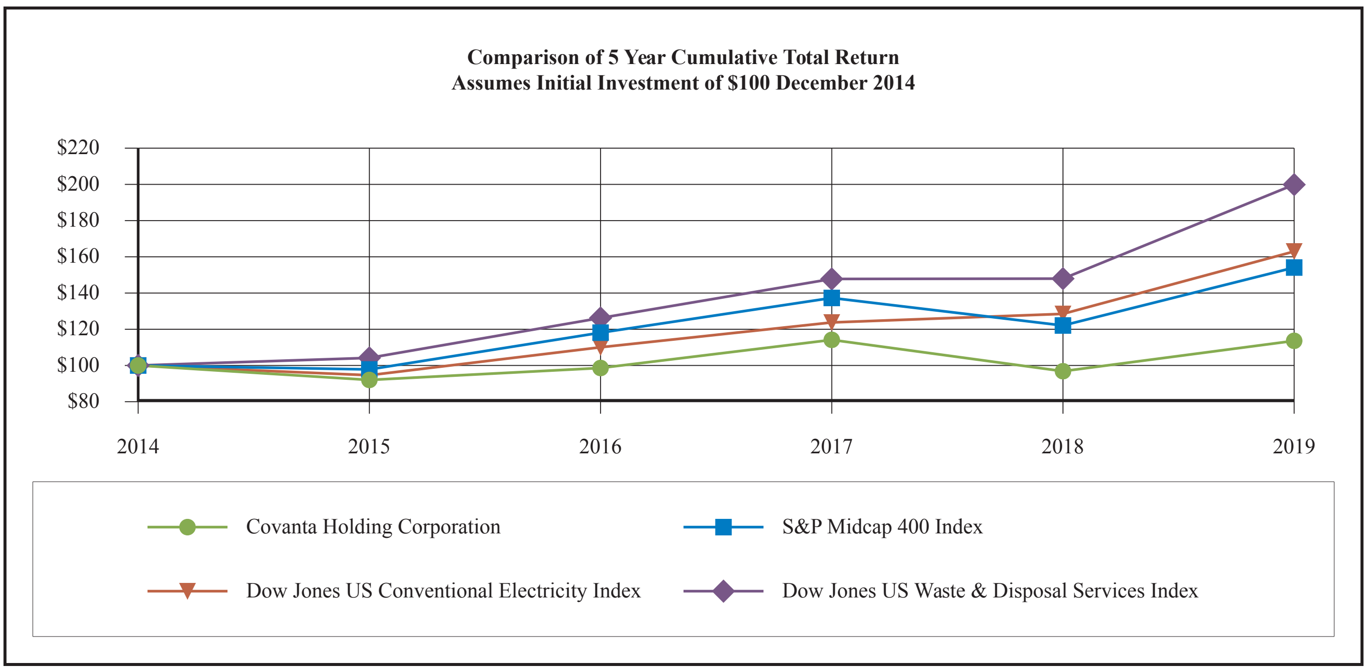
Our common stock is traded on the New York Stock Exchange under the symbol "CVA". On February 14, 2020, there were approximately 604 holders of record of our common stock.

Share Repurchases

Under our share repurchase program, common stock repurchases may be made in the open market, in privately negotiated transactions from time to time, or by other available methods, at management's discretion in accordance with applicable federal securities laws. The timing and amounts of any repurchases will depend on many factors, including our capital structure, the market price of our common stock and overall market conditions, and whether any restrictions then exist under our policies relating to trading in compliance with securities laws. As of December 31, 2019, the amount remaining under our currently authorized share repurchase program was $66 million. There were no repurchases made under our share repurchase program during the year ended December 31, 2019.

Performance Measurement Comparison

The following performance graph sets forth a comparison of the yearly percentage change in the Company's cumulative total stockholder return on common stock with the Standard and Poor's Midcap 400 Index*, the Dow Jones US Conventional Electricity Index**, and the Dow Jones US Waste & Disposal Services Index**. The foregoing cumulative total returns are computed assuming (a) an initial investment of $100, and (b) the reinvestment of dividends at the frequency which dividends were paid during the applicable years. The graph below reflects comparative information for the five fiscal years beginning with the close of trading on December 31, 2014 and ending December 31, 2019.



The stockholder return reflected above is not necessarily indicative of future performance.

* The Standard and Poor's Midcap 400 Index is a capitalization-weighted index designed to measure performance of the broad domestic economy through changes in the aggregate market value of the component stocks representing all major industries.
** The Dow Jones US Waste & Disposal Services Index and the Dow Jones US Conventional Electricity Index are maintained by Dow Jones & Company, Inc. As described by Dow Jones, the Dow Jones US Waste & Services Index consists of providers of pollution control and environmental services for the management, recovery and disposal of solid and hazardous waste materials, such as landfills and recycling centers. The Dow Jones US Conventional Electricity Index consists of companies generating and distributing electricity through the burning of fossil fuels such as coal, petroleum and natural gas, and through nuclear energy.

Item 6. ***SELECTED FINANCIAL DATA***

The selected financial information presented below should be read in conjunction with *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations* and *Item 8. Financial Statements and Supplementary Data*.

	Year Ended December 31,				
	2019	2018	2017	2016	2015
	(In millions, except per share amounts)				
Statements of Operations Data:					
Operating revenue	$ 1,870	$ 1,868	$ 1,752	$ 1,699	$ 1,645
Operating expense	$ 1,780	$ 1,805	$ 1,651	$ 1,590	$ 1,536
Operating income	$ 90	$ 63	$ 101	$ 109	$ 109
Net income (loss) (1)	$ 10	$ 152	$ 57	$ (4)	$ 69
Earnings (loss) per share: (1)					
Basic	$ 0.07	$ 1.17	$ 0.44	$ (0.03)	$ 0.52
Diluted	$ 0.07	$ 1.15	$ 0.44	$ (0.03)	$ 0.51
Weighted average common shares outstanding:					
Basic	131	130	130	129	132
Diluted	133	132	131	129	133
Cash dividend declared per share	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00

(1) The year ended December 31, 2017 includes the significant impact of the enactment of the Tax Cuts and Jobs Act. For further information see *Item. 1. Business and Item 8. Financial Statements And Supplementary Data — Note 9. Income Taxes.*

	As of December 31,				
	2019	2018	2017	2016	2015
	(In millions)				
Balance Sheet Data:					
Cash and cash equivalents	$ 37	$ 58	$ 46	$ 84	$ 94
Property, plant and equipment, net	$ 2,451	$ 2,514	$ 2,606	$ 3,024	$ 2,690
Assets held for sale(1)	$ 5	$ 2	$ 653	$ —	$ —
Total assets	$ 3,715	$ 3,843	$ 4,441	$ 4,284	$ 4,234
Long-term debt (incl. current portion)	$ 2,383	$ 2,342	$ 2,349	$ 2,252	$ 2,263
Project debt (incl. current portion)	$ 133	$ 152	$ 174	$ 383	$ 198
Liabilities held for sale(2)	$ 2	$ —	$ 540	$ —	$ —
Total liabilities	$ 3,339	$ 3,356	$ 4,014	$ 3,815	$ 3,594
Total stockholders' equity	$ 376	$ 487	$ 427	$ 469	$ 638

(1) Amounts as of December 31, 2019 and 2018 are included in Prepaid expenses and other current assets on the Consolidated Balance Sheets.
(2) Amounts as of December 31, 2019 and 2018 are included in Other liabilities on the Consolidated Balance Sheets.

Item 7. *MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS*

The terms "we," "our," "ours," "us," "Covanta" and "Company" refer to Covanta Holding Corporation and its subsidiaries; the term "Covanta Energy" refers to our subsidiary Covanta Energy, LLC and its subsidiaries.

OVERVIEW

The following discussion should be read in conjunction with our audited consolidated financial statements and the notes thereto included elsewhere in *Item 8. Financial Statements and Supplementary Data* of this Form 10-K. This discussion may contain forward-looking statements that anticipate results that are subject to uncertainty. We discuss in more detail various factors that could cause actual results to differ from expectations in *Item 1A. Risk Factors* in this Form 10-K.

For a discussion of our facilities, the energy-from-waste process and the environmental benefits of EfW, see *Item 1. Business.*

We have one reportable segment which is comprised of our entire operating business. For additional information on our reportable segment, see *Item 8. Financial Statements and Supplementary Data — Note 1. Organization and Summary of Significant Accounting Policies.*

For a discussion of key strategies and the execution thereof in 2019, see *Item 1. Business — Strategy* and *Execution on Strategy.*

General Business Conditions

See *Item 1. Business — Markets, Competition and Business Conditions* for a discussion of factors affecting business conditions and financial results.

RESULTS OF OPERATIONS

The comparability of the information provided below with respect to our revenue, expense and certain other items for periods during each of the years presented was affected by several factors. As outlined in *Item 1. Business - Execution on Strategy, Item 8. Financial Statements And Supplementary Data — Note 1. Organization and Summary of Significant Accounting Policies*, *Note 3. New Business and Asset Management* and *Note 4. Dispositions and Assets Held for Sale* our business development initiatives and acquisitions resulted in various transactions, which are reflected in comparative revenue and expense. These factors must be taken into account in developing meaningful comparisons between the periods compared below.

The Results of Operations discussion below compares our revenue, expense and certain other items for the years ended December 31, 2019 and 2018. For a discussion of the results for the years ended December 31, 2018 and 2017 please refer to *Part II- Item 7. Results of Operations in our Annual Report on Form 10-K for the year ended December 31, 2018.*

The following terms used within the Results of Operations discussion are defined as follows:

- "Organic growth": reflects the performance of the business on a comparable period-over-period basis, excluding the impacts of transactions and contract transitions.
- "Transactions": includes the impacts of acquisitions, divestitures, and the addition or loss of operating contracts.
- "Contract transitions": includes the impact of the expiration of: (a) long-term major waste and service contracts, most typically representing the transition to a new contract structure, and (b) long-term energy contracts.

RESULTS OF OPERATIONS — OPERATING INCOME

Year Ended December 31, 2019 vs. Year Ended December 31, 2018

	Year Ended December 31,		Variance Increase (Decrease)
	2019	2018	2019 vs 2018
	(In millions)		
OPERATING REVENUE:			
Waste and service revenue	$ 1,393	$ 1,327	$ 66
Energy revenue	329	343	(14)
Recycled metals revenue	86	95	(9)
Other operating revenue	62	103	(41)
Total operating revenue	1,870	1,868	2
OPERATING EXPENSE:			
Plant operating expense	1,371	1,321	50
Other operating expense	64	65	(1)
General and administrative expense	122	115	7
Depreciation and amortization expense	221	218	3
Impairment charges	2	86	(84)
Total operating expense	1,780	1,805	(25)
Operating income	$ 90	$ 63	$ 27

Operating Revenue

Waste and Service Revenue

	Year Ended December 31,		Variance
In millions:	2019	2018	2019 vs 2018
EfW tip fees	$ 638	$ 624	$ 14
EfW service fees	466	424	42
Environmental services	140	141	(1)
Municipal services	231	207	24
Other revenue	34	38	(4)
Intercompany	(116)	(107)	(9)
Total waste and service revenue	$ 1,393	$ 1,327	$ 66

	Year Ended December 31,		Variance
EfW facilities - Tons [(1)] (in millions):	2019	2018	2019 vs 2018
Tip fee - contracted	8.8	8.9	(0.1)
Tip fee - uncontracted	2.0	2.1	(0.1)
Service fee	10.7	9.5	1.2
Total Tons	21.5	20.5	1.0

(1) Includes solid tons only. Certain amounts may not total due to rounding.

For the twelve month comparative period, waste and service revenue increased by $66 million, primarily driven by $44 million of organic growth and the acquisition of two Palm Beach County EfW facility operating contracts in the third quarter of 2018, partially offset by $7 million related to service contract transitions. Within organic growth, EfW tip fee revenue increased by $28 million, with $31 million due to higher average revenue per ton, partially offset by lower volume, and EfW service fees increased by $13 million.

Energy Revenue

	Year Ended December 31,								Variance Increase (Decrease)	
	2019			2018			2019 vs 2018			
$ in millions:	Revenue (2)		Volume(2)(3)	Revenue (2)		Volume(2)(3)	Revenue		Volume	
Energy sales (1)	$	273		$	291		$	(18)		
Capacity		44			52			(8)		
Other revenue		12			—			12	—	
Total energy	$	329	6.4	$	343	6.5	$	(14)	(0.1)	

(1) Includes non-energy portion of wholesale load serving.
(2) Covanta share only. Represents the sale of electricity and steam based upon output delivered and capacity provided.
(3) Steam converted to MWh at an assumed average rate of 11 klbs of steam / MWh.
Certain amounts may not total due to rounding.

For the twelve month comparative period, energy revenue decreased by $14 million, driven by lower market pricing for energy and capacity ($16 million), a decrease in production at EfW facilities ($7 million), and the deconsolidation of the Dublin EfW facility ($5 million), partially offset by a net benefit from contract transitions of $7 million and new wholesale energy load serving revenue of $11 million.

Recycled Metal Revenue

	Year Ended December 31,							
	2019		2018		2019	2018	2019	2018
	Metal Revenue (in millions)				Tons Sold (in thousands) (1)		Tons Recovered (in thousands)	
Ferrous Metal	$	46	$	58	370	333	424	424
Non-Ferrous Metal		40		37	34	31	51	49
Total	$	86	$	95				

(1) Represents the portion of total volume that is equivalent to Covanta's share of revenue under applicable client revenue sharing arrangements.

For the twelve month comparative period, recycled metals revenue decreased $9 million primarily due to lower market pricing for ferrous material of $17 million, partially offset by higher volumes of ferrous material sold.

Other Operating Revenue

Other operating revenue decreased by $41 million for the twelve month comparative period, primarily due to lower construction revenue.

Operating Expense

Plant Operating Expense

	Year Ended December 31,				Variance	
In millions:	2019		2018		2019 vs 2018	
Plant maintenance (1)	$	308	$	299	$	9
All other		1,063		1,023		40
Plant operating expense	$	1,371	$	1,321	$	50

(1) Plant maintenance costs include our internal maintenance team and non-facility employee costs for facility scheduled and unscheduled maintenance and repair expense.
Certain amounts may not total due to rounding.

Plant operating expenses increased by $50 million for the twelve month comparable period, primarily due to new expenses related to wholesale load servicing, the acquisition of two Palm Beach County EfW facility operating contracts in the third quarter of 2018, and overall operating cost escalation in our existing operations.

Other Operating Expense

Other operating expenses decreased by $1 million for the twelve month comparable period, with lower construction expense of $40 million largely offset by $4 million of closure costs related to our Warren facility, which was shut down in March 2019, and lower insurance recoveries of $35 million, which are recorded as a contra expense, as compared to the prior year.

General and Administrative Expense

General and administrative expenses increased by $7 million for the twelve month comparative period primarily due to increases in compensation expense.

Impairment Charges

During the year ended December 31, 2018, we identified an indicator of impairment associated with certain of our EfW facilities where the expectation was that, more likely than not, the assets would not be operated through their previously estimated economic useful lives. We performed recoverability tests to determine if these facilities were impaired as of the respective balance sheet date. As a result, based on expected cash flows utilizing Level 3 inputs, we recorded a non-cash impairment charge for the year ended December 31, 2019 and 2018 of $2 million and $86 million, respectively, to reduce the carrying value of the assets to their estimated fair value.

RESULTS OF OPERATIONS — NON-OPERATING INCOME ITEMS

Years Ended December 31, 2019 and 2018

Other (Expense) Income

	Year Ended December 31,		Variance Increase (Decrease)
	2019	2018	2019 vs 2018
	(In millions)		
Interest expense	$ (143)	$ (145)	$ 2
Gain on sale of business	49	217	(168)
Loss on extinguishment of debt	—	(15)	15
Other income (expense), net	1	(3)	4
Total other (expense) income	$ (93)	$ 54	$ (147)

During the year ended December 31, 2019, we recorded a $56 million gain related to the Rookery South Energy Recovery Facility development project and an $11 million loss related to the divestiture of our Springfield and Pittsfield EfW facilities.

During the year ended December 31, 2018, we recorded a $7 million gain on the sale of our equity interests in a hydroelectric facility, a $204 million gain on the sale of 50% of our Dublin EfW to our joint venture with GIG and a $6 million gain on the sale of our remaining interests in China. For additional information see *Item 1. Financial Statements — Note 3. New Business and Asset Management.*

During the year ended December 31, 2018, we recorded a loss on extinguishment of debt related to our tax-exempt bond refinancing comprised of $12 million related to the redemption of our 2022 Senior Notes and $3 million related to the refinancing our tax-exempt bonds related to certain of our facilities in New York and Massachusetts.

Income Tax (Benefit) Expense:

	Year Ended December 31,		Variance Increase (Decrease)
	2019	2018	2019 vs 2018
	(In millions, except percentages)		
Income tax benefit	$ (7)	$ (29)	$ 22
Effective income tax rate	264%	(25)%	

The increase in the effective tax rate for the year ended December 31, 2019, compared to the year ended December 31, 2018 is primarily due to the $45 million non-taxable gain in 2019 resulting from the formation of the Rookery joint venture as compared to the $206 million non-taxable gain on the sale of 50% of our interests in Dublin EfW to GIG in 2018.

For additional information see *Item 8. Financial Statements And Supplementary Data — Note 9. Income Taxes.*

Net Income (Loss) and Earnings Per Share:

	Year Ended December 31,		Variance Increase (Decrease)
	2019	2018	2019 vs 2018
	(In millions, except per share amounts)		
Net Income:	$ 10	$ 152	$ (142)
Earnings Per Share:			
Weighted Average Shares:			
Basic:	131	130	1
Diluted:	133	132	1
Earnings Per Share:			
Basic:	$ 0.07	$ 1.17	$ (1.10)
Diluted:	$ 0.07	$ 1.15	$ (1.08)
Cash Dividend Declared Per Share [1]	$ 1.00	$ 1.00	$ —

(1) For information on dividends declared to shareholders and share repurchases, see *Liquidity and Capital Resources* below.

Supplementary Financial Information — Adjusted EBITDA (Non-GAAP Discussion)

To supplement our results prepared in accordance with GAAP, we use the measure of adjusted earnings before interest taxes depreciation and amortization ("Adjusted EBITDA"), which is a non-GAAP financial measure as defined by the SEC. This non-GAAP financial measure is described below, and is not intended as a substitute and should not be considered in isolation from measures of financial performance prepared in accordance with GAAP. In addition, our use of non-GAAP financial measures may be different from non-GAAP financial measures used by other companies, limiting their usefulness for comparison purposes. The presentation of Adjusted EBITDA is intended to enhance the usefulness of our financial information by providing a measure which management internally uses to assess and evaluate the overall performance of its business and those of possible acquisition candidates, and highlight trends in the overall business.

We use Adjusted EBITDA to provide additional ways of viewing aspects of operations that, when viewed with the GAAP results provide a more complete understanding of our core business. As we define it, Adjusted EBITDA represents earnings before interest, taxes, depreciation and amortization, as adjusted for additional items subtracted from or added to net income including the effects of impairment losses, gains or losses on sales, dispositions or retirements of assets, adjustments to reflect the Adjusted EBITDA from our unconsolidated investments, adjustments to exclude significant unusual or non-recurring items that are not directly related to our operating performance plus adjustments to capital type expenses for our service fee facilities in line with our credit agreements. We adjust for these items in our Adjusted EBITDA as our management believes that these items would distort their ability to efficiently view and assess our core operating trends. As larger parts of our business are conducted through unconsolidated investments, we adjust EBITDA for our proportionate share of the entity's depreciation and amortization, interest expense, tax expense and other adjustments to exclude significant unusual or non-recurring items that are not directly related to the entity's operating performance, in order to improve comparability to the Adjusted EBITDA of our wholly owned entities. We do not have control, nor have any legal claim to the portion of our unconsolidated investees' revenues and expenses allocable to our joint venture partners. As we do not control, but do exercise significant influence, we account for these unconsolidated investments in accordance with the equity method of accounting. Net income (losses) from these investments are reflected within our consolidated statements of operations in Equity in net income from unconsolidated investments.

Adjusted EBITDA should not be considered as an alternative to net income or cash flow provided by operating activities as indicators of our performance or liquidity or any other measures of performance or liquidity derived in accordance with GAAP.

In order to provide a meaningful basis for comparison, we are providing information with respect to our Adjusted EBITDA for the years ended December 31, 2019 and 2018, respectively, reconciled for each such period to net income and cash flow provided by operating activities, which are believed to be the most directly comparable measures under GAAP. The following is a reconciliation of Net income to Adjusted EBITDA (in millions):

	Year Ended December 31,	
Adjusted EBITDA	**2019**	**2018**
Net income	$ 10	$ 152
Depreciation and amortization expense	221	218
Interest expense	143	145
Income tax benefit	(7)	(29)
Impairment charges [(a)]	2	86
Net gain on sale of businesses and investments [(b)]	(49)	(217)
Loss on extinguishment of debt [(c)]	—	15
Property insurance recoveries, net	—	(18)
Loss on asset sales	4	1
Capital type expenditures at client owned facilities [(e)]	34	37
Accretion expense	2	2
Business development and transaction costs	2	3
Severance and reorganization costs [(d)]	13	5
Non-cash compensation expense	25	24
Adjustments to reflect Adjusted EBITDA from unconsolidated investments	25	23
Other [(f)]	3	10
Adjusted EBITDA	$ 428	$ 457

(a) During the year ended December 31, 2018, we identified indicators of impairment associated with certain of our EfW facilities and recorded a non-cash impairment charge of $86 million, to reduce the carrying value of the facilities to their estimated fair value.

(b) During the year ended December 31, 2019, we recorded a $56 million gain related to the Rookery South Energy Recovery Facility development project and an $11 million loss related to the divestiture of our Springfield and Pittsfield EfW facilities.

During the year ended December 31, 2018, we recorded a $7 million gain on the sale of our equity interests in Koma Kulshan, a $204 million gain on the sale of 50% of our Dublin project to our joint venture with the Green Investment Group Limited and a $6 million gain on the sale of our remaining interests in China.

(c) During the year ended December 31, 2018, we recorded a $3 million loss related to the refinancing of our tax-exempt bonds and a $12 million loss related to the redemption of our 6.375% Senior Notes due 2022.

(d) During the year ended December 31, 2019, we recorded $13 million of costs related to our ongoing asset portfolio optimization efforts, early retirement program, and certain organizational restructuring activities.

(e) Adjustment for capital equipment related expenditures at our service fee operated facilities which are capitalized at facilities that we own.

(f) Includes certain other items that are added back under the definition of Adjusted EBITDA in Covanta Energy, LLC's credit agreement.

The following is a reconciliation of cash flow provided by operating activities to Adjusted EBITDA (in millions):

	Year Ended December 31,	
	2019	2018
Cash flow provided by operating activities	$ 226	$ 238
Cash paid for interest, net of capitalized interest	152	136
Cash paid for taxes	5	2
Capital type expenditures at service fee operated facilities [a]	34	37
Equity in net income from unconsolidated investments	6	6
Adjustments to reflect Adjusted EBITDA from unconsolidated investments	25	23
Dividends from unconsolidated investments	(9)	(13)
Adjustment for working capital and other	(11)	28
Adjusted EBITDA	$ 428	$ 457

(a) See *Adjusted EBITDA - Note (f)* above.

For additional discussion related to management's use of non-GAAP measures, see *Liquidity and Capital Resources — Supplementary Financial Information — Free Cash Flow (Non-GAAP Discussion)* below.

BUSINESS OUTLOOK

In 2020 and beyond, we expect that our financial results will be affected by several factors, including: market prices, contract transitions, new contracts, new project development and construction, acquisitions, and the organic growth of earnings and cash flow generated by our existing assets. In order to drive organic growth, we will be focused on growing our environmental services and profiled waste businesses, enhanced metals recovery and centralized processing, ash management, continuous improvement using Lean Six Sigma concepts, and managing facility production and operating costs.

In 2020, the following specific factors are expected to impact our financial results as compared to 2019:

Positive factors include:

- Improving waste tip fee prices and growth in volumes of profiled waste;
- Increased volumes of waste processed, metals recovered and electricity sold; and
- The full year impact of the operations of the New York City Marine Transfer Station

Negative factors include:

- The impact of lower market prices for commodities including ferrous scrap and electricity;
- Increasing wages and benefits to support growth throughout our business; and
- A higher level of planned maintenance capital expenditures

In December 2019, a key subcontractor performing civil engineering work on our Earls Gate project announced it was experiencing financial difficulties and had entered administration (a UK proceeding similar to US reorganization). Our primary contractor has signed an agreement to take over performance of this subcontractor's scope of work. Although this may cause delays in the construction of the Earls Gate project, at this time we do not anticipate a material financial or other impact related to this event.

LIQUIDITY AND CAPITAL RESOURCES

Our principal sources of liquidity are our unrestricted cash and cash equivalents, cash flow generated from our ongoing operations, and unutilized capacity under our Revolving Credit Facility, which we believe will allow us to meet our liquidity needs. Our business is capital intensive and our ability to successfully implement our strategy is, in part, dependent on the continued availability of capital on desirable terms. For additional information regarding our credit facilities and other debt, see *Item 8. Financial Statements And Supplementary Date - Note 15. Consolidated Debt.*

We expect to utilize a combination of cash flows from operations, borrowings under our Revolving Credit Facility, and other financing sources, as necessary, to fund growth investments in our business.

In 2020, we expect to generate net cash from operating activities which alone may not meet all of our cash requirements including funding capital expenditures to maintain our existing assets and paying our ongoing dividends to shareholders. We would utilize our Revolving Credit Facility to cover any shortfall. See *Results of Operations - Business Outlook* above for discussion of the factors impacting our 2020 business outlook.

We generally intend to refinance our debt instruments prior to maturity with like-kind financing in the bank and/or debt capital markets in order to maintain a capital structure comprised primarily of long-term debt, which we believe appropriately matches the long-term nature of our assets and contracts.

The loan documentation governing the Credit Facilities contains various affirmative and negative covenants, as well as financial maintenance covenants (financial ratios), that limit our ability to engage in certain types of transactions. We were in compliance with all of the covenants under the Credit Facilities as of December 31, 2019. Further, we do not anticipate our existing debt covenants to restrict our ability to meet future liquidity needs.

As of December 31, 2019, Covanta Energy had $1.3 billion in senior secured credit facilities consisting of a $900 million revolving credit facility (the “Revolving Credit Facility”) and a $400 million term loan (the “Term Loan”) both expiring August 2023 (collectively referred to as the "Credit Facilities"). As of December 31, 2019, our potential sources of near-term liquidity included (in millions):

	As of December 31, 2019	
Cash	$	37
Unutilized capacity under the Revolving Credit Facility		489
Total cash and unutilized capacity under the Revolving Credit Facility	$	526

In addition, as of December 31, 2019, we had restricted cash of $26 million, of which $2 million was designated for future payment of project debt principal. Restricted funds held in trust are primarily amounts received and held by third-party trustees relating to certain projects we own. We generally do not control these accounts and these funds may be used only for specified purposes. For additional information on restricted funds held in trust, see *Item 8. Financial Statements And Supplementary Data — Note 1. Organization and Summary of Significant Accounting Policies - Restricted Funds Held in Trust.*

Our primary future cash requirements will be to fund capital expenditures to maintain our existing businesses, service our debt, invest in the growth of our business, and return capital to our shareholders. We believe that our liquidity position and ongoing cash flow from operations will be sufficient to finance these requirements.

The following summarizes our key financing activities completed during the year ended December 31, 2019:

- In December 2019, we entered into an agreement whereby we will regularly sell certain receivables on a revolving basis to third-party financial institutions (the “Purchasers”) up to an aggregate purchase limit of $100 million (the “Receivables Purchase Agreement or “RPA”). Transfers under the RPA meet the requirements to be accounted for as sales in accordance with the *Transfers and Servicing* topic of FASB Accounting Standards Codification. We receive a discounted purchase price for each receivable sold under the RPA and will continue to service and administer the subject receivables.

- In August 2019, we entered into a loan agreement with the Pennsylvania Economic Development Financing Authority under which they agreed to issue $50 million in aggregate principal amount of tax-exempt Solid Waste Disposal Bonds for the purpose of funding qualified capital expenditures at certain of our facilities in Pennsylvania and paying related costs of issuance.

- To reduce our exposure to fluctuations in cash flows due to changes in variable interest rates paid on our direct borrowings under the Credit Facilities, during the year ended December 31, 2019, we entered into pay-fixed, receive-variable swap agreements on $150 million notional amount of our variable rate debt under the Credit Facilities.

Share Repurchases and Dividends

For additional information on share repurchases see *Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities* and *Item 8. Financial Statements And Supplementary Data — Note 5. Equity and Earnings Per Share ("EPS").*

Sources and Uses of Cash Flow

Year Ended December 31, 2019 vs. Year Ended December 31, 2018

Net cash provided by operating activities for the year ended December 31, 2019 decreased by $12 million from the prior year period primarily attributable to the payment of our accrued expenses relating to the settlement of the Durham York matter as discussed in *Item 8. Financial Statements — Note 17. Commitments and Contingencies* and the prepayment of interest due in the first quarter of 2020, offset by the proceeds from the sale of a portion of our accounts receivable as discussed in *Item 8. Financial Statements — Note 10. Accounts Receivable Securitization.*

Net cash used in investing activities for the year ended December 31, 2019 increased by $6 million from the prior year period.

Net cash used in investing activities for the year ended December 31, 2019 of $145 million primarily consisted of the following:

- $158 million for property, plant and equipment, including $115 million for maintenance capital expenditures and $41 million for organic growth; offset by
- $22 million cash received upon the sale of a portion of our interests in the construction phase Rookery EfW facility to our joint venture partner GIG.

Net cash used in investing activities for the year ended December 31, 2018 of $139 million primarily consisted of the following:

- $206 million for property, plant and equipment, including $143 million for maintenance capital expenditures and $59 million for organic growth; and
- $46 million for the acquisition of the Palm Beach Resource Recovery Corporation; offset by
- $98 million cash received upon the sale of a portion of our Dublin EfW facility to our joint venture partner GIG.

For additional information on the above acquisitions and dispositions refer to *Item 8. Financial Statements — Note 3. New Business and Asset Management* and *Note 4. Dispositions and Assets Held for Sale.*

Net cash used in financing activities for the year ended December 31, 2019 decreased by $67 million from the prior year period.

Net cash used in financing activities for the year ended December 31, 2019 of $122 million primarily consisted of the following:

- $134 million of dividends paid to shareholders; and
- $29 million of net repayments on our Revolving Credit Facility; and
- $18 million of repayments of project debt; offset by
- $50 million of proceeds from tax-exempt bonds; and
- $30 million of proceeds from equipment financing arrangements.

Net cash used in financing activities for the year ended December 31, 2018 of $189 million primarily consisted of the following:

- $233 million of net repayments on our Revolving Credit Facility;
- $134 million dividends paid to shareholders; and
- $23 million of repayments of project debt; partially funded by
- Approximately $200 million of net proceeds from the refinancing of Covanta Energy's previous $200 million Term Loan with a new $400 million Term Loan; and
- $30 million of proceeds from the issuance of tax-exempt bonds.

For additional information on the above financing transactions refer to *Item 8. Financial Statements — Note 15. Consolidated Debt.* For a discussion of the sources and uses of cash flow for the years ended December 31, 2018 and 2017 please refer to *Part II-Item 7. Results of Operations in our Annual Report on Form 10-K for the year ended December 31, 2018.*

Supplementary Financial Information — Free Cash Flow (Non-GAAP Discussion)

To supplement our results prepared in accordance with GAAP, we use the measure of Free Cash Flow which is a non-GAAP measure as defined by the SEC. This non-GAAP financial measure is not intended as a substitute and should not be considered in isolation from measures of liquidity prepared in accordance with GAAP. In addition, our use of Free Cash Flow may be different from similarly identified non-GAAP measures used by other companies, limiting its usefulness for comparison purposes. The presentation of Free Cash Flow is intended to enhance the usefulness of our financial information by providing a measure which management internally uses to assess and evaluate the overall performance of its business and those of possible acquisition candidates, and highlight trends in the overall business.

We use the non-GAAP financial measures of Free Cash Flow as criteria of liquidity and performance-based components of employee compensation. Free Cash Flow is defined as cash flow provided by operating activities, less maintenance capital expenditures, which are capital expenditures primarily to maintain our existing facilities. We use Free Cash Flow as a measure of liquidity to determine amounts we can reinvest in our core businesses, such as amounts available to make acquisitions, invest in construction of new projects, make principal payments on debt, or return capital to our shareholders through dividends and/or stock repurchases. For additional discussion related to management's use of non-GAAP measures, see *Results of Operations — Supplementary Financial Information — Adjusted EBITDA (Non-GAAP Discussion)* above.

In order to provide a meaningful basis for comparison, we are providing information with respect to our Free Cash Flow for the years ended December 31, 2019 and 2018, reconciled for each such period to cash flow provided by operating activities, which we believe to be the most directly comparable measure under GAAP.

The following is a reconciliation of Net cash provided by operating activities to Free Cash Flow (in millions):

	Year Ended December 31,	
	2019	2018
Net cash provided by operating activities	$ 226	$ 238
Add: Changes in restricted funds - operating [(a)]	20	4
Less: Maintenance capital expenditures [(b)]	(106)	(142)
Free Cash Flow	$ 140	$ 100

(a) Adjustment for the impact of the adoption of ASU 2016-18 effective January 1, 2018. As a result of adoption, the statement of cash flows explains the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Therefore, changes in restricted funds are eliminated in arriving at net cash, cash equivalents and restricted funds provided by operating activities.

(b) Purchases of property, plant and equipment are also referred to as capital expenditures. Capital expenditures that primarily maintain existing facilities are classified as maintenance capital expenditures.

The following table provides the components of total purchases of property, plant and equipment (in millions):

	Year Ended December 31,	
	2019	2018
Maintenance capital expenditures	$ (106)	$ (142)
Net maintenance capital expenditures paid but incurred in prior periods	(9)	(1)
Capital expenditures associated with construction of Dublin EfW facility	—	(22)
Capital expenditures associated with organic growth initiatives	(22)	(24)
Capital expenditures associated with the New York City MTS contract	(19)	(13)
Total capital expenditures associated with growth investments [(c)]	(41)	(59)
Capital expenditures associated with property insurance events	(2)	(4)
Total purchases of property, plant and equipment	$ (158)	$ (206)

(c) Total growth investments represents investments in growth opportunities, including organic growth initiatives, technology, business development, and other similar expenditures.

Capital expenditures associated with growth investments	(41)	(59)
UK business development projects	(3)	(5)
Investment in equity affiliate	(14)	(16)
Asset and business acquisitions, net of cash acquired	2	(50)
Total growth investments	(56)	(130)

Available Sources of Liquidity

Cash and Cash Equivalents

Cash and cash equivalents include all cash balances and highly liquid investments having maturities of three months or less from the date of purchase. These short-term investments are stated at cost, which approximates fair value. Balances held by our international subsidiaries are not generally available for near-term liquidity in our domestic operations.

	As of December 31,	
	2019	2018
	(in millions)	
Domestic	$ 17	$ 19
International	20	39
Total Cash and Cash Equivalents	$ 37	$ 58

Credit Facilities

As of December 31, 2019, Covanta Energy's senior secured credit facilities consist of a $900 million revolving credit facility (the "Revolving Credit Facility") and a $385 million term loan (the "Term Loan") both expiring 2023 (collectively referred to as the "Credit Facilities"). For a detailed description of the terms of the Credit Facilities, see *Item 8. Financial Statements And Supplementary Data — Note 15. Consolidated Debt.*

Consolidated Debt

The face value of our consolidated debt is as follows (in millions):

	As of December 31, 2019	As of December 31, 2018
Corporate Debt:		
Revolving credit facility	$ 183	$ 212
Term loan due	385	395
Senior notes	1,200	1,200
Tax-exempt bonds	544	494
Equipment financing arrangements	85	59
Finance leases(1)	6	5
Total corporate debt (including current portion)	$ 2,403	$ 2,365
Project Debt:		
Domestic project debt - service fee facilities	$ 47	$ 58
Domestic project debt - tip fee facilities	—	3
Union County EfW facility finance lease	84	89
Total project debt (including current portion)	131	150
Total Debt Outstanding	$ 2,534	$ 2,515

(1) Excludes Union County EfW Facility finance lease which is presented within project debt in our consolidated balance sheets.

For a detailed description of the terms of the debt instruments noted in the table above, see *Item 8. Financial Statements And Supplementary Data — Note 15. Consolidated Debt.* The loan documentation governing the Credit Facilities contains various affirmative and negative covenants, as well as financial maintenance covenants, that limit our ability to engage in certain types of transactions.

Contractual Obligations

The following table summarizes our gross contractual obligations including project debt, leases and other obligations as of December 31, 2019.

		Payments Due by Period			
(In millions)	**Total**	**2020**	**2021 and 2022**	**2023 and 2024**	**2025 and Beyond**
Project debt (1)	$ 47	$ 2	$ 4	$ 4	$ 37
Long-term debt (1)	2,312	10	20	973	1,309
Equipment financing arrangements (1)	85	7	14	15	49
Finance leases(2)	90	7	14	15	54
Uncertainty in income tax obligations (3)	40	1	1	15	23
Interest payments	1,285	139	274	217	655
Operating leases	68	8	15	12	33
Retirement plan obligations (4)	2	—	—	1	1
Total obligations	$ 3,929	$ 174	$ 342	$ 1,252	$ 2,161

(1) For a detailed description of the terms of our debt instruments, see *Item 8. Financial Statements And Supplementary Data — Note 15. Consolidated Debt*.

(2) For a detailed description of the terms of our debt instruments, see *Item 8. Financial Statements And Supplementary Data — Note 16. Leases.*

(3) Accounting for uncertainty in income tax obligations is based upon the expected date of settlement taking into account all of our administrative rights including possible litigation.

(4) Retirement plan obligations are based on actuarial estimates for our non-qualified pension plan obligations and post-retirement plan obligations only as of December 31, 2019.

Other Commitments

Other commitments as of December 31, 2019 were as follows (in millions):

Letters of credit issued under the Revolving Credit Facility	$ 228
Letters of credit - other	40
Surety bonds	137
Total other commitments — net	$ 405

We have issued or are party to performance guarantees and related contractual obligations undertaken mainly pursuant to agreements to construct and/or operate certain energy-from-waste facilities. To date, we have not incurred material liabilities under our guarantees.

For additional information on other commitments, see *Item 8. Financial Statements And Supplementary Data — Note 17. Commitments and Contingencies - Other Matters.*

Other Factors Affecting Liquidity

Our capital structure includes obligations with various maturity dates. Depending upon market conditions and general business requirements at the time we refinance these obligations, our choice of refinancing structure could materially increase or decrease our annual cash interest expense in future periods.

A substantial rise in the price of power may require us to post additional collateral, in the form of cash or letters of credit, to support hedging arrangements entered into under our energy risk management program. Such collateral posting requirements have been immaterial to date. We only enter into hedging transactions related to physical power generation, therefore we expect that any increase in obligations to hedge counterparties resulting from a rise in power prices would effectively be offset by corresponding increases in physical power sales, and as such we believe that any resulting collateral requirements would not have a material effect on our financial condition.

Insurance Coverage

We periodically review our insurance programs to ensure that our coverage is appropriate for the risks associated with our business. We have obtained insurance for our employees, assets and operations that provide coverage for what we believe are probable maximum losses, subject to self-insured retentions, policy limits and premium costs which we believe to be appropriate. However, the insurance obtained does not cover us for all possible losses, and coverage available in the market may change over time.

Off-Balance Sheet Arrangements

We have investments that are accounted for under the equity method and therefore we do not consolidate the financial information of those companies.

Supplemental Information on Unconsolidated Non-Recourse Project Debt

Below is a summary of our proportion of non-recourse project debt held by unconsolidated equity investments as of December 31, 2019 (in millions):

	Total Project Debt		Percentage Ownership	Proportionate Unconsolidated Project Debt		Project Stage
Dublin EfW (Ireland) (1)	$	447	50%	$	224	Operational
Earls Gate (UK) (2)		31	25%		8	Under construction
Rookery (UK) (3)		43	40%		17	Under construction
Zhao County EfW (China) (4)		—	26%		—	Under construction
Total	$	521		$	249	

(1) We have a 50% indirect ownership of Dublin EfW, through our 50/50 joint venture with GIG, Covanta Europe Assets Ltd.

(2) We have a 25% indirect ownership of Earls Gate, through our 50/50 joint venture with GIG, Covanta Green Jersey Assets Ltd., which owns 50% of Earls Gate. The total estimated project cost is £210 million ($277 million), £147 million ($194 million) is financed through non-recourse project-based debt.

(3) We have a 40% indirect ownership of Rookery through our 50/50 joint venture with GIG, Covanta Green UK Ltd. The total estimated project cost is £457 million ($603 million), £310 million ($409 million) is financed through non-recourse project-based debt.

(4) We have a 26% interest in Zhao County through our venture with Longking Energy Development Co. Ltd. The total estimated project cost is RMB 650 million ($93 million), RMB 455 million ($65 million) is financed through non-recourse project debt.

For additional information on our unconsolidated equity investments see *Item 8. Financial Statements And Supplementary Data — Note 3. New Business and Asset Management* and *Note 11. Equity Method Investments*.

DISCUSSION OF CRITICAL ACCOUNTING POLICIES AND ESTIMATES

In preparing our consolidated financial statements in accordance with GAAP, we are required to use judgment in making estimates and assumptions that affect the amounts reported in our consolidated financial statements and related notes. We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances. These estimates form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Many of our critical accounting policies are subject to significant judgments and uncertainties that could potentially result in materially different results under different conditions and assumptions. Future events rarely develop exactly as forecast, and the best estimates routinely require adjustment.

Policy	Judgments and estimates	Effect if actual results differ from assumptions
Revenue and Expense Recognition The Company recognizes revenue in accordance with the ASC 606, Revenue from Contracts with Customers. The core principle of ASC 606 is that an entity will recognize revenue at an amount that reflects the consideration to which the entity expects to be entitled in exchange for transferring goods or services to a customer. Revenue is recognized by applying the five steps described below: Step 1: Identify the contract(s) with a customer. Step 2: Identify the performance obligations in the contract. Step 3: Determine the transaction price. Step 4: Allocate the transaction price to the performance obligation in the contract. Step 5: Recognize revenue when (or as) the entity satisfies a performance obligation.	When a performance obligation is satisfied over time, the output or input method may be used to determine an appropriate method of progress. The Output method recognizes revenue on the basis of direct measurements of the value to the customer of the goods or services transferred to date relative to the remaining goods or services promised under the contract. The input method utilizes the entities inputs towards the satisfaction of a performance obligation (for example, costs incurred). Both methods may include estimates within the transaction price, contracts with customers may contain different types of variable consideration that we estimate through probability based approaches. There are certain constraining factors relating to Variable consideration that may preclude us from booking revenue in order to prevent over estimating revenue. Determining whether a factor is constrained requires judgment.	There is a degree of uncertainty that exists in determining the variable component of consideration in a contract. A significant revenue reversal is not expected but amounts recognized for revenue are adjusted based on actual performance obligations delivered which will cause fluctuations in operating income recognized. Further estimates may change on long term construction contracts based on better information becoming available which can cause fluctuations in revenue and operating income.
Purchase Accounting We allocate acquisition purchase prices to identified tangible and intangible assets acquired and liabilities assumed based on their estimated fair values at the dates of acquisition, with any residual amounts allocated to goodwill. The fair value estimates used reflect our best estimates for the highest and best use by market participants.	These estimates are subject to uncertainties and contingencies. For example, we use the discounted cash flow method to estimate the value of many of our assets, which entails developing projections of future cash flows.	If the cash flows from the acquired net assets differ significantly from our estimates, the amounts recorded could be subject to impairments. Furthermore, to the extent we change our initial estimates of the remaining useful life of the assets or liabilities, future depreciation and amortization expense could be impacted.

Policy	Judgments and estimates	Effect if actual results differ from assumptions
Equity Method Investments We evaluate our equity investments to determine if we have the ability to exercise significant influence over the entity but not control, generally assumed to be 20%-50% ownership. Under the equity method, original investments are recorded at cost and adjusted by our share of earnings or losses of these companies. Distributions received from the investee reduce our carrying value of the investment and are recorded in the consolidated statements of cash flows using the cumulative earnings approach.	The determination and degree of our ability to control, or exert significant influence over, an entity involves the use of judgment. The consolidation guidance requires qualitative and quantitative analysis to determine whether our involvement, through holding interests directly or indirectly in an entity, would give us the ability to exercise significant influence over an entity but not control.	Subsequent changes to the interests of the entity through equity ownership levels or otherwise may require a reassessment of our conclusions of whether we have the ability to exercise significant influence over the entity but not control. If upon a reassessment event we were determined to control the entities, consolidation would be required. Summarized financial information of equity method investments is included in *Item 8. Financial Statements And Supplementary Data — Note 11. Equity Method Investments.*
Long-lived Assets Our long-lived assets include property, plant and equipment; waste, service and energy contracts; amortizable intangible assets; and other assets. We evaluate the recoverability of the long-lived assets when there are indicators of possible impairment. Such indicators may include a decline in market, new regulation, recurring or expected operating losses, change in business strategy, or other changes that would impact the use or benefit received from the assets. The assessment is performed by grouping the long-lived assets at the lowest level of identifiable cash flows for the related assets or group of assets (such as the facility level). Initially the carrying value of the asset or asset group is compared to its undiscounted expected future cash flows. If the carrying value is in excess of the undiscounted cash flows, the carrying value is then compared to the fair value. Fair value may be estimated based upon the discounted cash flows, market or replacement cost methods based on the assumptions of a third-party market participant. Impairment is recognized if the fair value is less than the carrying value.	Our judgments regarding the existence of impairment indicators are based on regulatory factors, market conditions, anticipated cash flows and operational performance of our assets. When determining the fair value of our asset groupings for impairment assessments, we make assumptions regarding their fair values which are dependent on estimates of future cash flows, discount rates, and other factors.	Future events or changes in circumstances may occur that require another assessment in future periods based on cash flows and discount rates in effect at that time.

Policy	Judgments and estimates	Effect if actual results differ from assumptions
Goodwill As of December 31, 2019, we had $321 million of goodwill recorded in our one reportable segment, which is comprised of two reporting units, North America EfW and CES (see *Item 8. Financial Statements And Supplementary Data — Note 14. Intangible Assets and Goodwill)*. We evaluate our goodwill annually and when an event occurs or circumstances change that could reduce the fair value of a reporting unit below its carrying value. We have the option to perform our initial assessment over the possible impairment of goodwill either qualitatively or quantitatively. Under the qualitative assessment, consideration is given to both external factors (including macroeconomic and industry conditions) and our own internal factors (including internal costs, recent financial performance, management, business strategy, customers, and stock price).	Our judgments regarding the existence of impairment indicators are based on regulatory factors, market conditions, anticipated cash flows and operational performance of our assets. When determining the fair value of our reporting units for impairment assessments, we make assumptions regarding the fair value which is dependent on estimates of future cash flows, discount rates, and other factors.	We performed the required annual impairment review of our recorded goodwill for our two reporting units as of October 1, 2019. We performed a qualitative assessment for our North America EfW reporting unit and concluded that the fair value of this reporting unit continued to substantially exceed the carrying value as of the testing date. For our CES reporting unit, we bypassed the qualitative assessment and proceeded directly to the first step of the goodwill impairment test. We determined an estimate of the fair value of this reporting unit by combining both the income and market approaches. The market approach was based on current trading multiples of EBITDA for companies operating in businesses similar to our CES reporting unit. In performing the test under the income approach, we utilized a discount rate of 10% and a long-term terminal growth rate of 2.5% beyond our planning period. The assumptions used in evaluating goodwill for impairment are subject to change and are tracked against historical performance. Based on the results of the test performed, we determined that the estimated fair value of the CES reporting unit exceeded the carrying value by 5%; therefore, we did not record a goodwill impairment charge for the year ended December 31, 2019. Given the narrow margin, we performed a sensitivity analysis on the above assumptions which determined that, while holding the market approach constant, an increase in the discount rate of 80 bps to 10.8% or a decrease in the long-term growth rate of 120 bps to 1.3% would result in impairment. While we believe the assumptions used were reasonable and commensurate with the views of a market participant, changes in key assumptions, including increasing the discount rate, lowering forecasts for revenue, operating margin or lowering the long-term growth rate for our CES reporting unit, could result in a future impairment. The goodwill recorded for our CES reporting unit totaled $46 million as of December 31, 2019, and resulted from previously acquired materials processing facilities that are specially designed to process, treat, recycle, and dispose of solid and liquid wastes.

Policy	Judgments and estimates	Effect if actual results differ from assumptions
Deferred Tax Assets As described in *Item 8. Financial Statements And Supplementary Data — Note 9. Income Taxes*, we have recorded a deferred tax asset related to our NOLs. The NOLs will expire in various amounts beginning on December 31, 2033 through December 31, 2037, if not used. Deferred tax assets are reduced by a valuation allowance if, based on available evidence, it is more likely than not that some portion or all of the deferred tax assets will not be realized.	We estimated a valuation allowance of approximately $65 million to offset our deferred tax assets related to NOLs and our tax credit carryforward balance. The amount was estimated based upon future taxable income arising from (a) the reversal of temporary differences during the period the NOLs are available and (b) future operating income expected, to the extent it is reasonably predictable. Judgment is involved in assessing whether a valuation allowance is required on our deferred tax assets.	To the extent our estimation of the reversal of temporary differences and operating income generated differs from actual results, we could be required to adjust the carrying amount of the deferred tax assets.

RECENT ACCOUNTING PRONOUNCEMENTS

See *Item 8. Financial Statements And Supplementary Data — Note 2. Recent Accounting Pronouncements* for a summary of new accounting pronouncements.

Item 7A. *QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK*

In the normal course of business, our subsidiaries are party to financial instruments that are subject to market risks arising from changes in commodity prices, interest rates, foreign currency exchange rates, and derivative instruments. Our use of derivative instruments is very limited and we do not enter into derivative instruments for trading purposes. The following analysis provides quantitative information regarding our exposure to financial instruments with market risks. We use a sensitivity model to evaluate the fair value or cash flows of financial instruments with exposure to market risk that assumes instantaneous, parallel shifts in exchange rates and interest rate yield curves. There are certain limitations inherent in the sensitivity analysis presented, primarily due to the assumption that exchange rates change in a parallel manner and that interest rates change instantaneously. In addition, the fair value estimates presented herein are based on pertinent information available to us as of December 31, 2019. Further information is included in *Item 8. Financial Statements And Supplementary Data — Note 12. Financial Instruments* and *Note 13. Derivative Instruments*.

Commodity Price Risk

Waste Price Risk

We have some protection against fluctuations in fuel (municipal waste) price risk because approximately 76% of our municipal waste is provided under multi-year contracts where we are paid for our fuel at fixed rates. At our tip fee energy-from-waste facilities, certain amounts of waste processing capacity are not subject to long-term contracts and, therefore, we are partially exposed to the risk of market fluctuations in the waste disposal fees we may charge for fuel. At service fee facilities, waste disposal fees generally increase annually due to annual contract price escalations intended to reflect changes in our costs. Declines in waste disposal fees at our energy-from-waste facilities are mitigated through internalizing waste disposal by utilizing our network of transfer stations located throughout the northeast United States and by increasing our profiled waste volumes, which we can sell at a higher price than municipal solid waste.

We expect that multi-year contracts for waste supply at facilities we own or lease will continue to be available on acceptable terms in the marketplace, at least for a substantial portion of facility capacity, as municipalities continue to value long-term committed and sustainable waste disposal capacity. We also expect that an increasing portion of system capacity will be contracted on a shorter-term basis, and so we will have more frequent exposure to waste market risk.

Energy Price Risk

In contrast to our waste disposal agreements, as a result of structural and regulatory changes in the energy markets over time, we expect that multi-year contracts for energy sales will generally be less available than in the past, thereby increasing our exposure to energy market price volatility upon expiration. As our historic energy contracts have expired and our service fee contracts have transitioned to tip fee contracts, our exposure to market energy prices has increased. We expect this trend to continue. In order to mitigate our exposure to near-term (one to three years) revenue fluctuations in energy markets, we enter into hedging arrangements and we expect to do so in the future.

Recycled Metals Price Risk

We recover and sell ferrous and non-ferrous metals, with pricing linked to related commodity indices. Therefore, our metals revenue is completely exposed to market price fluctuations. A 10% change in the current market rates would impact recycled metals revenue by approximately $5 million and $4 million for ferrous and non-ferrous, respectively.

Interest Rate Risk

Our financial market risk results primarily from changes in interest rates. We reduce our exposure to changes in interest rates by entering into interest rate swap contracts. We utilize the interest rate swaps to convert variable rate debt to fixed rate debt. Our interest rate hedge instruments are designated as cash flow hedges. For further details about our interest rate swaps, see *Item 8. Financial Statements And Supplementary Data — Note 13. Derivative Instruments*.

Borrowings under the Credit Facilities bear interest, at our option, at either a base rate or a Eurodollar rate plus an applicable margin determined by a pricing grid based on Covanta Energy's leverage ratio. Base rate is defined as the higher of (i) the Federal Funds Effective Rate plus 0.50%, (ii) the rate the administrative agent announces from time to time as it's per annum "prime rate" or (iii) the London Interbank Offered Rate ("LIBOR"), or a comparable or successor rate, plus 1.00%. Base rate borrowings under the Revolving Credit Facility bear interest at the base rate plus an applicable margin ranging from 0.50% to 1.50%. Eurodollar borrowings under the Revolving Credit Facility bear interest at LIBOR plus an applicable margin ranging from 1.75% to 2.75%.

Base rate borrowings under the Term Loan bear interest at the base rate plus an applicable margin ranging from 0.75% to 1.00%. Eurodollar borrowings under the Term Loan bear interest at LIBOR plus an applicable margin ranging from 1.75% to 2.00%.For details as to the various election options under the Credit Facility, see *Item 8. Financial Statements And Supplementary Data — Note 15. Consolidated Debt*.

As of December 31, 2019, the outstanding balances under Covanta Energy's Term Loan and the Revolving Credit Facilities were $384 million and $183 million, respectively. A hypothetical increase of 1% in the underlying December 31, 2019 market interest rates would result in a potential reduction to twelve-month future pre-tax earnings and cash provided by operations of approximately $4 million, based on balances outstanding as of December 31, 2019.

London Interbank Offered Rate ("LIBOR") Transition

The use of the London Interbank Offered Rate ("LIBOR") is expected to be phased out by the end of 2021. LIBOR is currently used as a reference rate for certain of our debt, including our Credit Facilities. Generally, our contracts include a transition clause in the event LIBOR is discontinued, as such, we do not expect the transition of LIBOR to have a material impact on our business. At this time, there is no definitive information regarding the future utilization of LIBOR or of any particular replacement rate; however, we will continue to monitor the efforts of various parties, including government agencies, seeking to identify an alternative rate to replace LIBOR.

Foreign Currency Exchange Rate Risk

We have operations and investments in various foreign markets, including Canada, Ireland, the UK, China and Italy. As and to the extent that we grow our international business, we expect to invest in foreign currencies to pay either for the construction costs of facilities that we develop or for the cost to acquire existing businesses or assets. Currency volatility in those markets, as well as the effectiveness of any currency hedging strategies we may implement, may impact both the amount we are required to invest in new projects as well as our financial returns on these projects and our reported results. See *Item 8. Financial Statements And Supplementary Data — Note 11. Equity Method Investments* for further discussion.

Item 8. ***FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA***

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Covanta Holding Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Covanta Holding Corporation and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income, equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedule listed in the Index at Item 15a (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of the Company at December 31, 2019 and 2018, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on the criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 25, 2020 expressed an adverse opinion thereon.

Adoption of New Accounting Standard

As discussed in Note 1 to the consolidated financial statements, the Company changed its method for accounting for leases in 2019.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the 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 audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) 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.

Rookery Equity Method Investment - Variable Interest Model

Description of the Matter

As disclosed in Note 3 to the consolidated financial statements, in March 2019, the 50/50 jointly owned and governed entity ("Covanta Green") between Covanta and Green Investment Group was used to fund an 80% investment in the Rookery project, an energy from waste facility being built in Bedfordshire, England (the "Facility"). The Company provides technical oversight and became a service provider for the Facility. The Company accounts for its 50% equity interest in Covanta Green under the equity method of accounting. For the year ended December 31, 2019, the Company recorded a $56 million gain on sale of business and investments which is included in the "Gain (loss) on sale of assets" in the consolidated statement of operations.

Auditing the assessment of whether the Company has a controlling financial interest in Covanta Green, which was determined to be a variable interest entity, was complex and required significant judgment. Management's assessment of whether Covanta is the primary beneficiary under the variable interest model is highly judgmental and could have a significant effect on the accounting for the Company's 50% equity interest in Covanta Green and the gain recorded in the consolidated statement of operations.

How We Addressed the Matter in Our Audit

We tested the controls over the Company's evaluation of the accounting conclusions with respect to the variable interest model.

Our audit procedures included, among others, evaluating whether Covanta is the primary beneficiary of Covanta Green, which was determined to be a variable interest entity. We read and evaluated the key elements of all arrangements between Covanta and the entities involved in the transaction and evaluated the underlying legal and governance documents to determine whether Covanta has a controlling financial interest in Covanta Green. We made inquiries of management, obtained an understanding of and evaluated the business purpose of Covanta Green and the activities that most significantly impact the economic performance of the entity. For example, we evaluated how decisions about the most significant activities are made and the party or parties that make them, including evaluating whether Covanta's service agreement with the Facility resulted in Covanta's power to direct the activities that most significantly impact performance or the obligation to absorb expected losses.

Income Taxes - Uncertain Tax Positions

Description of the Matter

As discussed in Note 9 of the consolidated financial statements, the Company has recorded a liability of $40 million related to uncertain tax positions as of December 31, 2019. The Company conducts business in the US, various foreign countries and numerous states and is therefore subject to US federal and state income taxes, as well as income taxes of multiple foreign jurisdictions. Due to the multinational and multistate operations of the Company, changes in global, including US federal and state, income tax laws and regulations result in complexity in the accounting for and monitoring of income taxes including the provision for uncertain tax positions.

Auditing management's identification and measurement of uncertain tax positions involved complex analysis and audit judgment related to the evaluation of the income tax consequences of significant business transactions, including legal entity rationalization and restructurings, and changes in income tax law and regulations in various jurisdictions, which is often subject to interpretation.

How We Addressed the Matter in Our Audit

We tested the controls over the Company's process to account for uncertain tax positions, including management's review of the related tax technical analyses. For example, we tested controls over management's identification and assessment of changes to tax laws and significant transactions, which may result in uncertain tax positions.

We performed audit procedures, among others, to evaluate the Company's assumptions and underlying data used to develop its uncertain tax positions and related unrecognized income tax benefit amounts by jurisdiction. We obtained an understanding of the Company's legal structure through our review of organizational charts and related legal documents. We further considered the income tax consequences of significant transactions, including internal restructurings, and assessed management's interpretation of those changes under the relevant jurisdiction's tax law. Due to the complexity of tax law, we involved our income tax professionals to assess the Company's interpretation of and compliance with tax laws in these jurisdictions, as well as to identify tax law changes. In certain circumstances, we involved our income tax professionals to evaluate the technical merits of the Company's tax positions, including assessing the Company's correspondence with the relevant tax authorities and evaluating income tax opinions or other third-party advice obtained by the Company. We also evaluated the Company's income tax disclosures included in Note 9 to the consolidated financial statements in relation to these matters.

Impairment Evaluation of Goodwill - CES Reporting Unit

Description of the Matter

As discussed in Note 1 of the consolidated financial statements, goodwill is not amortized but rather is tested for impairment at least annually at the reporting unit level. The Company's goodwill is assigned to its reporting units as of the initial acquisition date. In 2019, the Company performed a quantitative goodwill impairment test on its CES reporting unit, which had goodwill of $46 million as of December 31, 2019. The Company's quantitative goodwill impairment test compares the fair value of the reporting unit to the reporting unit's carrying value.

Auditing management's goodwill impairment test is highly judgmental due to the subjectivity in determining the fair value of the reporting unit. Significant assumptions include future cash flow projections and the discount rate applied to those cash flows, the long-term terminal growth rate, and market proxies. These assumptions are highly subjective and involved significant judgment.

How We Addressed the Matter in Our Audit

We tested the controls over the Company's goodwill impairment process, including management's review of significant assumptions used in the fair value analysis.

Our audit procedures included, among others, assessing the suitability and application of the valuation methodologies and evaluating the significant assumptions and underlying data used by the Company in its analysis. For example, we compared the significant assumptions used by management to current industry and economic trends, the Company's business model and other relevant factors. We tested the projected financial information used in the analysis and evaluated the consistency and appropriateness of the discount rates and long-term terminal growth rates used in the assessment. We also tested the market approach by evaluating the market multiple proxies in management's analysis. We involved a valuation specialist to assist us in assessing the valuation methodologies and testing the significant assumptions used in the fair value models. We also performed sensitivity analyses of significant assumptions to evaluate the changes in fair value of the reporting unit resulting from changes in these assumptions.

/s/ Ernst & Young LLP

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

Iselin, New Jersey
February 25, 2020

COVANTA HOLDING CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS

	For the Year Ended December 31,		
	2019	2018	2017
	(In millions, except per share amounts)		
OPERATING REVENUE:			
Waste and service revenue	$ 1,393	$ 1,327	$ 1,231
Energy revenue	329	343	334
Recycled metals revenue	86	95	82
Other operating revenue	62	103	105
Total operating revenue	1,870	1,868	1,752
OPERATING EXPENSE:			
Plant operating expense	1,371	1,321	1,271
Other operating expense, net	64	65	51
General and administrative expense	122	115	112
Depreciation and amortization expense	221	218	215
Impairment charges	2	86	2
Total operating expense	1,780	1,805	1,651
Operating income	90	63	101
OTHER (EXPENSE) INCOME			
Interest expense	(143)	(145)	(147)
Net gain (loss) on sale of business and investments	49	217	(6)
Loss on extinguishment of debt	—	(15)	(84)
Other income (expense), net	1	(3)	1
Total other (expense) income	(93)	54	(236)
(Loss) income before income tax benefit and equity in net income from unconsolidated investments	(3)	117	(135)
Income tax benefit	7	29	191
Equity in net income from unconsolidated investments	6	6	1
NET INCOME	$ 10	$ 152	$ 57
Weighted Average Common Shares Outstanding:			
Basic	131	130	130
Diluted	133	132	131
Earnings Per Share:			
Basic	$ 0.07	$ 1.17	$ 0.44
Diluted	$ 0.07	$ 1.15	$ 0.44
Cash Dividend Declared Per Share:	$ 1.00	$ 1.00	$ 1.00

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

COVANTA HOLDING CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	For the Year Ended December 31,		
	2019	2018	2017
	(In millions)		
Net income	$ 10	$ 152	$ 57
Foreign currency translation	(5)	(2)	19
Net (loss) gain on intra-entity foreign currency transactions	(2)	3	(2)
Net unrealized gain (loss) on derivative instruments, net of tax expense of $6, $2 and $0, respectively	4	21	(10)
Other comprehensive (loss) income	(3)	22	7
Comprehensive income	$ 7	$ 174	$ 64

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

COVANTA HOLDING CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

	As of December 31,	
	2019	2018
	(In millions, except per share amounts)	
ASSETS		
Current:		
Cash and cash equivalents	$ 37	$ 58
Restricted funds held in trust	18	39
Receivables (less allowances of $9 and $8, respectively)	240	338
Prepaid expenses and other current assets	105	64
Total Current Assets	400	499
Property, plant and equipment, net	2,451	2,514
Restricted funds held in trust	8	8
Intangible assets, net	258	279
Goodwill	321	321
Other assets	277	222
Total Assets	$ 3,715	$ 3,843
LIABILITIES AND EQUITY		
Current:		
Current portion of long-term debt	$ 17	$ 15
Current portion of project debt	8	19
Accounts payable	36	76
Accrued expenses and other current liabilities	292	333
Total Current Liabilities	353	443
Long-term debt	2,366	2,327
Project debt	125	133
Deferred income taxes	372	378
Other liabilities	123	75
Total Liabilities	3,339	3,356
Commitments and Contingencies (Note 17)		
Equity:		
Preferred stock ($0.10 par value; authorized 10 shares; none issued and outstanding)	—	—
Common stock ($0.10 par value; authorized 250 shares; issued 136 shares, outstanding 131 shares)	14	14
Additional paid-in capital	857	841
Accumulated other comprehensive loss	(35)	(33)
Accumulated deficit	(460)	(334)
Treasury stock, at par	—	(1)
Total Equity	376	487
Total Liabilities and Equity	$ 3,715	$ 3,843

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

COVANTA HOLDING CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOW

	For the Year Ended December 31,		
	2019	2018	2017
OPERATING ACTIVITIES:		(In millions)	
Net income	$ 10	$ 152	$ 57
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization expense	221	218	215
Amortization of long-term debt deferred financing costs	5	5	7
(Gain) loss on sale of business	(49)	(217)	6
Impairment charges	2	86	2
Loss on extinguishment of debt	—	15	84
Provision for doubtful accounts	2	2	9
Stock-based compensation expense	25	24	18
Equity in net income from unconsolidated investments	(6)	(6)	(1)
Deferred income taxes	(9)	(31)	(193)
Dividends from unconsolidated investments	9	13	2
Other, net	3	(10)	(13)
Change in working capital, net of effects of acquisitions:			
Receivables	94	7	(27)
Prepaid and other current assets	(5)	(3)	5
Accounts payable and accrued expenses	(77)	(16)	66
Changes in noncurrent assets and liabilities, net	1	(1)	5
Net cash provided by operating activities	226	238	242
INVESTING ACTIVITIES:			
Purchase of property, plant and equipment	(158)	(206)	(277)
Acquisition of businesses, net of cash acquired	2	(50)	(16)
Proceeds from asset sales	27	128	4
Property insurance proceeds	—	18	8
Payment of indemnification claim related to sale of asset	—	(7)	—
Investment in equity affiliate	(14)	(16)	—
Other, net	(2)	(6)	(8)
Net cash used in investing activities	(145)	(139)	(289)

COVANTA HOLDING CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOW – (Continued)

	For the Year Ended December 31,		
	2019	2018	2017
		(In millions)	
FINANCING ACTIVITIES:			
Proceeds from borrowings on long-term debt	80	1,165	400
Proceeds from borrowings on revolving credit facility	536	740	952
Proceeds from insurance premium financing	29	25	24
Proceeds from borrowings on Dublin project financing	—	—	643
Payment related to Dublin interest rate swap	—	—	(17)
Payments on the Dublin Convertible Preferred	—	—	(132)
Payments on long-term debt	(16)	(944)	(420)
Payments on revolving credit facility	(565)	(973)	(850)
Payments on project debt	(18)	(23)	(382)
Payments of deferred financing costs	(1)	(16)	(21)
Payment of Dublin financing costs	—	—	(19)
Cash dividends paid to stockholders'	(133)	(134)	(131)
Payment of insurance premium financing	(26)	(24)	(4)
Other, net	(8)	(5)	(3)
Net cash (used in) provided by financing activities	(122)	(189)	40
Effect of exchange rate changes on cash and cash equivalents	(1)	1	7
Net decrease in cash, cash equivalents and restricted cash	(42)	(89)	—
Cash, cash equivalents and restricted cash at beginning of period	105	194	194
Cash, cash equivalents and restricted cash at end of period	63	105	194
Less: cash, cash equivalents and restricted cash of assets held for sale at end of period	—	—	77
Cash, cash equivalents and restricted cash at end of period	$ 63	$ 105	$ 117
Reconciliation of cash, cash equivalents and restricted cash:			
Cash and cash equivalents	$ 37	$ 58	$ 46
Restricted funds held in trust- short term	18	39	43
Restricted funds held in trust- long term	8	8	28
Total cash, cash equivalents and restricted cash	$ 63	$ 105	$ 117
Cash Paid for Interest and Income Taxes:			
Interest	$ 152	$ 136	$ 149
Income taxes, net of refunds	$ 5	$ 2	$ —

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

COVANTA HOLDING CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY

	Covanta Holding Corporation Stockholders' Equity							
	Common Stock					Treasury Stock		
	Shares	Amount	Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated (Deficit) Earnings	Shares	Amount	Total
	(In millions)							
Balance as of December 31, 2016	**136**	**$ 14**	**$ 807**	**$ (62)**	**$ (289)**	**6**	**$ (1)**	**$ 469**
Cumulative effect change in accounting for share based payments	—	—	1	—	10	—	—	11
Stock-based compensation expense	—	—	18	—	—	—	—	18
Dividend declared	—	—	—	—	(132)	—	—	(132)
Shares repurchased for tax withholdings for vested stock awards	—	—	(4)	—	—	—	—	(4)
Shares issued in non-vested stock award	—	—	—	—	—	(1)	—	—
Other	—	—	—	—	1	—	—	1
Comprehensive income, net of income taxes	—	—	—	7	57	—	—	64
Balance as of December 31, 2017	**136**	**$ 14**	**$ 822**	**$ (55)**	**$ (353)**	**5**	**$ (1)**	**$ 427**
Cumulative effect change in accounting for revenue recognition	—	—	—	—	1	—	—	1
Stock-based compensation expense	—	—	24	—	—	—	—	24
Dividend declared	—	—	—	—	(133)	—	—	(133)
Shares repurchased for tax withholdings for vested stock awards	—	—	(6)	—	—	—	—	(6)
Other	—	—	1	—	(1)	—	—	—
Comprehensive income, net of income taxes	—	—	—	22	152	—	—	174
Balance as of December 31, 2018	**136**	**$ 14**	**$ 841**	**$ (33)**	**$ (334)**	**5**	**$ (1)**	**$ 487**
Cumulative effect change in accounting for ASU 2018-02 (see Note1)	—	—	—	1	(1)	—	—	—
Stock-based compensation expense	—	—	25	—	—	—	—	25
Dividend declared	—	—	—	—	(135)	—	—	(135)
Shares repurchased for tax withholdings for vested stock awards	—	—	(8)	—	—	—	—	(8)
Shares issued in non-vested stock award	—	—	—	—	—	—	1	1
Other	—	—	(1)	—	—	—	—	(1)
Comprehensive income, net of income taxes	—	—	—	(3)	10	—	—	7
Balance as of December 31, 2019	**136**	**$ 14**	**$ 857**	**$ (35)**	**$ (460)**	**5**	**$ —**	**$ 376**

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

NOTE 1. ORGANIZATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The terms “we,” “our,” “ours,” “us” and “Company” refer to Covanta Holding Corporation and its subsidiaries; the term “Covanta Energy” refers to our subsidiary Covanta Energy, LLC and its subsidiaries.

Organization

Covanta is one of the world’s largest owners and operators of infrastructure for the conversion of waste to energy (known as “energy-from-waste” or “EfW”), and also owns and operates related waste transport and disposal and other renewable energy production businesses. EfW serves two key markets as both a sustainable waste management solution that is environmentally superior to landfilling and as a source of clean energy that reduces overall greenhouse gas emissions and is considered renewable under the laws of many states and under federal law. Our facilities are critical infrastructure assets that allow our customers, which are principally municipal entities, to provide an essential public service.

Our EfW facilities earn revenue from both the disposal of waste and the generation of electricity and/or steam, generally under contracts, as well as from the sale of metal recovered during the EfW process. We process approximately 21 million tons of solid waste annually. We operate and/or have ownership positions in 41 EfW facilities, which are primarily located in North America. In total, these assets produce approximately 10 million megawatt hours (“MWh”) of baseload electricity annually. We also operate a waste management infrastructure that is complementary to our core EfW business.

We have one reportable segment which is comprised of our entire operating business. The results of our reportable segment are consistent with our consolidated results as presented on our consolidated statements of operations for the years ended December 31, 2019, 2018 and 2017. Our reportable segment reflects the manner in which our Chief Operating Decision Maker ("CODM") reviews results and allocates resources and does not reflect the aggregation of multiple operating segments.

Summary of Significant Accounting Policies

The financial statements and accompanying notes are prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP"). The following is a description of our significant accounting policies.

Principles of Consolidation

The consolidated financial statements reflect the results of our operations, cash flows and financial position of our majority-owned or controlled subsidiaries. All intercompany accounts and transactions have been eliminated.

Equity and Cost Method Investments

Investments in unconsolidated entities over which we have significant influence are accounted for under the equity method of accounting. Under the equity method of accounting, the investment is initially recorded at cost, then our proportional share of the underlying net income or loss is recorded as Equity in net income from unconsolidated investments in our statement of operations with a corresponding increase or decrease to the carrying value of the investment. Distributions received from the investee reduce our carrying value of the investment and are recorded in the consolidated statements of cash flows using the cumulative earnings approach. These investments are evaluated for impairment if events or circumstances arise that indicate that the carrying amount of such assets may not be recoverable. There were no indicators of impairment related to our equity method investments for the years ended December 31, 2019 and 2018.

Investments in entities over which we neither have significant influence nor control are accounted for using the cost method. Under the cost method, we record the investment at cost and recognize income for any dividends declared from distribution of the investments earnings. We review the cost method investments for impairment whenever events or changes in circumstances indicate that the carrying value may no longer be recoverable. We impair our cost method investments when we determine that there has been an “other-than temporary” decline in the investments' fair value compared to its carrying value. The fair value of the investment would then become the new cost basis of the investment. There were no indicators of impairment related to our cost method investments for the years ended December 31, 2019 and 2018.

Revenue Recognition

Our EfW projects generate revenue from three primary sources: 1) fees charged for operating facilities or for receiving waste for disposal (waste and service revenue); 2) the sale of electricity and/or steam (energy revenue); and 3) the sale of ferrous and non-ferrous metals that are recovered from the waste stream as part of the EfW process (recycled metals revenue). We may also generate other operating revenue from the construction, expansion or upgrade of a facility, when a public-sector client owns the facility. Our customers for waste services or facility operations are principally public-sector entities, though we also market disposal capacity at certain facilities to commercial customers.

We also operate and/or have ownership positions in environmental services businesses, transfer stations and landfills (primarily for ash disposal) that are ancillary and complementary to our EfW projects and generate additional revenue from disposal or service fees.

Revenue is allocated to the performance obligations in a contract on a relative standalone selling price basis. To the extent that we sell the good or service related to the performance obligation separately in the same market, the standalone selling price is the observable price that we sell the good or service separately in similar circumstances and to similar customers. The fees charged for our services are generally defined in our service agreements and vary based on contract-specific terms.

Waste and Service Revenue

Service Fee

Service fee revenue is generated from the operations and maintenance services that we provide to owned and operated EfW facilities. We provide multiple waste disposal services aimed at operating and maintaining the facilities. Service fee revenue is generally based on an expected annual operating fee in relation to annual guaranteed waste processing and excess tonnage fees. The fees charged represent one performance obligation to operate and maintain each facility. Variable consideration primarily consists of fees earned for processing excess tonnage above a minimum specified in the contract. We act as the agent in contracts for the sale of energy and metals in service fee facilities that we operate and accordingly record revenues net for those contracts.

Tip Fee

Tip fees are generated from the sale of waste disposal services at EfW facilities that we own. We earn a per ton “tipping fee”, generally under long term contractual obligations with our host community and contractual obligations with municipal and commercial waste customers. The tipping fee is generally subject to an annual escalation. The performance obligation in these agreements is to provide waste disposal services for tons of acceptable waste. Revenue is recognized when the waste is delivered to the facility.

Energy Sales

Typical energy sales consist of: (a) electricity generation, (b) capacity and (c) steam. We primarily sell electricity either to utilities at contracted rates or at prevailing market rates in regional markets and in some cases, sell steam directly to industrial users. We sell a portion of electricity and other energy product outputs pursuant to contracts. As these contracts expire, we intend to sell an increasing portion of the energy output in competitive energy markets or pursuant to short-term contracts.

Recycled Metals Revenue

Recycled metals revenue represents the sale of recovered ferrous and non-ferrous metals to processors and end-users. The majority of our metals contracts are based on both an unspecified variable unit (i.e. tonnage) and variable forward market price index, while some contracts contain a fixed unit or fixed rate to form the basis of our overall transaction price. We recognize recycled metal revenue when control transfers to the customer.

Other Operating Revenue (Construction)

We generate additional revenue from the construction, expansion or upgrade of a facility, when a municipal client owns the facility and we provide the construction services. We generally use the cost incurred measure of progress for our construction contracts because it best depicts the transfer of control to the customer. Under the cost incurred measure of progress, the extent of progress towards completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation.

Plant Operating Expense

Plant operating expense includes facility employee costs, expense for materials and parts for facility scheduled and unscheduled maintenance and repair expense, which includes costs related to our internal maintenance team and non-facility employee costs. Plant operating expense also includes hauling and disposal expenses, fuel costs, chemicals and reagents, operating lease expense, and other facility operating related expense.

Pass Through Costs

Pass through costs are costs for which we receive a direct contractually committed reimbursement from the public sector client that sponsors an EfW project. These costs generally include utility charges, insurance premiums, ash residue transportation and disposal, and certain chemical costs. These costs are recorded net of public sector client reimbursements as a reduction to Plant operating expense in our consolidated statement of operations.

Pass through costs were as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Pass through costs	$ 57	$ 57	$ 59

Income Taxes

Deferred income taxes are based on the difference between the financial reporting and tax basis of assets and liabilities. The deferred income tax provision represents the change during the reporting period in the deferred tax assets and deferred tax liabilities, net of the effect of acquisitions and dispositions. Deferred tax assets include tax losses and credit carryforwards and are reduced by a valuation allowance if, based on available evidence, it is more likely than not that some portion or all of the deferred tax assets will not be realized.

We file a consolidated federal income tax return for each of the periods covered by the consolidated financial statements, which includes all eligible United States subsidiary companies. Foreign subsidiaries are taxed according to regulations existing in the countries in which they do business. Our federal consolidated income tax return also includes the taxable results of certain grantor trusts, which are excluded from our consolidated financial statements; however, certain related tax attributes are recorded in our consolidated financial statements since they are part of our federal tax return.

Stock-Based Compensation

Stock-based compensation awards to employees are accounted for as compensation expense based on their grant date fair values. For additional information, see *Note 7. Stock-Based Award Plans.*

Cash and Cash Equivalents

Cash and cash equivalents include all cash balances and highly liquid investments having maturities of three months or less from the date of purchase. These short-term investments are stated at cost, which approximates fair value. Balances held by our international subsidiaries are not generally available for near-term liquidity in our domestic operations.

Restricted Funds Held in Trust

Restricted funds held in trust are primarily amounts received and held by third party trustees relating to certain projects we own. We generally do not control these accounts and these funds may be used only for specified purposes. These funds include debt service reserves for payment of principal and interest on project debt. Revenue funds are comprised of deposits of revenue received with respect to projects prior to their disbursement. Other funds include escrowed debt proceeds, amounts held in trust for operations, maintenance, environmental obligations, operating lease reserves in accordance with agreements with our clients, and amounts held for future scheduled distributions. Such funds are invested principally in money market funds, bank deposits and United States treasury bills.

Restricted fund balances are as follows (in millions):

	As of December 31,			
	2019		2018	
	Current	Noncurrent	Current	Noncurrent
Debt service funds - principal	$ 2	$ —	$ 16	$ —
Debt service funds - interest	—	—	—	—
Total debt service funds	2	—	16	—
Revenue funds	3	—	4	—
Other funds	13	8	19	8
Total	$ 18	$ 8	$ 39	$ 8

Receivables and Allowance for Doubtful Accounts

Receivables consist of amounts due to us from normal business activities. Allowances for doubtful accounts are the estimated losses from the inability of customers to make required payments. We use historical experience, as well as current market information, in determining the estimate.

In December 2019, we entered into an agreement whereby we will regularly sell certain receivables on a revolving basis to third-party financial institutions up to an aggregate purchase limit of $100 million (the "Receivables Purchase Agreement or "RPA"). Transfers under the RPA meet the requirements to be accounted for as sales in accordance with the *Transfers and Servicing* topic of FASB Accounting Standards Codification. We receive a discounted purchase price for each receivable sold under the RPA and will continue to service and administer the subject receivables. For additional information see *Note 10. Accounts Receivable Securitization.*

Property, Plant and Equipment, net

Property, plant, and equipment acquired in business acquisitions is recorded at our estimate of fair value on the date of the acquisition. Additions, improvements and major expenditures are capitalized if they increase the original capacity or extend the remaining useful life of the original asset more than one year. Maintenance repairs and minor expenditures are expensed in the period incurred. Depreciation is computed using the straight-line method over the estimated useful lives of the assets, which generally range from three years for computer equipment to 50 years for certain infrastructure components of energy-from-waste facilities. Property, plant and equipment at our service fee operated facilities are not recognized on our balance sheet and any additions, improvements and major expenditures for which we are responsible at our service fee operated facilities are expensed in the period incurred. Our leasehold improvements are depreciated over the life of the lease term or the asset life, whichever is shorter. Upon retirement or disposal of assets, the cost and related accumulated depreciation are removed from the consolidated balance sheets and any gain or loss is reflected in the consolidated statements of operations.

Property, plant and equipment, net consisted of the following (in millions):

	As of December 31,	
	2019	2018
Land	$ 20	$ 26
Facilities and equipment	4,463	4,367
Landfills (primarily for ash disposal)	78	75
Construction in progress	58	71
Total	4,619	4,539
Less: accumulated depreciation and amortization	(2,168)	(2,025)
Property, plant, and equipment — net	$ 2,451	$ 2,514

Depreciation and amortization expense related to property, plant and equipment was $201 million, $199 million, and $197 million, for the years ended December 31, 2019, 2018 and 2017, respectively. Non-cash investing activities related to capital expenditures totaled $6 million, $37 million and $18 million as of December 31, 2019, 2018 and 2017, respectively, and were recorded in Accrued expenses and other current liabilities on our consolidated balance sheet.

Property, plant and equipment is evaluated for impairment whenever events or changes in circumstances indicate their carrying value may not be recoverable over their estimated useful life. In reviewing for recoverability, we compare the carrying amount of the relevant assets to their estimated undiscounted future cash flows. When the estimated undiscounted future cash flows are less than the assets carrying amount, the carrying amount is compared to the assets fair value. If the assets fair value is less than the carrying amount an impairment charge is recognized to reduce the assets carrying amount to its fair value. For the years ended December 31, 2019, 2018 and 2017, we recognized an impairment on our property, plant and equipment of $2 million, $63 million and $2 million, respectively. For additional information, see *Note 8. Supplementary Information - Impairment Charges*.

Asset Retirement Obligations

We recognize a liability for asset retirement obligations when it is incurred, which is generally upon acquisition, construction, or development. Our liabilities include closure and post-closure costs for landfill cells and site restoration for certain energy-from-waste and power producing sites. We principally determine the liability using internal estimates of the costs using current information, assumptions, and interest rates, but also use independent appraisals as appropriate to estimate costs. When a new liability for asset retirement obligation is recorded, we capitalize the cost of the liability by increasing the carrying amount of the related long-lived asset. The liability is accreted to its present value each period and the capitalized cost is depreciated over the useful life of the related asset. We recognize period-to-period changes in the liability resulting from revisions to the timing or the amount of the original estimate of the undiscounted cash flows.

Current and noncurrent asset retirement obligations are included in Accrued expenses and other current liabilities and Other liabilities, respectively, on our consolidated balance sheet. Our asset retirement obligation is presented as follows (in millions):

	As of December 31,	
	2019	**2018**
Beginning of period asset retirement obligation	$ 29	$ 26
Accretion expense(1)	2	3
Net change (2)	(3)	—
Reclassification to assets held for sale	(2)	—
End of period asset retirement obligation	26	29
Less: current portion	(4)	(5)
Noncurrent asset retirement obligation	$ 22	$ 24

(1) Accretion expense is included in Plant operating expense in the consolidated statements of operations.
(2) Comprised primarily of expenditures and settlements of the asset retirement obligation liability, net revisions based on current estimates of the liability and revised expected cash flows and life of the liability.

Intangible Assets and Liabilities

Our waste, service and energy contracts are intangible assets related to long-term operating contracts at acquired facilities. These intangible assets and liabilities and other finite intangible assets, are recorded at their estimated fair market values upon acquisition based primarily upon discounted cash flows in accordance with accounting standards related to business combinations.

Intangible assets with finite lives are evaluated for impairment whenever events or changes in circumstances indicate their carrying value may not be recoverable over their estimated useful life. In reviewing for recoverability, we compare the carrying amount of the relevant assets to their estimated undiscounted future cash flows. When the estimated undiscounted future cash flows are less than the assets carrying amount, the carrying amount is compared to the assets fair value. If the assets fair value is less than the carrying amount an impairment charge is recognized to reduce the assets carrying amount to its fair value. For the year ended December 31, 2019, 2018 and 2017, we recognized an impairment on our intangible assets of zero, $22 million and zero, respectively. For additional information, see *Note 8. Supplementary Information - Impairment Charges* and *Note 14. Intangible Assets and Goodwill.*

Goodwill

Goodwill is the excess of our purchase price over the fair value of the net assets of acquired businesses. We do not amortize goodwill, but we assess our goodwill for impairment at least annually. The evaluation of goodwill requires the use of estimates of future cash flows to determine the estimated fair value of the reporting unit. All goodwill is related to our one reportable segment, which is comprised of two reporting units, North America EfW and CES. A reporting unit is defined as an operating segment or a component of an operating segment to the extent discrete financial information is available that is reviewed by segment management which has been determined to be one level below our chief operating decision maker. If the carrying value of the reporting unit exceeds the fair value, an impairment charge is recognized to reduce the carrying value to the fair value.

We performed the required annual impairment review of our recorded goodwill for our two reporting units as of October 1, 2019. We performed a qualitative assessment for our North America EfW reporting unit and concluded that the fair value of this reporting unit continued to substantially exceed the carrying value as of the testing date.

For our CES reporting unit, we bypassed the qualitative assessment and proceeded directly to the first step of the goodwill impairment test. We determined an estimate of the fair value of this reporting unit by combining both the income and market approaches. The market approach was based on current trading multiples of EBITDA for companies operating in businesses similar to our CES reporting unit. In performing the test under the income approach, we utilized a discount rate of 10% and a long-term terminal growth rate of 2.5% beyond our planning period. The assumptions used in evaluating goodwill for impairment are subject to change and are tracked against historical performance.

Based on the results of the test performed, we determined that the estimated fair value of the CES reporting unit exceeded the carrying value by 5%; therefore, we did not record a goodwill impairment charge for the year ended December 31, 2019.

Given the narrow margin, we performed a sensitivity analysis on the above assumptions which determined that, while holding the market approach constant, an increase in the discount rate of 80 bps to 10.8% or a decrease in the long-term growth rate of 120 bps to 1.3% would result in impairment.

While we believe the assumptions used were reasonable and commensurate with the views of a market participant, changes in key assumptions, including increasing the discount rate, lowering forecasts for revenue, operating margin or lowering the long-term growth rate for our CES reporting unit, could result in a future impairment.

The goodwill recorded for our CES reporting unit totaled $46 million as of December 31, 2019, and resulted from previously acquired materials processing facilities that are specially designed to process, treat, recycle, and dispose of solid and liquid wastes. For additional information, see *Note 14. Intangible Assets and Goodwill.*

Business Combinations

We recognize the assets acquired and liabilities assumed in a business combination at fair value including any noncontrolling interest of the acquired entity; recognize any goodwill acquired; establish the acquisition-date fair value based on the highest and best use by market participants for the asset as the measurement objective; and disclose information needed to evaluate and understand the nature and financial effect of the business combination. We expense transaction costs directly associated to the acquisition as incurred; capitalize in-process research and development costs, if any; and record a liability for contingent consideration at the measurement date with subsequent remeasurement recognized in the results of operations. Any costs for business restructuring and exit activities related to the acquired company are included in the post-combination results of operations. Tax adjustments related to previously recorded business combinations, if any, are recognized in the results of operations.

Accumulated Other Comprehensive Income ("AOCI")

The changes in accumulated other comprehensive (loss) income are as follows (in millions):

	Foreign Currency Translation	Pension and Other Postretirement Plan Unrecognized Net Gain	Net Unrealized Loss on Derivatives	Unrealized loss on intra-entity foreign currency transactions	Total
Balance at December 31, 2017	$ (17)	$ 2	$ (33)	$ (7)	$ (55)
Other comprehensive (loss) income before reclassifications	(4)	—	(6)	3	(7)
Amounts reclassified from accumulated other comprehensive loss	2	—	27	—	29
Net current period comprehensive (loss) income	(2)	—	21	3	22
Balance at December 31, 2018	$ (19)	$ 2	$ (12)	$ (4)	$ (33)
Cumulative effect change in accounting for ASU 2018-02 (see Note1)	—	1	—	—	1
Balance at January 1, 2019	(19)	3	(12)	(4)	(32)
Other comprehensive (loss) income before reclassifications	(5)	—	4	(2)	(3)
Net current period comprehensive (loss) income	(5)	—	4	(2)	(3)
Balance at December 31, 2019	$ (24)	$ 3	$ (8)	$ (6)	$ (35)

Amount Reclassified from Accumulated Other Comprehensive Income

Accumulated Other Comprehensive Income Component	Year Ended December 31, 2018	Affected Line Item in the Consolidated Statement of Operations
Foreign currency translation	$ 2	Gain (loss) on sale of assets [(1)]
Interest rate swap	27	Gain (loss) on sale of assets [(1)]
	29	Total before tax
	—	Tax benefit
Total reclassifications	$ 29	Net of tax

[(1)] For additional information see, *Note 3. New Business and Asset Management -Green Investment Group Limited ("GIG") Joint Ventures-Dublin EfW.*

Derivative Instruments

We recognize derivative instruments on the balance sheet at their fair value. We have entered into swap agreements with various financial institutions to hedge our exposure to energy price risk and interest rate risk. Changes in the fair value of the energy derivatives and the interest rate swap are recognized as a component of AOCI. For additional information, see *Note 13. Derivative Instruments*.

Foreign Currency Translation

For foreign operations, assets and liabilities are translated at year-end exchange rates and revenue and expense are translated at the average exchange rates during the year. Unrealized gains and losses resulting from foreign currency translation are included in the consolidated statements of equity as a component of AOCI. Currency transaction gains and losses are recorded in other operating expense in the consolidated statements of operations.

Defined Contribution Plans

Substantially all of our employees in the United States are eligible to participate in the defined contribution plans we sponsor. The defined contribution plans allow employees to contribute a portion of their compensation on a pre-tax basis in accordance with specified guidelines. We match a percentage of employee contributions up to certain limits. We also provide a company contribution to the defined contribution plans for eligible employees. Our costs related to defined contribution plans were $20 million, $18 million and $18 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Share Repurchases

Under our share repurchase program, common stock repurchases may be made, from time to time, in the open market, in privately negotiated transactions, or by other available methods, at management's discretion and in accordance with applicable federal securities laws. The timing and amounts of any repurchases will depend on many factors, including our capital structure, the market price of our common stock and overall market conditions, and whether any restrictions then exist under our policies relating to trading in compliance with securities laws. Purchase price over par value for share repurchases are allocated to additional paid-in capital up to the weighted average amount per share recorded at the time of initial issuance of our common stock, with any excess recorded as a reduction to retained earnings. There were no share repurchases for the years ended December 31, 2019, 2018 and 2017.

Use of Estimates

The preparation of financial statements requires us to make estimates and assumptions that affect the reported amounts of assets or liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenue and expense during the reporting period. Actual results could differ from those estimates. Significant estimates include: useful lives of long-lived assets, asset retirement obligations, construction expense estimates, unbilled service receivables, fair value of financial instruments, fair value of the reporting units for goodwill impairment analysis, fair value of long-lived assets for impairment analysis, renewable energy credits, stock-based compensation, purchase accounting allocations, cash flows and taxable income from future operations, valuation allowance for deferred taxes, liabilities related to uncertain tax positions, allowances for uncollectible receivables, and liabilities related to employee medical benefit obligations, workers' compensation, severance and certain litigation.

Reclassifications

Certain amounts have been reclassified in our prior period consolidated statements of cash flows to conform to current year presentation. Certain other amounts have been reclassified in our prior period consolidated balance sheet to conform to current year presentation.

Accounting Pronouncements Recently Adopted

In February 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2018-02 Income Statement—Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income. The amendments in this update allow a reclassification from accumulated other comprehensive income ("AOCI") to retained earnings for adjustments to the tax effect of items in AOCI, that were originally recognized in other comprehensive income, related to the new statutory rate prescribed in the Tax Cuts and Jobs Act enacted on December 22, 2017, which reduced the US federal corporate tax rate from 35% to 21%. The amendments in this update should be applied either in the period of adoption or retrospectively to each period (or periods) in which the effect of the change in the US federal corporate income tax rate in the Tax Cuts and Jobs Act is recognized. Effective January 1, 2019, we adopted this standard and recorded a reclassification of AOCI to accumulated deficit totaling $1 million.

In February 2016, the FASB issued ASU 2016-02 Leases (Topic 842) which amended the standard for lease arrangements to increase transparency and comparability by providing additional information to users of financial statements regarding an entity's leasing activities. Subsequent to the issuance of Topic 842, the FASB clarified the standard through several ASUs; hereinafter the collection of lease standards is referred to as Accounting Standards Codification ("ASC") 842. The revised standard seeks to achieve this objective by requiring reporting entities to recognize lease assets and lease liabilities on the balance sheet for substantially all lease arrangements. The standard requires a modified retrospective basis adoption.

On January 1, 2019, we adopted ASC 842 using the modified retrospective method and recognized a right of use ("ROU") asset and liability in our condensed consolidated balance sheet in the amount of $57 million and $62 million, respectively, related to our operating leases where we are the lessee. There was no effect on our operating leases as lessor. Results for the year ended December 31, 2019 are presented under ASC 842, while prior period amounts were not adjusted and continue to be reported in accordance with the historic accounting guidance under ASC Topic 840, Leases.

As part of the adoption, we elected the package of practical expedients permitted under the transition guidance within the new standard, which, among other things, allowed us to:

1. Continue to apply the ASC 840 guidance, including the disclosure requirements, in the comparative periods presented in the year of adoption, the hindsight practical expedient;
2. Continue applying our current policy for accounting for land easements that existed as of, or expired before, January 1, 2019;
3. Not separate non-lease components from lease components and instead to account for each separate lease component and the non-lease components associated with that lease component as a single lease component. We elected to apply this practical expedient to all underlying asset classes;
4. Not apply the recognition requirements in ASC 842 to short-term leases; and
5. Not record a right of use asset or right of use liability for leases with an asset or liability balance that would be considered immaterial.

Refer to *Note 16. Leases* for additional disclosures required by ASC 842.

NOTE 2. RECENT ACCOUNTING PRONOUNCEMENTS

The following table summarizes recent ASU's issued by the FASB that could have an impact on our consolidated financial statements.

Standard	Description	Effective Date	Effect on the financial statements or other significant matters
ASU 2019-12 Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes	This standard was issued with the intent to simplify various aspects of income taxes. The standard requires a prospective basis of adoption and a retrospective basis adjustment for amendments related to franchise taxes.	First quarter of 2021, early adoption is permitted.	We are currently evaluating the impact this standard will have on our consolidated financial statements.
ASU 2018-15, Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract	The amendments in this update align the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software. The standard provides the option to choose between prospective transition and retrospective transition.	First quarter of 2020.	This standard is not expected to have a material impact on our consolidated financial statements.
ASU 2016-13 Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments as amended by ASU 2018-19, 2019-04, 2019-05, 2019-11 and 2019-10.	The standard amends guidance on the impairment of financial instruments. The ASU estimates credit losses based on expected losses and provides for a simplified accounting model for purchased financial assets with credit deterioration. The standard requires a modified retrospective basis adoption through a cumulative-effect adjustment to retained earnings as of the beginning of the period of adoption.	First quarter of 2020, early adoption is permitted.	We will adopt the standard using a modified retrospective approach, on January 1, 2020.This standard is not expected to have a material impact on our consolidated financial statements.

NOTE 3. NEW BUSINESS AND ASSET MANAGEMENT

The acquisitions discussed in the section below are not material to our consolidated financial statements individually or in the aggregate and therefore, disclosures of pro forma financial information have not been presented. The results of operations reflect the period of ownership of the acquired businesses, business development projects and dispositions.

Green Investment Group Limited ("GIG") Joint Ventures

Dublin EfW

During 2017, we completed construction of the Dublin EfW facility ("Dublin EfW"), a 600,000 metric ton-per-year, 58 megawatt facility in Dublin, Ireland. Operational commencement began in October 2017.

In December 2017, we entered into a strategic partnership with GIG, a subsidiary of Macquarie Group Limited, to develop EfW projects in the UK and Ireland. Our first investment with GIG, Covanta Europe Assets, Ltd ("CEAL"), is structured as a 50/50 joint venture between Covanta and GIG. As an initial step, we contributed 100% of Dublin EfW into CEAL, and GIG acquired a 50% ownership in CEAL for €136 million ($167 million). We retained a 50% equity interest in CEAL and retained our role as operations and maintenance ("O&M") service provider for the Dublin EfW.

On February 12, 2018, GIG's investment in CEAL closed and we received gross proceeds of $167 million ($98 million, net of existing restricted cash), which we used to repay borrowings under our revolving credit facility. The sale resulted in our loss of a controlling interest in Dublin EfW, which required the entity to be deconsolidated from our financial statements as of the sale date. For the year ended December 31, 2018, we recorded a gain on the loss of a controlling interest of the business of $204 million which is included in Net gain (loss) on sale of business and investments on our consolidated statement of operations. The gain resulted from the excess of proceeds received plus the fair value of our non-controlling interest in Dublin EfW over our carrying value.

Our 50% equity interest in CEAL is accounted for under the equity method of accounting. As of December 31, 2019 and 2018, our equity investment of $143 million and $149 million, respectively is included in Other assets on our consolidated balance sheet. The fair value of our investment was determined by the fair value of the consideration received for the 50% acquired by GIG. There were no basis differences between the fair value of the acquired investment in CEAL and the carrying amounts of the underlying net assets as they were fair valued contemporaneously as of the sale date. For further information, see *Note 11. Equity Method Investments*.

Earls Gate Energy Centre

In December of 2018, financial close was reached on our second project with GIG, the Earls Gate Energy Centre project ("Earls Gate"), a 650 metric ton-per-day, 21.5 megawatt equivalent generation capacity EfW facility to be built in Grangemouth, Scotland. GIG and Covanta together will hold a 50% equity ownership in the project company, through a 50/50 joint venture, Covanta Jersey Assets Ltd., with co-investor and developer Brockwell Energy owning the remaining 50% stake. The Earls Gate facility is expected to commence operations in early 2022. We will account for our 50% ownership of the joint venture, which gives us a 25% indirect ownership of the project company, under the equity method of accounting. As of December 31, 2019 and 2018, an equity investment of $9 million and $10 million, respectively, and a shareholder loan of $15 million and $6 million, respectively, related to this project are included in Other assets on our consolidated balance sheet. For further information, see *Note 11. Equity Method Investments*.

Rookery EfW

In March 2019, we reached financial close on the Rookery South Energy Recovery Facility (“Rookery”), a 1,600 metric ton-per-day, 60 megawatt EfW facility under construction in Bedfordshire, England. Rookery is our second investment in the UK with our strategic partner, Green Investment Group Limited (“GIG”). Through a 50/50 jointly-owned and governed entity (“Covanta Green”), we and GIG own an 80% interest in the project. We co-developed the project with Veolia ES (UK) Limited (“Veolia”), who owns the remaining 20%. We provide technical oversight during construction and will provide operations and maintenance (“O&M”) services for the facility, and Veolia will be responsible for supplying at least 70% of the waste processing capacity. The facility is expected to commence commercial operations in 2022.

In connection with the transaction, we received $44 million (£34 million) of total consideration for the value of our development costs incurred to date and related fees, and for GIG's right to invest 40% in the project (50% investment in Covanta Green). For the year ended December 31, 2019, as a result of this consideration and a step-up in the fair value of our retained equity investment, we recorded a gain of $56 million in Net gain on sale of business and investments in our condensed consolidated statement of operations. As of December 31, 2019, $22 million of the consideration received remains in Covanta Green (to be used by us or distributed to us, at our discretion) and as such this amount is included in Prepaid expenses and other current assets and our $9 million equity method investment is included in Other assets on our condensed consolidated balance sheet. The fair value of our retained equity investment in Covanta Green was determined by the fair value of the consideration received from GIG for the right to invest 40% in the project.

Zhao County, China Venture

In December 2019, we made an equity investment in a venture that signed a concession agreement with Zhao County, China that supports the construction of a new 1,200 ton-per-day EfW facility located approximately 200 miles from Beijing ("Zhao County"). The project is being developed jointly by Covanta and strategic local partner, Longking Energy Development Co. Ltd. Construction is expected to begin in early 2020 with completion in less than two years.

As of December 31, 2019, our equity investment in the venture totaled RMB 35 million ($5 million) which amounted to a 26% ownership interest. This investment is accounted for under the equity method of accounting and is included in Other assets on our consolidated balance sheet. Pursuant to the agreement, we are required to contribute an additional RMB 61 million ($9 million) by the end of 2021 and our eventual ownership interest in the venture is expected to be 49%. For additional information see *Note 19. Subsequent Events*.

Environmental Services Acquisitions

During 2018, we acquired one environmental services business located in Toronto, Canada, for approximately $4 million. During 2017, we acquired three environmental services businesses (one of which was accounted for as an asset purchase), in separate transactions, for approximately $17 million.

These acquisitions expanded our Covanta Environmental Solutions capabilities and client service offerings, and allow us to direct additional non-hazardous profiled waste volumes into our EfW facilities, and therefore are highly synergistic with our existing business.

Palm Beach Resource Recovery Acquisition

In September 2018, we acquired the Palm Beach Resource Recovery Corporation ("PBRRC") for $46 million. PBRRC holds long-term contracts for the operation and maintenance of two EfW facilities located in Palm Beach County, Florida.

NOTE 4. DISPOSITIONS AND ASSETS HELD FOR SALE

Divestiture of Springfield and Pittsfield EfW facilities

During the second quarter of 2019, as part of our ongoing asset rationalization and portfolio optimization efforts, we divested our Pittsfield and Springfield EfW facilities. During the first quarter, we determined that the assets and liabilities associated with these facilities met the criteria for classification as assets held for sale, but did not meet the criteria for classification as discontinued operations as this sale did not represent a strategic shift in our business. For the year ended December 31, 2019, we recognized a loss of $11 million, which is included in Net gain (loss) on sale of business and investments in our condensed consolidated statement of operations.

Sale of Hydro Facility Investment

In July 2018, we sold our equity interests in a hydroelectric facility located in the state of Washington for proceeds of approximately $12 million. For the year ended December 31, 2018, we recorded a gain of $7 million related to this transaction which is included in Net gain (loss) on sale of business and investments on our consolidated statement of operations.

China Investments

During 2016, we completed the exchange of our ownership interests in China and sold our ownership interest in Sanfeng Environment to a third-party, a subsidiary of CITIC Limited ("CITIC"), a leading Chinese industrial conglomerate and investment company.

Subsequent to completing the exchange, Sanfeng Environment made certain claims for indemnification under the agreement related to the condition of the facility in Taixing. During the year ended December 31, 2017, we recorded a $6 million charge related to these claims, which is included in Net gain (loss) on sale of business and investments on our consolidated statement of operations.

On February 9, 2018 we sold our remaining investment in Sanfeng Environment to CITIC for proceeds of $13 million and recorded a gain on the sale of $6 million, which is included in Net gain (loss) on sale of business and investments on our condensed consolidated statement of operations for the year ended December 31, 2018.

NOTE 5. EQUITY AND EARNINGS PER SHARE ("EPS")

Equity

As of December 31, 2019, there were 136 million shares of common stock issued of which 131 million shares were outstanding; the remaining 5 million shares of common stock issued but not outstanding were held as treasury stock.

As of December 31, 2019, there were 10 million shares of preferred stock authorized, with none issued or outstanding. The preferred stock may be divided into a number of series as defined by our Board of Directors. The Board of Directors is authorized to fix the rights, powers, preferences, privileges and restrictions granted to and imposed upon the preferred stock upon issuance.

In May 2014, the stockholders of the Company approved the Covanta Holding Corporation 2014 Equity Award Plan. For additional information, see *Note 7. Stock-Based Award Plans*.

Earnings Per Share

We calculate basic EPS using net earnings for the period and the weighted average number of outstanding shares of our common stock, par value $0.10 per share, during the period. Diluted earnings per share computations, as calculated under the treasury stock method, include the weighted average number of shares of additional outstanding common stock issuable for stock options, restricted stock awards and restricted stock units whether or not currently exercisable. Diluted earnings per share does not include securities if their effect was anti-dilutive.

Basic and diluted weighted average shares outstanding were as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Basic weighted average common shares outstanding	131	130	130
Dilutive effect of stock options, restricted stock and restricted stock units	2	2	1
Diluted weighted average common shares outstanding	133	132	131
Anti-dilutive stock options, restricted stock and restricted stock units excluded from the calculation of EPS	—	—	—

NOTE 6. REVENUES

Disaggregation of revenue

A disaggregation of revenue from contracts with customers is presented on our consolidated statements of operations for the year ended December 31, 2019, 2018 and 2017. See *Note 1. Organization and Summary of Significant Accounting Policies* for a discussion of our reportable segment.

Performance Obligations and Transaction Price Allocated to Remaining Performance Obligations

The following summarizes our performance obligations, a description of how transaction price is allocated to future performance obligations and the practical expedients applied:

Revenue Type	Timing	Performance Obligations	Measure of Progress	Type	Practical Expedients
Service Fee	Over time	Operations/waste disposal	Time elapsed	Fixed & Variable	Constrained (1) & Series (2)
Tip Fee	Over time	Waste disposal	Units delivered	Fixed & Variable	Right to invoice
Energy	Over time	Energy Capacity Steam	Units delivered Time elapsed Units delivered	Fixed & Variable	Right to invoice & Series (2)
Metals	Point in time	Sale of ferrous & non-ferrous metals	Units delivered	Variable	Less than 1 year
Other (Construction)	Over time	Construction services	Costs incurred	Fixed & Variable	Less than 1 year

(1) The amount of variable consideration that is included in the transaction price may be constrained, and is included only to the extent that it is probable that a significant reversal in the amount of the cumulative revenue recognized will not occur in a future period. We estimate our variable service fee using the expected value method.

(2) Service Fee and Energy contracts have been determined to have an annual and monthly series, respectively.

ASC 606 requires disclosure of the aggregate amount of transaction price that is allocated to performance obligations that have not yet been satisfied as of December 31, 2019. The guidance provides certain conditions (identified as "practical expedients") that limit this disclosure requirement. We have contracts that meet the following practical expedients provided by ASC 606:

1. The performance obligation is part of a contract that has an original expected duration of one year or less.
2. Revenue is recognized from the satisfaction of the performance obligations in the amount billable to our customer that corresponds directly with the value to the customer of our performance completed to date (i.e. “right-to-invoice” practical expedient).
3. The variable consideration is allocated entirely to a wholly unsatisfied performance obligation or to a wholly unsatisfied promise to transfer a distinct service or a series of distinct services that are substantially the same and that have the same pattern of transfer to our customer (i.e. “series practical expedient”).

Our remaining performance obligation primarily consists of the fixed consideration contained in our contracts. As of December 31, 2019 our total remaining performance obligation was $6.4 billion of which we expect to recognize 11% and 10% in 2020 and 2021, respectively.

Contract Balances

The following table reflects the balance in our contract assets, which we classify as “Accounts receivable unbilled” and present net in Accounts receivable, and our contract liabilities, which we classify as deferred revenue and present in “Accrued expenses and other current liabilities” in our consolidated balance sheet (in millions):

	December 31, 2019	December 31, 2018
Unbilled receivables	$ 16	$ 16
Deferred revenue	$ 18	$ 15

For the year ended December 31, 2019, revenue recognized that was included in deferred revenue on our consolidated balance sheet at the beginning of the period totaled $5 million.

Accounts receivable are recorded when the right to consideration becomes unconditional and we typically receive payments from customers monthly. The timing of our receipt of cash from construction projects is generally based upon our reaching completion milestones as set forth in the applicable contracts, and the timing and size of these milestone payments can result in material working capital variability between periods. We had no asset impairment charges related to these assets in the period.

NOTE 7. STOCK-BASED AWARD PLANS

Stock-Based Award Plans

In May 2014, the stockholders of the Company approved the Covanta Holding Corporation 2014 Equity Award Plan (the “Plan”) to provide incentive compensation to non-employee directors, officers and employees, and to consolidate the two previously existing equity compensation plans into a single plan: the Company’s Equity Award Plan for Employees and Officers (the “Former Employee Plan”) and the Company’s Equity Award Plan for Directors (the “Former Director Plan,” and together with the Former Employee Plan, the “Former Plans”). Shares that were available for issuance under the Former Plans will be available for issuance under the Plan. During 2019, the Company amended the Plan to reserve an additional 6 million shares of the Company's common stock for issuance under the Plan.

The purpose of the Plan is to promote our interests (including our subsidiaries and affiliates) and our stockholders’ interests by using equity interests to attract, retain and motivate our management, non-employee directors and other eligible persons and to encourage and reward their contributions to our performance and profitability. The Plan provides for awards to be made in the form of (a) shares of restricted stock, (b) restricted stock units, (c) incentive stock options, (d) non-qualified stock options, (e) stock appreciation rights, (f) performance awards, or (g) other stock-based awards which relate to or serve a similar function to the awards described above. Awards may be made on a standalone, combination or tandem basis.

Stock-Based Compensation

Generally, we recognize compensation costs using the graded vesting attribution method over the requisite service period of the award, which is generally three years. Forfeitures are accounted for as they occur. Stock-based compensation expense is as follows (in millions, except for weighted average years):

	Total Stock-Based Compensation Expense			Unrecognized stock-based compensation expense	Weighted-average years to be recognized
	Year Ended December 31,				
	2019	2018	2017	As of December 31, 2019	
Restricted Stock Units	$ 17	$ 14	$ 5	$ 9	1.4
Performance Awards	$ 6	$ 5	$ 2	$ 6	1.7
Restricted Stock Awards	$ 2	$ 5	$ 11	$ —	0.3
Tax benefit related to compensation expense	$ 5	$ 5	$ 4		

During the year ended December 31, 2019, we withheld 452,025 shares of our common stock in connection with tax withholdings for vested stock awards.

Restricted Stock Units ("RSUs")

We award RSUs to eligible employees and our directors that entitle the recipient to receive shares of our common stock as the units vest. We calculate the fair value of RSUs based on the closing price of our stock on the date the award was granted.

During the year ended December 31, 2019 we awarded certain employees grants of RSUs that will be expensed over the requisite service period. The terms of the RSUs include vesting provisions based solely on continued service. If the service criteria are satisfied, the RSUs will generally vest during March of 2020, 2021, and 2022.

During the year ended December 31, 2019 we awarded RSUs for annual director compensation and for quarterly director fees for certain of our directors who elected to receive RSUs in lieu of cash payments. We determined the service vesting condition of these restricted stock units to be non-substantive and, in accordance with accounting principles for stock compensation, recorded the entire fair value of the awards as compensation expense on the grant date.

Changes in nonvested RSUs as of December 31, 2019 were as follows (in thousands, except per share amounts):

	Number of Shares	Weighted-Average Grant Date Fair Value
Nonvested at the beginning of the year	1,832	$ 14.74
Granted	1,238	$ 16.70
Vested	(691)	$ 14.46
Forfeited	(107)	$ 15.73
Nonvested at the end of the year	2,272	$ 15.86

The weighted-average grant-date fair value of RSUs granted during the years ended December 31, 2019, 2018, and 2017 was $16.70, $14.87, and $15.08, respectively. The total fair value of shares vested during the years ended December 31, 2019, 2018, and 2017, was $10 million, $8 million, and $1 million, respectively.

Performance Awards

Performance awards represent a contingent right to receive shares of our common stock based on performance targets and consist of two types of awards, free cash flow ("FCF") awards and total stockholder return ("TSR") awards. Issuance and payment of the performance award is dependent upon the employee's continued employment during the performance period and the achievement of performance goals achieved. As of December 31, 2019, there were 8 million shares of common stock available for future issuance under our equity plans.

For our FCF and TSR awards we recognize compensation costs ratably over the performance period. The FCF Awards and the TSR Awards will each cliff vest at the end of the 3 year performance period, however, the number of shares delivered will vary based upon the attained level of performance and may range from 0 to 2 times the number of target units awarded.

Stock-based compensation expense for the FCF Awards is recognized beginning in the period when management has determined it is probable the financial performance metric will be achieved for the respective vesting period.

Stock-based compensation expense for TSR awards are fair valued on the date of grant and expensed over the performance measurement period.

The grant date fair value for the FCF Awards granted were computed using the closing price of the common stock on the grant date. The grant date fair value for the TSR Awards granted were calculated using a Monte Carlo simulation. There were no TSR Awards granted in 2017.

The Monte Carlo valuation assumptions utilized for the TSR awards were:

	2019	2018
Expected life (1)	2.82 years	2.82 years
Expected stock price volatility (2)	3.28%	2.63%
Risk-free interest rate (3)	2.48%	2.38%
Stock price (4)	$ 16.35	$ 14.80

(1) Represents the remaining performance measurement period as of the valuation date.
(2) Based on each entity's historical stock price volatility over the remaining performance measurement period.
(3) The risk free rate equals the yield, as of the grant date, on zero coupon US Treasury STRIPS that have a term equal to the length of the remaining performance measurement period.
(4) The stock price is the closing price of our common stock on the grant date.

Changes in performance awards as of December 31, 2019 were as follows (in thousands, except per share amounts):

	Number of Shares	Weighted-Average Grant Date Fair Value
Nonvested at the beginning of the year	1,166	$ 15.66
Granted	395	$ 17.90
Vested	(368)	$ 15.11
Nonvested at the end of the year	1,193	$ 16.57

The weighted-average grant-date fair value of performance awards granted during the years ended December 31, 2019, 2018, and 2017 was $17.90, $15.50, and $16.30 respectively. The total fair value of shares vested during the years ended December 31, 2019, 2018, and 2017, was $6 million, zero and zero, respectively.

Restricted Stock Awards ("RSAs")

RSAs that have been issued to employees typically vest over a three-year period. RSAs are stock-based awards for which the employee or director does not have a vested right to the stock ("nonvested") until the requisite service period has been rendered.

RSAs to employees are subject to forfeiture if the employee is not employed on the vesting date. RSAs issued to directors are not subject to forfeiture in the event a director ceases to be a member of the Board of Directors, except in limited circumstances. RSAs will be expensed over the requisite service period. Prior to vesting, restricted stock awards have all of the rights of common stock (other than the right to sell or otherwise transfer, when issued). We calculate the fair value of share-based stock awards based on the closing price on the date the award was granted.

During the year ended December 31, 2019, we awarded our director's RSAs for the annual director compensation. We determined the service vesting condition of these restricted stock awards to be non-substantive and, in accordance with accounting principles for stock compensation, recorded the entire fair value of the awards as compensation expense on the grant date.

Changes in nonvested restricted stock awards as of December 31, 2019 were as follows (in thousands, except per share amounts):

	Number of Shares	Weighted-Average Grant Date Fair Value
Nonvested at the beginning of the year	727	$ 15.90
Granted	6	$ 17.64
Vested	(474)	$ 15.73
Forfeited	(17)	$ 16.21
Nonvested at the end of the year	242	$ 16.26

The weighted-average grant-date fair value of RSAs granted during the years ended December 31, 2019, 2018, and 2017 was $17.64, $15.20, and $16.22 respectively. The total fair value of shares vested during the years ended December 31, 2019, 2018, and 2017, was $7 million, $11 million, and $10 million, respectively.

Stock Options

We have also awarded stock options to certain employees and directors. Stock options awarded to directors vested immediately. Stock options awarded to employees have typically vested annually over 3 to 5 years and expire over 10 years. We calculate the fair value of our share-based option awards using the Black-Scholes option pricing model which requires estimates of the expected life of the award and stock price volatility.

The following table summarizes activity and balance information of the options under the Plan as of December 31, 2019:

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value [(2)]
	(in thousands, except per share amounts)			
Outstanding at the beginning of the year	25	$ 20.58		
Granted	—	$ —		
Exercised	—	$ —		
Expired	—	$ —		
Forfeited	—	$ —		
Outstanding at the end of the year [(1)]	25	$ 20.58	4.52	$ —
Options exercisable at year end	25	$ 20.58	4.52	$ —

(1) All options outstanding as of December 31, 2019 are fully vested.
(2) The aggregate intrinsic value represents the total pre-tax intrinsic value (the difference between the closing stock price on the last trading day of 2019 and the exercise price, multiplied by the number of in-the-money options) that would have been received by the option holders had all option holders exercised their options on the last trading day of 2019. The intrinsic value changes based on the fair market value of our common stock.

NOTE 8. SUPPLEMENTARY INFORMATION

Other Operating Expense, net

Insurance Recoveries

Fairfax County Energy-from-Waste Facility

In February 2017, our Fairfax County energy-from-waste facility experienced a fire in the front-end receiving portion of the facility. During the first quarter of 2017, we completed our evaluation of the impact of this event and recorded an immaterial asset impairment, which we have since recovered from insurance proceeds. The facility resumed operations in December 2017.

Plymouth Energy-from-Waste Facility

In May 2016, our Plymouth energy-from-waste facility experienced a turbine generator failure. Damage to the turbine generator was extensive and operations at the facility were suspended promptly to assess the cause and extent of damage. The facility is capable of processing waste without utilizing the turbine generator to generate electricity, and we resumed waste processing operations in early June of 2016. The facility resumed generating electricity early in the first quarter of 2017 after the generator and other damaged equipment were replaced.

The cost of repair or replacement of assets and business interruption losses for the above matters were insured under the terms of applicable insurance policies, subject to deductibles.

We recorded insurance gains, as a reduction to Other operating expense, net in our consolidated statement of operations as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Insurance gains for property and clean-up costs, net of impairment charges	$ —	$ 18	$ 7
Insurance gains for business interruption costs, net of costs incurred	$ 2	$ 19	$ 23

Hennepin County Legal Settlement

On September 25, 2017, we settled a dispute with Hennepin County, Minnesota regarding extension provisions in our service contract to operate the Hennepin Energy Recovery Center. In 2017, we received $8 million in connection with the settlement. During the year ended December 31, 2017, we recorded a gain on settlement of $8 million as a reduction of Other operating expense, net in our consolidated statement of operations.

Impairment Charges

Impairment charges are as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Impairment charges	$ 2	$ 86	$ 2

During the year ended December 31, 2018, we identified an indicator of impairment associated with certain of our EfW facilities where the current expectation is that, more likely than not, the assets will not be operated through their previously estimated economic useful life. We performed recoverability tests to determine if these facilities were impaired as of the respective balance sheet date. As a result, based on expected cash flows utilizing Level 3 inputs, we recorded a non-cash impairment charge for the year ended December 31, 2018 of $86 million, to reduce the carrying value of the assets to their estimated fair value.

For more information regarding fair value measurements, see *Note 12. Financial Instruments*.

Selected Supplementary Balance Sheet Information

Selected supplementary balance sheet information is as follows (in millions):

	As of December 31,	
	2019	2018
Prepaid expenses	$ 27	$ 22
Other receivable	22	—
Spare parts	20	21
Other	36	21
Total prepaid expenses and other current assets [1]	$ 105	$ 64
Operating expenses, payroll and related expenses	$ 139	$ 150
Deferred revenue	12	10
Accrued liabilities to client communities	16	26
Interest payable	27	38
Dividends payable	38	36
Insurance premium financing	24	20
Other	36	53
Total accrued expenses and other current liabilities	$ 292	$ 333

[1] Includes assets held for sale previously disclosed separately on the consolidated balance sheet.

Geographic Information

Our operations are principally located in the United States. A summary of our operating revenue and total assets by geographic area is as follows (in millions):

	United States	Other	Total
Operating Revenue:			
Year Ended December 31, 2019	$ 1,800	$ 70	$ 1,870
Year Ended December 31, 2018	$ 1,785	$ 83	$ 1,868
Year Ended December 31, 2017	$ 1,705	$ 47	$ 1,752

	United States	Other	Total
Total Assets:			
As of December 31, 2019	$ 3,466	$ 249	$ 3,715
As of December 31, 2018	$ 3,635	$ 208	$ 3,843
As of December 31, 2017	$ 3,727	$ 714	$ 4,441

NOTE 9. INCOME TAXES

We file a federal consolidated income tax return with our eligible subsidiaries. Our federal consolidated income tax return also includes the taxable results of certain grantor trusts described below. The components of income tax expense were as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Current:			
Federal	$ —	$ —	$ 4
State	2	1	2
Foreign	—	1	(1)
Total current	2	2	5
Deferred:			
Federal	(4)	(1)	(204)
State	(4)	(25)	(2)
Foreign	(1)	(5)	10
Total deferred	(9)	(31)	(196)
Total income tax benefit	$ (7)	$ (29)	$ (191)

Domestic and foreign pre-tax (loss) income was as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Domestic	$ (25)	$ (43)	$ (43)
Foreign	22	160	(92)
Total	$ (3)	$ 117	$ (135)

The effective income tax rate was 264%, (25)%, and 142% for the years ended December 31, 2019, 2018 and 2017, respectively.

The increase in the effective tax rate for the year ended December 31, 2019, compared to the year ended December 31, 2018 is primarily due to the $45 million non-taxable gain in 2019 resulting from the formation of the Rookery joint venture as compared to the $206 million non-taxable gain on the sale of 50% of our interests in Dublin EfW to GIG in 2018.

The decrease in the effective tax rate for the year ended December 31, 2018 compared to the year ended December 31, 2017 is primarily due to the combined effects of: (i) a significant deferred tax revaluation related to tax reform in 2017 which did not reoccur in 2018; (ii) no income tax associated with the gain from the sale of 50% of our interests in Dublin EfW; and (iii) the discrete tax benefits attributable to New Jersey state tax law changes and a state audit settlement.

A reconciliation of our income tax (benefit) expense at the federal statutory income tax rate of 21% to our income tax benefit at the effective tax rate is as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Income tax (benefit) expense at the federal statutory rate	$ (1)	$ 25	$ (47)
State and other tax expense	(1)	(1)	(2)
Tax rate differential on foreign earnings	(2)	(3)	10
Gain on sale of business	(9)	(44)	—
Permanent differences	4	5	(3)
Impact of state apportionment & tax rate	(2)	(13)	—
Change in valuation allowance	1	3	31
Liability for uncertain tax positions	(1)	(4)	—
Impact of deferred tax re-measurement for federal tax rate change	—	—	(204)
Tax reform transition tax	—	1	21
Other	4	2	3
Total income tax benefit	$ (7)	$ (29)	$ (191)

We had consolidated federal NOLs estimated to be approximately $198 million for federal income tax purposes as of December 31, 2019. The majority of these NOLs will expire in 2033 and beyond, if not used.

In addition to the consolidated federal NOLs, as of December 31, 2019, we had state NOL carryforwards of approximately $400 million, which expire between 2028 and 2037, net foreign NOL carryforwards of approximately $161 million with some expiring between 2020 and 2039. The federal tax credit carryforwards include production tax credits of $60 million expiring between 2024 and 2036, and research and experimentation tax credits of $1 million expiring between 2027 and 2033. Additionally, we had state income tax credits of $1 million.

The tax effects of temporary differences that give rise to the deferred tax assets and liabilities are presented as follows (in millions):

	As of December 31,	
	2019	2018
Deferred tax assets:		
Net operating loss carryforwards	$ 90	$ 90
Accrued and prepaid expenses	63	61
Tax credits	49	48
Interest expense	26	12
Other	8	23
Total gross deferred tax asset	236	234
Less: valuation allowance	(65)	(73)
Total deferred tax asset	171	161
Deferred tax liabilities:		
Property, plant and equipment	517	521
Intangible assets	17	12
Other, net	9	6
Total gross deferred tax liability	543	539
Net deferred tax liability	$ 372	$ 378

US income taxes were not provided on cumulative undistributed foreign earnings as of December 31, 2019 and 2018. Foreign undistributed earnings were considered permanently invested, therefore no provision for US income taxes was accrued as of December 31, 2019 and 2018.

Deferred tax assets relating to employee stock-based compensation deductions were reduced to reflect exercises of non-qualified stock option grants and vesting of restricted stock. Some exercises of non-qualified stock option grants and vesting of restricted stock resulted in tax deductions in excess of previously recorded benefits resulting in a "shortfall".

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows (in millions):

Balance at December 31, 2016	$ 43
Additions based on tax positions related to the current year	1
Additions for tax positions of prior years	6
Reductions for lapse in applicable statute of limitations	(1)
Reductions for tax positions of prior years	(2)
Additions due to acquisitions	1
Balance at December 31, 2017	48
Additions based on tax positions related to the current year	2
Additions for tax positions of prior years	1
Reductions for lapse in applicable statute of limitations	(2)
Reductions for tax positions of prior years	(8)
Balance at December 31, 2018	41
Additions based on tax positions related to the current year	2
Reductions for lapse in applicable statute of limitations	(1)
Reductions for tax positions of prior years	(2)
Balance at December 31, 2019	$ 40

The uncertain tax positions, exclusive of interest and penalties, were $40 million and $41 million as of December 31, 2019 and 2018, respectively, which also represent potential tax benefits that if recognized, would impact the effective tax rate.

We record interest accrued on liabilities for uncertain tax positions and penalties as part of the tax provision. As of December 31, 2019 and 2018, we had accrued interest and penalties associated with liabilities for uncertain tax positions of $6 million and $5 million, respectively.

Audits for federal income tax returns are closed for the years through 2010. However, the Internal Revenue Service ("IRS") can audit the NOL's generated during those years in the years that the NOL's are utilized.

State income tax returns are generally subject to examination for a period of three to six years after the filing of the respective tax return. The state impact of any federal changes remains subject to examination by various states for a period of up to one year after formal notification to the states. We have various state income tax returns in the process of examination, administrative appeals or litigation.

Our NOLs predominantly arose from our predecessor insurance entities, formerly named Mission Insurance Group, Inc., (“Mission”). These Mission insurance entities have been in state insolvency proceedings in California and Missouri since the late 1980's. The amount of NOLs available to us will be reduced by any taxable income or increased by any taxable losses generated by current members of our consolidated tax group, which include grantor trusts associated with the Mission insurance entities.

While we cannot predict what amounts, if any, may be includable in taxable income as a result of the final administration of these grantor trusts, substantial actions toward such final administration have been taken and we believe that neither arrangements with the California Commissioner of Insurance nor the final administration by the Missouri Director will result in a material reduction in available NOLs.

NOTE 10. ACCOUNTS RECEIVABLE SECURITIZATION

In December 2019, we entered into an agreement whereby we will regularly sell certain receivables on a revolving basis to third-party financial institutions (the “Purchasers”) up to an aggregate purchase limit of $100 million (the “Receivables Purchase Agreement or “RPA”). Transfers under the RPA meet the requirements to be accounted for as sales in accordance with the *Transfers and Servicing* topic of FASB Accounting Standards Codification. We receive a discounted purchase price for each receivable sold under the RPA and will continue to service and administer the subject receivables. The weighted-average discount rate paid on accounts receivable sold was 2.43% for the year ended December 31, 2019.

Amounts recognized in connection with the RPA were as follows (in millions):

	For the Year Ended December 31, 2019
Accounts receivable sold and derecognized	$ 224
Cash proceeds received (1)	$ 223
Loss on accounts receivable sold (2)	$ 2

	December 31, 2019
Pledged receivables (3)	$ 142

(1) Of this amount, $99 million, represented the initial transfer upon commencement of the RPA, which is net of transaction fees and the structuring discount. The remainder represented proceeds from collections reinvested in revolving-period transfers. This amount is included in Net cash provided by operating activities on our consolidated statement of cash flows.
(2) Recorded in Other operating expense, net on our consolidated statements of operations. Amount includes initial transaction costs of $1 million and a guarantee expense of less than $1 million related to the pledged receivables.
(3) Secures our obligations under the RPA and provides a guarantee for the prompt payment, not collection, of all payment obligations relating to the sold receivables.

We are not required to offer to sell any receivables and the Purchasers are not committed to purchase any receivable offered. The RPA has a scheduled termination date of December 5, 2020. Additionally, we may terminate the RPA at any time upon 30 days' prior written notice. The agreement governing the RPA contains certain covenants and termination events. An occurrence of an event of default or the occurrence of a termination event could lead to the termination of the RPA. As of December 31, 2019 we were in compliance with the covenants, and no termination events had occurred. As of December 31, 2019, $100 million, the maximum amount available under the RPA, was fully utilized.

NOTE 11. EQUITY METHOD INVESTMENTS

Investments accounted for under the equity method of $167 million and $160 million are included in Other assets in our consolidated balance sheet as of December 31, 2019 and 2018, respectively. A shareholder loan of $15 million related to the Earls Gate project is included in Other assets in our consolidated balance sheet as of December 31, 2019. For additional information on our equity investments in Ireland, the UK and China, see *Note 3. New Business and Asset Management.*

Our ownership percentages in our equity method investments are as follows:

	December 31,	
Ownership interest:	**2019**	**2018**
Dublin EfW (Ireland) (1)	50%	50%
Ambiente 2000 S.r.l. (Italy)	40%	40%
Earls Gate (UK) (2)	25%	25%
Rookery EfW (UK) (3)	40%	—%
Zhao County EfW (China) (4)	26%	—%
South Fork Plant (US)	—%	50%

(1) We have a 50% indirect ownership of Dublin EfW, through our 50/50 joint venture with GIG, Covanta Europe Assets Ltd.
(2) We have a 25% indirect ownership of Earls Gate, through our 50/50 joint venture with GIG, Covanta Green Jersey Assets Ltd., which owns 50% of Earls Gate.
(3) We have a 40% indirect ownership of Rookery through our 50/50 joint venture with GIG, Covanta Green UK Ltd.
(4) We have a 26% interest in Zhao County through our venture with Longking Energy Development Co. Ltd.

Summarized financial information of our equity method investments is presented as follows (in millions):

	For the Year Ended December 31,		
	2019	2018	2017
Statement of Operations:			
Operating revenue	$ 120	$ 112	$ 17
Operating income	$ 28	$ 31	$ 1
Net income	$ 11	$ 13	$ 1

	December 31,	
	2019	2018
Balance Sheet:		
Current assets	$ 180	$ 80
Long-term assets	$ 1,008	$ 834
Current liabilities	$ 104	$ 69
Long-term liabilities	$ 735	$ 521

We serve as the O&M service provider for the Dublin EfW facility which is owned by CEAL, our joint venture with GIG. For the years ended December 31, 2019 and 2018 we recognized $30 million and $27 million in revenues related to this agreement.

NOTE 12. FINANCIAL INSTRUMENTS

Fair Value Measurements

Authoritative guidance associated with fair value measurements provides a framework for measuring fair value and establishes a fair value hierarchy that prioritizes the inputs used to measure fair value, giving the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 inputs), then significant other observable inputs (Level 2 inputs) and the lowest priority to significant unobservable inputs (Level 3 inputs). The following methods and assumptions were used to estimate the fair value of each class of financial instruments:

- For marketable securities, the carrying value of these amounts is a reasonable estimate of their fair value.
- Fair values for long-term debt and project debt are determined using quoted market prices (Level 1).
- The fair value of our floating to fixed rate interest rate swaps is determined using discounted cash flow valuation methodologies that apply the appropriate forward floating rate curve observable in the market to the contractual terms of our swap agreements. The fair value of the interest rate swaps is adjusted to reflect counterparty risk of non-performance, and is based on the counterparty’s credit spread in the credit derivatives market.
- The fair values of our energy hedges were determined using the spread between our fixed price and the forward curve information available within the market.

The estimated fair value amounts have been determined using available market information and appropriate valuation methodologies. However, considerable judgment is required in interpreting market data to develop estimates of fair value. Accordingly, the estimates presented herein are not necessarily indicative of the amounts that we would realize in a current market exchange and are based on pertinent information available to us as of December 31, 2019. Such amounts have not been comprehensively revalued for purposes of these financial statements and current estimates of fair value may differ significantly from the amounts presented herein.

The following financial instruments are recorded at their estimated fair value. The following table presents information about the recurring fair value measurement of our assets and liabilities as of December 31, 2019 and 2018:

Financial Instruments Recorded at Fair Value on a Recurring Basis:	Fair Value Measurement Level	As of December 31, 2019	As of December 31, 2018
		(In millions)	
Assets:			
Investments — mutual and bond funds [1]	1	$ 2	$ 2
Derivative asset — energy hedges[2]	2	12	—
Total assets:		$ 14	$ 2
Liabilities:			
Derivative liability — energy hedges [3]	2	$ —	$ 13
Derivative liability — interest rate swaps [3]	2	$ 2	$ —
Total liabilities:		$ 2	$ 13

(1) Included in other noncurrent assets in the consolidated balance sheets.
(2) The short-term balance is included in Prepaid expenses and other current assets and the long-term balance is included in Other assets in the consolidated balance sheets.
(3) The short-term balance is included in Accrued expenses and other current liabilities and the long-term balance is included in Other liabilities in the consolidated balance sheets.

The following financial instruments are recorded at their carrying amount (in millions):

Financial Instruments Recorded at Carrying Amount:	As of December 31, 2019 Carrying Amount	As of December 31, 2019 Estimated Fair Value	As of December 31, 2018 Carrying Amount	As of December 31, 2018 Estimated Fair Value
Liabilities:				
Long-term debt	$ 2,383	$ 2,459	$ 2,342	$ 2,245
Project debt	$ 133	$ 138	$ 152	$ 154

We are required to disclose the fair value of financial instruments for which it is practicable to estimate that value. The fair value of short-term financial instruments such as cash and cash equivalents, restricted cash, accounts receivables, prepaid expenses and other assets, accounts payable and accrued expenses approximates their carrying value on the consolidated balance sheets due to their short-term nature.

In addition to the recurring fair value measurements, certain assets are measured at fair value on a non-recurring basis when an indication of impairment is identified. Long-lived assets, such as property and equipment and identifiable intangibles with finite useful lives, are periodically evaluated for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. For the purpose of impairment testing, we review the recoverable amount of individual assets or groups of assets at the lowest level of which there are there are identifiable cash flows, which is generally at the facility level. Assets are reviewed using factors including, but not limited to, our future operating plans and projected cash flows. The determination of whether impairment has occurred is based on the assets fair value as compared to the carrying value. Fair value is generally determined using an income approach, which requires discounting the estimated future cash flows associated with the asset. If the asset carrying amount exceeds its fair value, an impairment charge is recognized in the amount by which the carrying amount exceeds the fair value of the asset.

NOTE 13. DERIVATIVE INSTRUMENTS

Energy Price Risk

We have entered into a variety of contractual hedging arrangements, designated as cash flow hedges, in order to mitigate our exposure to energy market risk, and will continue to do so in the future. Our efforts in this regard involve only mitigation of price volatility for the energy we produce and do not involve taking positions (either long or short) on energy prices in excess of our physical generation. The amount of energy generation for which we have hedged on a forward basis under agreements with various financial institutions as of December 31, 2019 is indicated in the following table (in millions):

Calendar Year	Hedged MWh
2020	2.7
2021	0.8
2022	0.1
Total	3.6

As of December 31, 2019 and 2018, the fair value of the energy derivative asset and liability was $12 million and $13 million, respectively.

During the year ended December 31, 2019, cash provided by and used in energy derivative settlements of $18 million and $2 million, respectively, was included in the change in net cash provided by operating activities on our consolidated statement of cash flows.

During the year ended December 31, 2018, cash provided by and used in energy derivative settlements of $8 million and $24 million, respectively, was included in the change in net cash provided by operating activities on our consolidated statement of cash flows.

During the year ended December 31, 2017, cash provided by and used in energy derivative settlements of $17 million and zero, respectively, was included in the change in net cash provided by operating activities on our consolidated statement of cash flows.

Interest Rate Swaps

We may utilize derivative instruments to reduce our exposure to fluctuations in cash flows due to changes in variable interest rates paid on our direct borrowings under the senior secured revolving credit facility and the term loan of our subsidiary Covanta Energy (collectively referred to as the "Credit Facilities"). To achieve that objective, during December 31, 2019, we entered into pay-fixed, receive-variable swap agreements on $150 million notional amount of our variable rate debt under the Credit Facilities. The interest rate swaps are designated specifically to the Credit Facilities as a cash flow hedge and are recorded at fair value with changes in fair value recorded as a component of AOCI.

As of December 31, 2019, the fair value of the interest rate swap derivative liability of $2 million was recorded in Other long-term liabilities on our condensed consolidated balance sheet.

NOTE 14. INTANGIBLE ASSETS AND GOODWILL

Our intangible assets and liabilities are recorded upon acquisition at their estimated fair market values based upon discounted cash flows. Intangible assets and liabilities are amortized using the straight line method over their useful lives. Waste and service contract liabilities, net, are included as a component of Other liabilities on our consolidated balance sheets.

Intangible assets consisted of the following (in millions):

		As of December 31, 2019			As of December 31, 2018		
	Remaining Weighted Average Useful Life	Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Waste, service and energy contracts	18 years	$ 447	$ 211	$ 236	$ 522	$ 271	$ 251
Customer relationships, permits and other	5 years	52	30	22	52	24	28
Intangible assets, net		$ 499	$ 241	$ 258	$ 574	$ 295	$ 279
Waste and service contracts (liability)	14 years	$ (72)	$ (66)	$ (6)	$ (72)	$ (64)	$ (8)

The following table details the amount of amortization expense and contra-expense associated with our intangible assets and liabilities that was included in our consolidated statements of operations for each of the years indicated (in millions):

	Year Ended December 31,		
	2019	2018	2017
Intangible assets, net	$ 22	$ 20	$ 20
Waste and service contracts (contra-expense)	$ (2)	$ (2)	$ (2)

The following table details the amount of estimated amortization expense and contra-expense associated with our intangible assets and liabilities expected to be included in our consolidated statements of operations for each of the years indicated as of December 31, 2019 (in millions):

	Year Ended December 31,				
	2020	2021	2022	2023	2024
Intangible assets, net	21	20	20	18	15
Waste and service contracts (contra-expense)	(1)	$ —	$ —	$ —	$ —

The weighted average number of years prior to the next renewal period for contracts that we have an intangible recorded is 8 years.

Goodwill

The following table details the changes in carrying value of goodwill (in millions):

	Total
Balance at December 31, 2017	$ 313
Goodwill related to acquisitions	8
Balance at December 31, 2018	321
Goodwill related to acquisitions	—
Balance at December 31, 2019	$ 321

As of December 31, 2019, goodwill of approximately $46 million was deductible for federal income tax purposes.

NOTE 15. CONSOLIDATED DEBT

Consolidated debt is as follows (in millions):

	Average Rate(1)	December 31, 2019	December 31, 2018
LONG-TERM DEBT:			
Revolving credit facility	4.17%	$ 183	$ 212
Term loan, net due 2023	4.26%	384	394
Credit Facilities Sub-total		$ 567	$ 606
Senior Notes		1,200	1,200
Less: deferred financing costs related to senior notes		(14)	(16)
Senior Notes Sub-total		$ 1,186	$ 1,184
Tax-exempt bonds		$ 544	$ 494
Less: deferred financing costs related to tax-exempt bonds		(5)	(6)
Tax-Exempt Bonds Sub-total		$ 539	$ 488
Equipment financing arrangements due 2020 through 2031		85	59
Finance Leases (2)		6	5
Total long-term debt		$ 2,383	$ 2,342
Less: current portion		(17)	(15)
Noncurrent long-term debt		$ 2,366	$ 2,327
PROJECT DEBT:			
Project debt related to service fee structures		$ 47	$ 58
Union County EfW facility finance lease (tip fee structure)		84	89
Project debt related to tip fee structures		—	3
Unamortized debt premium, net		2	3
Less: deferred financing costs		—	(1)
Total project debt		$ 133	$ 152
Less: Current portion		(8)	(19)
Noncurrent project debt		$ 125	$ 133
TOTAL CONSOLIDATED DEBT		$ 2,516	$ 2,494
Less: Current debt		(25)	(34)
TOTAL NONCURRENT CONSOLIDATED DEBT		$ 2,491	$ 2,460

(1) During the year ended December 31, 2019 we entered into pay-fixed, receive-variable swap agreements on $150 million notional amount of our variable rate debt under the Credit Facilities. *See Note 13. Derivative Instruments* for further information.

(2) Excludes Union County EfW facility finance lease which is presented within project debt in our consolidated balance sheets.

Credit Facility Refinancing

In August 2018, our subsidiary, Covanta Energy, refinanced its existing credit facilities with an amended $1.3 billion senior secured credit facilities consisting of a $900 million revolving credit facility expiring August 2023 (the “Revolving Credit Facility”) and a $400 million term loan (the “Term Loan”), (collectively referred to as the "Credit Facilities").

We incurred approximately $7 million in financing costs related to the refinancing which will be deferred and amortized over the five year term of the Credit Facilities. In addition, the remaining unamortized deferred costs of $4 million on the previous credit facilities will also be deferred and amortized over the revised term of 5 years. A portion of the net proceeds of the new Term Loan were used to repay direct borrowings under the previous Revolving Credit Facility and pay transaction fees and expenses.

The Revolving Credit Facility is available for the issuance of letters of credit of up to $600 million, provides for a $50 million sub-limit for the issuance of swing line loans (a loan that can be requested in US Dollars on a same day basis for a short drawing period); and is available in US Dollars, Euros, Pounds Sterling, Canadian Dollars and certain other currencies to be agreed upon, in each case for either borrowings or for the issuance of letters of credit. The proceeds under the Revolving Credit Facility are available for working capital and general corporate purposes of Covanta Energy and its subsidiaries. We have the option to establish additional term loan commitments and/or increase the size of the Revolving Credit Facility (collectively, the "Incremental Facilities"), subject to the satisfaction of certain conditions and obtaining sufficient lender commitments, in an amount up to the greater of $500 million and the amount that, after giving effect to the incurrence of such Incremental Facilities, would not result in a leverage ratio, as defined in the credit agreement governing our Credit Facilities (the "Credit Agreement"), exceeding 2.75:1.00.

Unutilized Capacity under Revolving Credit Facility

As of December 31, 2019, we had unutilized capacity under the Revolving Credit Facility as follows (in millions):

	Total Facility Commitment	Expiring	Direct Borrowings	Outstanding Letters of Credit	Unutilized Capacity
Revolving Credit Facility	$ 900	2023	$ 183	$ 228	$ 489

Repayment Terms

As of December 31, 2019, the Term Loan has mandatory principal payments of approximately $10 million in each year through 2022 and a final repayment of $355 million due at maturity in 2023. The Credit Facilities are pre-payable at our option at any time.

Interest and Fees

Borrowings under the Credit Facilities bear interest, at our option, at either a base rate or a Eurodollar rate plus an applicable margin determined by a pricing grid based on Covanta Energy's leverage ratio. Base rate is defined as the higher of (i) the Federal Funds Effective Rate plus 0.50%, (ii) the rate the administrative agent announces from time to time as it's per annum "prime rate" or (iii) the London Interbank Offered Rate ("LIBOR"), or a comparable or successor rate, plus 1.00%. Base rate borrowings under the Revolving Credit Facility bear interest at the base rate plus an applicable margin ranging from 0.50% to 1.50%. Eurodollar borrowings under the Revolving Credit Facility bear interest at LIBOR plus an applicable margin ranging from 1.75% to 2.75%. Fees for issuances of letters of credit include fronting fees equal to 0.15% per annum and a participation fee for the lenders equal to the applicable interest margin for LIBOR rate borrowings. We will incur an unused commitment fee ranging from 0.30% to 0.50% determined by a pricing grid based on Covanta Energy's leverage ratio on the unused amount of commitments under the Revolving Credit Facility.

Borrowings under the Term Loan bear interest at either (i) the base rate plus an applicable margin ranging from 0.75% to 1.00% or (ii) LIBOR plus an applicable margin ranging from 1.75% to 2.00%, in each determined by a pricing grid based on Covanta Energy's leverage ratio.

Guarantees and Securitization

The Credit Facilities are guaranteed by us and by certain of our subsidiaries. The subsidiaries that are party to the Credit Facilities agreed to secure all of the obligations under the Credit Facilities by granting, for the benefit of secured parties, a first priority lien on substantially all of their assets, to the extent permitted by existing contractual obligations. The Credit Facilities are also secured by a pledge of substantially all of the capital stock of each of our domestic subsidiaries and 65% of substantially all the capital stock of each of our directly-owned foreign subsidiaries, in each case to the extent not otherwise pledged.

Credit Agreement Covenants

The loan documentation governing the Credit Facilities contains various affirmative and negative covenants, as well as financial maintenance covenants, that limit our ability to engage in certain types of transactions. We were in compliance with all of the affirmative and negative covenants under the Credit Facilities as of December 31, 2019.

The negative covenants of the Credit Facilities limit our and our restricted subsidiaries' ability to, among other things:

- incur additional indebtedness (including guarantee obligations);
- create certain liens against or security interests over certain property;
- pay dividends on, redeem, or repurchase our capital stock or make other restricted junior payments;
- enter into agreements that restrict the ability of our subsidiaries to make distributions or other payments to us;
- make investments;
- consolidate, merge or transfer all or substantially all of our assets and the assets of our subsidiaries on a consolidated basis;
- dispose of certain assets; and
- make certain acquisitions.

The financial maintenance covenants of the Credit Facilities, which are measured on a trailing four quarter period basis, include the following:

- A maximum Leverage Ratio of 4.00 to 1.00 for the trailing four quarter period, which measures the principal amount of Covanta Energy's consolidated debt less certain restricted funds dedicated to repayment of project debt principal and construction costs ("Consolidated Adjusted Debt") to its adjusted earnings before interest, taxes, depreciation and amortization, as calculated in the Credit Agreement ("Credit Agreement Adjusted EBITDA"). The definition of Credit Agreement Adjusted EBITDA in the Credit Facilities excludes certain non-recurring and non-cash charges and may incorporate certain pro forma adjustments.
- A minimum Interest Coverage Ratio of 3.00 to 1.00, which measures Covanta Energy's Credit Agreement Adjusted EBITDA to its consolidated interest expense plus certain interest expense of ours, to the extent paid by Covanta Energy as calculated in the Credit Agreement.

Senior Notes

The table below summarizes our aggregate principal amount of senior unsecured notes, our ("Senior Notes"):

Maturity	Rate	December 31, 2019	December 31, 2018
2027	6.000%	$ 400	$ 400
2025	5.875%	400	400
2024	5.875%	400	400
		$ 1,200	$ 1,200

Senior Notes due 2027 (the "2027 Senior Notes")

In October 2018, we issued $400 million aggregate principal amount of Senior Notes due 2027. The 2027 Senior Note bear interest at 6.00% per annum, payable semi-annually on January 1 and July 1 of each year, commencing on July 1, 2019. Net proceeds from the sale of the 2027 Senior Notes were approximately $394 million and were used along with cash on hand and/or direct borrowings under our Revolving Credit Facility to fund the optional redemption of all of our 2022 Senior Notes.

During the year ended December 31, 2018, as a result of the redemption, we recorded a prepayment charge of $9 million and a write-off of the remaining deferred financing costs of $3 million recognized in our consolidated statements of operations as a Loss on extinguishment of debt. The 2027 Senior Notes are governed by and issued pursuant to the Indenture dated January 18, 2007 between us and Wells Fargo Bank, National Association, as trustee, (the "Base Indenture") and the Sixth Supplemental Indenture dated as of October 1, 2018.

Senior Notes due 2025 (the "2025 Senior Notes")

In March 2017, we issued $400 million aggregate principal amount of 5.875% Senior Notes due July 2025. The 2025 Notes bear interest at 5.875% per annum, payable semi-annually on January 1 and July 1 of each year, beginning on July 1, 2017. Net proceeds from the sale of the 2025 Senior Notes were approximately $394 million and were used to fund the redemption of our 2020 Senior Notes.

During the year ended December 31, 2017, as a result of the redemption, we recorded a prepayment charge of $9 million and a write-off of the remaining deferred financing costs of $4 million recognized in our consolidated statements of operations as a Loss on extinguishment of debt. The 2025 Senior Notes are governed by and issued pursuant to the Base Indenture and the Fifth Supplemental Indenture dated March 16, 2017.

Senior Notes due 2024 (the "2024 Senior Notes")

In March 2014, we issued $400 million aggregate principal amount of 5.875% Senior Notes due March 2024. The 2024 Senior Notes bear interest at 5.875% per annum, payable semi-annually on March 1 and September 1 of each year, commencing on September 1, 2014. The 2024 Senior Notes are governed by and issued pursuant to the Base Indenture and the Fourth Supplemental Indenture dated March 6, 2014.

Our Senior Notes are:

- general unsecured obligations of Covanta and are not guaranteed by any of our subsidiaries;
- rank equally in right of payment with all of our existing and future senior unsecured indebtedness that is not subordinated in right of payment to the Senior Notes;
- are effectively subordinated in right of payment to any of our existing and future secured indebtedness to the extent of the value of the assets securing such indebtedness;
- are structurally subordinated to any existing and future liabilities of any of our subsidiaries, including Covanta Energy, including their guarantees under certain of our Tax-Exempt Bonds;
- governed by the Base Indenture as supplemented by the supplemental indentures;
- are subject to redemption at our option, in whole or in part, subject to the terms of their respective supplemental indentures;
- are redeemable at our option using the proceeds of certain equity offerings subject to the terms of their respective supplemental indentures.

The indentures for our Senior Notes further may limit our ability and the ability of certain of our subsidiaries to:

- incur additional indebtedness;
- pay dividends or make other distributions or repurchase or redeem their capital stock;
- prepay, redeem or repurchase certain debt;
- make loans and investments;
- sell restricted assets;
- incur liens;
- enter into transactions with affiliates;
- alter the businesses they conduct;
- enter into agreements restricting our subsidiaries’ ability to pay dividends; and
- consolidate, merge or sell all or substantially all of their assets.

Tax-Exempt Bonds

Our Tax-Exempt Bonds are summarized in the table below:

Series	Maturity	Coupon	December 31, 2019	December 31, 2018
Pennsylvania Series 2019A	2039	3.250%	$ 50	$ —
New Hampshire Series 2018A	2027	4.000%	20	20
New Hampshire Series 2018B	2042	4.625%	67	67
New Hampshire Series 2018C	2042	4.875%	82	82
New York Series 2018A	2042	4.750%	130	130
New York Series 2018B	2024	3.500%	35	35
Virginia Series 2018A-1	2038	5.000%	30	30
New Jersey Series 2015A	2045	5.250%	90	90
Pennsylvania Series 2015A	2043	5.000%	40	40
			$ 544	$ 494

In August 2019, we entered into a loan agreement with the Pennsylvania Economic Development Financing Authority under which they agreed to issue $50 million in aggregate principal amount of tax-exempt Solid Waste Disposal Bonds for the purpose of funding qualified capital expenditures at certain of our facilities in Pennsylvania and paying related costs of issuance (the “Pennsylvania Bonds”). The Pennsylvania Bonds bear interest at a fixed rate of 3.25%, payable on February 1 and August 1 of each year, and have a legal maturity of August 1, 2039. The Pennsylvania Bonds are senior unsecured obligations of Covanta Holding Corporation and are not guaranteed by any of our subsidiaries.

In September 2018, we completed a refinancing transaction involving the issuance by the National Finance Authority, a component unit of the Business Finance Authority of the State of New Hampshire, of $170 million aggregate principal amount of Resource Recovery Bonds Series 2018A, 2018B and 2018C (the "New Hampshire Series”) and the issuance by the Niagara Area Development Corporation of $165 million aggregate principal amount of Solid Waste Disposal Facility Refunding Revenue Bonds Series 2018A and 2018B (the “New York Series”).

The net proceeds of both issuances were loaned to us for the purpose of redeeming the outstanding principal balance of our previously outstanding Massachusetts Development Finance Agency 2012 Series bonds and Niagara Area Development Corporation Series 2012 bonds.

In connection with the 2018 refinancing transaction, we recorded deferred financing costs of $3 million, which are being amortized over the term of the New Hampshire and New York Series bonds. In addition, we recorded a $3 million write-off of unamortized issuance costs associated with the previously outstanding debt which was recognized as a Loss on extinguishment of debt in our condensed consolidated statement of operations for the year ended December 31, 2018. The New Hampshire Series and New York Series bonds are our senior unsecured obligations and are not guaranteed by any of our subsidiaries.

In June 2018, we completed a financing transaction involving the issuance by the Virginia Small Business Financing Authority (the “VSBFA”) of $30 million in aggregate principal amount of Solid Waste Disposal Bonds due 2038 (the “2018 Virginia Series”). The VSBFA has approved an aggregate principal amount of $50 million for issuance and $20 million remains reserved for potential future issuance at our option. The 2018 Virginia Series bonds are payable semi-annually on January 1 and July 1, of each year, beginning January 1, 2019. The Virginia Series bonds have a legal maturity of January 1, 2048 but, are subject to a mandatory tender for purchase on July 1, 2038. We utilized the net proceeds of the 2018 Virginia Series to fund certain capital expenditures at our facilities in Virginia and paying related costs of issuance. The Virginia Bonds are our senior unsecured obligations and are not guaranteed by any of our subsidiaries. Our New Jersey Series and Pennsylvania Series bonds are guaranteed by Covanta Energy.

Each of the respective loan agreements for our Tax-Exempt Bonds contain customary events of default, including failure to make any payments when due, failure to perform its covenants under the respective loan agreement, and our bankruptcy or insolvency. Additionally, each of the loan agreements contains cross-default provisions that relate to our other indebtedness. Upon the occurrence of an event of default, the unpaid balance of the loan under the applicable loan agreement will become due and payable immediately. Our Tax Exempt Bonds also contain certain terms including mandatory redemption requirements in the event that (i) the respective loan agreement is determined to be invalid, or (ii) the respective bonds are determined to be taxable. In the event of a mandatory redemption of the bonds, we will have an obligation under each respective loan agreement to prepay the respective loan in order to fund the redemption.

Union County EfW Facility Finance Lease Arrangement

In June 2016, we extended the lease term related to the Union County EfW facility through 2053, which resulted in capital lease treatment for the revised lease. We recorded a lease liability of $104 million, calculated utilizing an incremental borrowing rate of 5.0% which is included in long-term project debt on our consolidated balance sheet. The lease includes certain periods of contingent rentals based upon plant performance as either a share of revenue or a share of plant profits. These contingent payments have been excluded from the calculation of the lease liability and instead will be treated as a period expense when incurred. Please see *Note 16. Leases* for further information.

Equipment Financing Arrangements

In 2014, we entered into equipment financing arrangements to finance the purchase of barges, railcars, containers and intermodal equipment related to our New York City contract. During March 2019, we commenced operations at the East 91st Street Marine Transfer Station, which is the second of a pair of marine transfer stations utilized under a 20-year waste transport and disposal agreement between Covanta and New York City's Department of Sanitation ("DSNY"). In accordance with the contract, we are responsible for purchasing and maintaining a sufficient number of transportation assets to allow the DSNY owned transfer stations to effectively handle the expected volumes of waste. As such, we entered into financing arrangements for the purchase of railcars, trailers, containers and barges (the "Equipment") to continue to meet the requirements of the DSNY contract. We commenced investing in the Equipment during 2019 and borrowed $31 million during the twelve months ended December 31, 2019. The borrowings maturity dates range from 2024 and 2031 with fixed interest rates ranging from 3.55% to 4.75%.

The outstanding borrowings under the equipment financing arrangements were $85 million as of December 31, 2019, and have mandatory payments remaining as follows (in millions):

	2020	2021	2022	2023	2024	Thereafter
Future minimum payments	$ 7	$ 7	$ 7	$ 8	$ 7	$ 49

Depreciation associated with these assets is included in Depreciation and amortization expense on our consolidated statement of operations. For additional information see *Note 1. Organization and Summary of Significant Accounting Policies - Property, Plant and Equipment*.

PROJECT DEBT

The maturities of project debt as of December 31, 2019 are as follows (in millions):

	2020	2021	2022	2023	2024	Thereafter
Project debt (1)	$ 2	$ 2	$ 2	$ 2	$ 2	$ 37

(1) Amounts exclude the Union County EfW facility finance lease discussed above.

Project debt associated with the financing of energy-from-waste facilities is arranged by municipal entities through the issuance of tax-exempt and taxable revenue bonds or other borrowings. For those facilities we own, that project debt is recorded as a liability on our consolidated balance sheet. Generally, debt service for project debt related to Service Fee structures is the primary responsibility of municipal entities, whereas debt service for project debt related to Tip Fee structures is paid by our project subsidiary from project revenue expected to be sufficient to cover such expense.

Payment obligations for our project debt associated with energy-from-waste facilities are generally limited recourse to the operating subsidiary and non-recourse to us, subject to operating performance guarantees and commitments. These obligations are typically secured by the revenue pledged under the respective indentures and by a mortgage lien and a security interest in the respective energy-from-waste facility and related assets. As of December 31, 2019, such revenue bonds were collateralized by property, plant and equipment with a net carrying value of $511 million and restricted funds held in trust of approximately $7 million.

Rates on our project debt as of December 31, 2019 were as follows:

	Minimum	Maximum
Project debt related to service fee structures due through 2035	5.00%	5.00%
Project debt related to tip fee structures due through 2053(1)	5.00%	5.25%

(1) Union County EfW facility finance lease discussed above.

Financing Costs

All deferred financing costs are amortized to interest expense over the life of the related debt using the effective interest method. For each of the years ended December 31, 2019, 2018 and 2017 amortization of deferred financing costs included as a component of interest expense totaled $5 million, $5 million and $7 million, respectively.

Capitalized Interest

Interest expense paid and costs amortized to interest expense related to project financing are capitalized during the construction and start-up phase of the project. Total interest expense capitalized was as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Capitalized interest	$ —	$ —	$ 17

Dublin Project Refinancing

During 2014, we executed agreements for project financing totaling €375 million to fund a majority of the construction costs of the Dublin EfW facility. The project financing package included: (i) €300 million of project debt under a credit facility agreement with various lenders which consisted of a €250 million senior secured term loan (the “Dublin Senior Term Loan due 2021”) and a €50 million second lien term loan (the “Dublin Junior Term Loan due 2022”), and (ii) a €75 million convertible preferred investment (the “Dublin Convertible Preferred”), which was committed by a leading global energy infrastructure investor.

On December 14, 2017, we executed agreements for project financing totaling €446 million ($534 million) to refinance the existing project debt and the Dublin Convertible Preferred. The new financing package included: (i) €396 million ($474 million) of senior secured project debt under a credit facility agreement between Dublin Waste to Energy Limited and various lenders (the “Dublin Senior Loan”) and (ii) a €50 million ($60 million) second lien term loan between Dublin Waste to Energy Group (Holdings) Limited and various lenders (the “Dublin Junior Loan”). The proceeds of the loans, along with other sources of funds, were utilized to repay (i) Dublin Senior Term Loan due 2021, (ii) the Dublin Junior Term Loan due 2022, (iii) the Dublin Convertible Preferred and (iv) transaction related fees and expenses.

During the year ended December 31, 2017, as a result of the Dublin project refinancing, we recorded the following charges to Loss on extinguishment of debt on our consolidated statement of operations: (i) a "make whole" payment on the Dublin Convertible Preferred of $41 million, (ii) $19 million of third party fees incurred in connection with the refinance and a write-off of part of the remaining deferred financing costs and (iii) unamortized debt discount and deferred financing costs of $11 million.

NOTE 16. LEASES

We determine if an arrangement contains a lease at inception. ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. ROU assets and liabilities are recognized at the lease commencement date based on the estimated present value of lease payments over the lease term.

Our leases consist of leaseholds on EfW facilities, land, trucks and automobiles, office space, and machinery and equipment. We utilized a portfolio approach in determining our discount rate. The portfolio approach takes into consideration the range of the term, the range of the lease payments, the category of the underlying asset and our estimated incremental borrowing rate, which is derived from information available at the lease commencement date, in determining the present value of lease payments. We also give consideration to our recent debt issuances as well as publicly available data for instruments with similar characteristics when calculating our incremental borrowing rates.

Our lease term includes options to extend the lease when it is reasonably certain that we will exercise that option. Leases with a term of 12 months or less are not recorded on the balance sheet, per the election of the practical expedient noted above in *Note 1. Organization and Summary of Significant Accounting Policies - Accounting Pronouncements Recently Adopted.*

We recognize lease expense for these leases on a straight-line basis over the lease term. We recognize variable lease payments in the period in which the obligation for those payments is incurred. Variable lease payments that depend on an index or a rate are initially measured using the index or rate at the commencement date, otherwise variable lease payments are recognized in the period incurred.

The components of lease expense were as follows (in millions):

	For the Year Ended December 31, 2019
Finance lease:	
Amortization of assets, included in Depreciation and amortization expense	$ 7
Interest on lease liabilities, included in Interest expense	4
Operating lease:	
Amortization of assets, included in Total operating expense	8
Interest on lease liabilities, included in Total operating expense	2
Total net lease cost	$ 21

Supplemental balance sheet information related to leases was as follows (in millions, except lease term and discount rate):

	December 31, 2019
Operating leases:	
Operating lease ROU assets, included in Other assets	$ 46
Current operating lease liabilities, included in Accrued expenses and other current liabilities	$ 6
Noncurrent operating lease liabilities, included in Other liabilities	46
Total operating lease liabilities	$ 52
Finance leases:	
Property and equipment, at cost	$ 168
Accumulated amortization	(25)
Property and equipment, net	$ 143
Current obligations of finance leases, included in Current portion of long-term debt	$ 6
Finance leases, net of current obligations, included in Long-term debt	84
Total finance lease liabilities	$ 90

Supplemental cash flow and other information related to leases was as follows (in millions):

	For the Year Ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows related to operating leases	$ 10
Financing cash flows related to finance leases	$ 6
Weighted average remaining lease term (in years):	
Operating leases	11.9
Finance leases	32.3
Weighted average discount rate:	
Operating leases	4.64%
Finance leases	5.05%

Maturities of lease liabilities were as follows (in millions):

	December 31, 2019	
	Operating Leases	Finance Leases
2020	$ 8	$ 8
2021	8	12
2022	7	12
2023	6	11
2024	6	11
2025 and thereafter	33	104
Total lease payments	68	158
Less: Amounts representing interest	(16)	(68)
Total lease obligations	$ 52	$ 90

Disclosures related to periods prior to the adoption of ASC 842

Rental expense was $23 million and $22 million for the years ended December 31, 2018 and 2017, respectively.

NOTE 17. COMMITMENTS AND CONTINGENCIES

We and/or our subsidiaries are party to a number of claims, lawsuits and pending actions, most of which are routine and all of which are incidental to our business. We assess the likelihood of potential losses on an ongoing basis to determine whether losses are considered probable and reasonably estimable prior to recording an estimate of the outcome. If we can only estimate the range of a possible loss, an amount representing the low end of the range of possible outcomes is recorded. The final consequences of these proceedings are not presently determinable with certainty. As of December 31, 2019 and 2018, accruals for our loss contingencies approximated $3 million and $16 million, respectively.

Environmental Matters

Our operations are subject to environmental regulatory laws and environmental remediation laws. Although our operations are occasionally subject to proceedings and orders pertaining to emissions into the environment and other environmental violations, which may result in fines, penalties, damages or other sanctions, we believe that we are in substantial compliance with existing environmental laws and regulations.

We may be identified, along with other entities, as being among parties potentially responsible for contribution to costs associated with the correction and remediation of environmental conditions at disposal sites subject to federal and/or analogous state laws. In certain instances, we may be exposed to joint and several liabilities for remedial action or damages. Our liability in connection with such environmental claims will depend on many factors, including our volumetric share of waste, the total cost of remediation, and the financial viability of other companies that also sent waste to a given site and, in the case of divested operations, the contractual arrangement with the purchaser of such operations.

The potential costs related to the matters described below and the possible impact on future operations are uncertain due in part to the complexity of governmental laws and regulations and their interpretations, the varying costs and effectiveness of cleanup technologies, the uncertain level of insurance or other types of recovery and the questionable level of our responsibility. Although the ultimate outcome and expense of any litigation, including environmental remediation, is uncertain, we believe that the following proceedings will not have a material adverse effect on our consolidated results of operations, financial position or cash flows.

Lower Passaic River Matter. In August 2004, the United States Environmental Protection Agency (the “EPA”) notified our subsidiary, Covanta Essex Company (“Essex”), that it was a potentially responsible party (“PRP”) for Superfund response actions in the Lower Passaic River Study Area (“LPRSA”), a 17 mile stretch of river in northern New Jersey. Essex’s LPRSA costs to date are not material to its financial position and results of operations; however, to date the EPA has not sought any LPRSA remedial costs or natural resource damages against PRPs. In March 2016, the EPA released the Record of Decision (“ROD”) for its Focused Feasibility Study of the lower 8 miles of the LPRSA; the EPA’s selected remedy includes capping/dredging of sediment, institutional controls and long-term monitoring. In June 2018, PRP Occidental Chemical Corporation (“OCC”) filed a federal Superfund lawsuit against 120 PRPs including Essex with respect to past and future response costs expended by OCC with respect to the LPRSA. The Essex facility started operating in 1990 and Essex does not believe there have been any releases to the LPRSA, but in any event believes any releases would have been de minimis considering the history of the LPRSA; however, it is not possible at this time to predict that outcome or to estimate the range of possible loss relating to Essex’s liability in the matter, including for LPRSA remedial costs and/or natural resource damages.

Other Matters

Durham-York Contractor Arbitration

In January 2019, the arbitrator issued a decision regarding outstanding disputes with our primary contractor for the Durham-York construction project, which related to: (i) claims by the contractor for the balance of the contract price withheld, change orders, delay damages and other expense reimbursement and (ii) claims by us for charges and liquidated damages for project completion delays. The final settlement for this matter was paid in July 2019.

China Indemnification Claims

Subsequent to completing the exchange of our project ownership interests in China for a 15% ownership interest in Sanfeng Environment, Sanfeng Environment made certain claims for indemnification under the agreement related to the condition of the facility in Taixing. In February 2018, we made a settlement payment of $7 million related to this claim.

Other Commitments

Other commitments as of December 31, 2019 were as follows (in millions):

Letters of credit issued under the Revolving Credit Facility	$	228
Letters of credit - other		40
Surety bonds		137
Total other commitments — net	$	405

The letters of credit were issued to secure our performance under various contractual undertakings related to our domestic and international projects or to secure obligations under our insurance program. Each letter of credit relating to a project is required to be maintained in effect for the period specified in related project contracts, and generally may be drawn if it is not renewed prior to expiration of that period.

We believe that we will be able to fully perform under our contracts to which these existing letters of credit relate, and that it is unlikely that letters of credit would be drawn because of a default of our performance obligations. If any of these letters of credit were to be drawn by the beneficiary, the amount drawn would be immediately repayable by us to the issuing bank. If we do not immediately repay such amounts drawn under letters of credit issued under the Revolving Credit Facility, unreimbursed amounts would be treated under the Credit Facilities as either additional term loans or as revolving loans.

The surety bonds listed in the table above relate primarily to construction and performance obligations and support for other obligations, including closure requirements of various energy projects when such projects cease operating. Were these bonds to be drawn upon, we would have a contractual obligation to indemnify the surety company. The bonds do not have stated expiration dates. Rather, we are released from the bonds as the underlying performance is completed.

We have certain contingent obligations related to our Senior Notes and Tax-Exempt Bonds. Holders may require us to repurchase their Senior Notes and Tax-Exempt Bonds if a fundamental change occurs. For specific criteria related to the redemption features of the Senior Notes and Tax-Exempt Bonds, see *Note 15. Consolidated Debt*.

We have issued or are party to guarantees and related contractual support obligations undertaken pursuant to agreements to construct and operate waste and energy facilities. For some projects, such performance guarantees include obligations to repay certain financial obligations if the project revenue is insufficient to do so, or to obtain or guarantee financing for a project. With respect to our businesses, we have issued guarantees to public sector clients and other parties that our subsidiaries will perform in accordance with contractual terms, including, where required, the payment of damages or other obligations. Additionally, damages payable under such guarantees for our energy-from-waste facilities could expose us to recourse liability on project debt. If we must perform under one or more of such guarantees, our liability for damages upon contract termination would be reduced by funds held in trust and proceeds from sales of the facilities securing the project debt and is presently not estimable. Depending upon the circumstances giving rise to such damages, the contractual terms of the applicable contracts, and the contract counterparty's choice of remedy at the time a claim against a guarantee is made, the amounts owed pursuant to one or more of such guarantees could be greater than our then-available sources of funds. To date, we have not incurred material liabilities under such guarantees.

We have entered into certain guarantees of performance in connection with our recent divestiture activities. Under the terms of the arrangements, we guarantee performance should the guaranteed party fail to fulfill its obligations under the specified arrangements.

NOTE 18. QUARTERLY DATA (UNAUDITED)

The following table presents quarterly unaudited financial data for the periods presented on the consolidated statements of operations (in millions, except per share amounts):

	Quarter Ended							
	March 31,		June 30,		September 30,		December 31,	
	2019	2018	2019	2018	2019	2018	2019	2018
Operating revenue	$ 453	$ 458	$ 467	$ 454	$ 465	$ 456	$ 485	$ 500
Operating (loss) income	$ (8)	$ 20	$ 10	$ (18)	$ 44	$ 2	$ 44	$ 59
Net income (loss)	$ 5	$ 201	$ (21)	$ (31)	$ 14	$ (27)	$ 12	$ 9
Earnings (loss) per share:								
Basic	$ 0.04	$ 1.55	$ (0.16)	$ (0.24)	$ 0.11	$ (0.21)	$ 0.09	$ 0.07
Diluted	$ 0.03	$ 1.53	$ (0.16)	$ (0.24)	$ 0.10	$ (0.21)	$ 0.09	$ 0.07

Net income for the quarter ended March 31, 2018 includes a $204 million gain on the loss of our controlling interest in Dublin EfW. See *Note 3. New Business and Asset Management* and *Note 4. Dispositions and Assets Held for Sale* for further information.

NOTE 19. SUBSEQUENT EVENTS

In January 2020, in connection with our Zhao County agreement, we received proceeds of RMB 61 million ($9 million) through a loan agreement with a third party. We subsequently contributed the entire amount of the loan proceeds to the equity investment entity which owns the project in the form of a shareholder loan which is convertible to equity. The third party loan bears an annual interest rate of 12%, payable bi-annually. The loan is collateralized through an equity pledge agreement whereby a portion of our equity in the entity is pledged as collateral for loan repayment. We have agreed to use commercially reasonable efforts to repay the loan principal and interest accrued within one year. For additional information see *Note 3. New Business and Asset Management-Zhao County, China Venture*

In February 2020, we reached financial close on the Newhurst Energy Recovery Facility ("Newhurst"), a 350,000 metric ton-per-year, 42 megawatt EfW facility under construction in Leicestershire, England. Newhurst is our third investment in the UK with our strategic partner, GIG. Through a 50/50 jointly-owned and governed entity, Covanta Green, we and GIG will own a 50% interest in Newhurst, with Biffa plc, a UK waste services provider, holding the remaining 50% interest. Biffa will provide approximately 70% of the waste supply to the project, and we will provide operations and maintenance services, in each case under a 20 year arrangement. Newhurst is expected to commence commercial operations in 2023.

Schedule II — Valuation and Qualifying Accounts
Receivables Valuation and Qualifying Accounts

Description	Balance Beginning of Year	Additions: Charged to Costs and Expense	Additions: Charged to Other Accounts	Deductions	Balance at End of Period
			(In millions)		
Reserves for doubtful accounts:					
Year ended December 31, 2019	$ 8	$ 2	$ —	$ 1	$ 9
Year ended December 31, 2018	$ 14	$ 2	$ —	$ 8	$ 8
Year ended December 31, 2017	$ 9	$ 9	$ —	$ 4	$ 14
Deferred tax valuation allowance:					
Year ended December 31, 2019	$ 73	$ 4	$ 1	$ (13)	$ 65
Year ended December 31, 2018	$ 77	$ 6	$ (4)	$ (6)	$ 73
Year ended December 31, 2017	$ 71	$ 16	$ (2)	$ (8)	$ 77

Item 9. *CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE*

There were no disagreements with accountants on accounting and financial disclosure.

Item 9A. *CONTROLS AND PROCEDURES*

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, have evaluated the effectiveness of our disclosure controls and procedures, as required by Rules 13a-15(b) and 15d-15(b) under the Securities Exchange Act of 1934, (the "Exchange Act") as of December 31, 2019. Our disclosure controls and procedures are designed to reasonably assure that information required to be disclosed by us in reports we file or submit under the Exchange Act is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding disclosures and is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms.

Our management, including our Chief Executive Officer and Chief Financial Officer, believes that any disclosure controls and procedures or internal controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must consider the benefits of controls relative to their costs. Inherent limitations within a control system include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by unauthorized override of the control. While the design of any system of controls is to provide reasonable assurance of the effectiveness of disclosure controls, such design is also based on part upon certain assumptions about the likelihood of future events, and such assumptions, while reasonable, may not take into account all potential future conditions. Accordingly, because of inherent limitations in a cost effective control system, misstatement due to error or fraud may occur and may not be prevented or detected.

Our management has conducted an assessment of its internal control over financial reporting as of December 31, 2019 as required by Section 404 of the Sarbanes-Oxley Act. Management's report on our internal control over financial reporting and the Independent Registered Public Accounting Firm's report appear below in this Item 9A.

Our Chief Executive Officer and Chief Financial Officer have concluded that we did not maintain effective internal controls over financial reporting because, in our information technology general controls, we had deficiencies which constituted a material weakness in controls with respect to certain systems that support our financial reporting processes. Our Chief Executive Officer and Chief Financial Officer have concluded that, based on their reviews, our disclosure controls and procedures are not effective to provide the reasonable assurance described above. Note, as described below, that we have determined that this material weakness did not result in any identified misstatements to the financial statements, and there were no changes to previously released financial results.

Changes in Internal Control over Financial Reporting

Our management concluded that there was a material weakness in our internal control over financial reporting related to information technology general controls in the areas of user access and application change management over certain systems that support our financial reporting processes. Certain business process controls that are dependent on the affected information technology general controls were also deemed ineffective because they could have been adversely impacted.

We believe that these control deficiencies were a result of: turnover of key personnel within the IT organization; changes in third party service providers; insufficient training of IT personnel and employees of new third party service providers on our procedures and controls; inadequate oversight of compliance with our procedures and controls by third party service providers; and insufficient ongoing emphasis by IT management on the importance of IT general controls during a period of significant transition and turnover.

Following identification of this material weakness and prior to filing this Annual Report on Form 10-K, we performed additional substantive procedures for the year ended December 31, 2019 to determine that this material weakness did not result in any identified misstatements to the financial statements, and there were no changes to previously released financial results. Based on these procedures, management believes that our consolidated financial statements included in this Form 10-K have been prepared in accordance with U.S. GAAP. Our Chief Executive Officer and Chief Financial Officer have certified that, based on their knowledge, the financial statements, and other financial information included in this Form 10-K, fairly present in all material respects the financial condition, results of operations and cash flows as of, and for, the periods presented in this Form 10-K. Ernst

& Young has issued an adverse audit report on the effectiveness of our internal control over financial reporting as of December 31, 2019, which appears below in this Item 9A.

Remediation

Our management has been implementing and continues to implement measures designed to ensure that the control deficiencies contributing to the material weakness are remediated, such that our information technology general controls are designed, implemented and operating effectively. These remediation actions have included: hiring additional information technology managers in previously vacant positions; centralizing the currently disparate processes to manage and control user accounts within our financial reporting systems; and the training and/or retraining of third party service providers on our policies and controls associated with the management of user accounts. Other remediation actions currently under development include: implementing an organization-wide training program addressing information technology general controls and policies, including educating control owners concerning the principles and requirements of each control, with a focus on those related to user access and change management over information technology systems impacting financial reporting; developing enhanced risk assessment procedures related to changes in the information technology systems environment; completing the centralization of the processes to manage and control user accounts within our financial reporting systems; developing new and enhancing existing logging and reporting capabilities so that changes to applications can be recorded and monitored for propriety; strengthening the request and authorization protocols around the granting of access to the our financial reporting systems, including assessments by the information technology function prior to granting logical access; and improving the process to periodically reassess the propriety of users' access to our financial reporting systems, and to promptly correct any inappropriate accounts identified.

We believe that these actions, together with additional actions that might be identified and determined necessary as management's remediation efforts continue to progress, will remediate the material weakness. The material weakness will not be considered remediated, however, until the applicable controls operate for a sufficient period of time and our management has concluded, through testing, that information technology general controls are operating effectively.

Except as noted in the preceding paragraphs, there has not been any change in our system of internal control over financial reporting during the year ended December 31, 2019 that has materially affected, or is reasonably likely to materially affect, internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f).

All internal control systems, no matter how well designed, have inherent limitations including the possibility of human error and the circumvention of overriding of controls. Further, because of changes in conditions, the effectiveness of internal controls may vary over time. Projections of any evaluation of effectiveness to future period 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. Accordingly, even those systems determined to be effective can provide us only with reasonable assurance with respect to financial statement preparation and presentation.

Our management has assessed the effectiveness of internal control over financial reporting as of December 31, 2019, following the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control - Integrated Framework (2013 Framework). Based on our assessment under the framework in Internal Control - Integrated Framework (2013 Framework), our management has concluded that our internal control over financial reporting was not effective as of December 31, 2019.

Our independent auditors, Ernst & Young LLP, have issued an adverse attestation report on our internal control over financial reporting. This report appears below in this Item 9A.

/s/ Stephen J. Jones

Stephen J. Jones
President and Chief Executive Officer

/s/ Bradford J. Helgeson

Bradford J. Helgeson
Executive Vice President and Chief Financial Officer

February 25, 2020

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Covanta Holding Corporation

Opinion on Internal Control over Financial Reporting

We have audited Covanta Holding Corporation and subsidiaries' internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, because of the effect of the material weakness described below on the achievement of the objectives of the control criteria, Covanta Holding Corporation and subsidiaries (the Company) has not maintained effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. The following material weakness has been identified and included in management's assessment. Management has identified a material weakness in internal control related to the Company's information technology general controls.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income, equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedule listed in the Index at Item 15a. This material weakness was considered in determining the nature, timing and extent of audit tests applied in our audit of the 2019 consolidated financial statements, and this report does not affect our report dated February 25, 2020, which expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible 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 an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the 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 PCOAB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) 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 (3) 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.

/s/ Ernst & Young LLP

Iselin, New Jersey
February 25, 2020

Item 9B. ***OTHER INFORMATION***

None.

PART III

Item 10. ***DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE***

Information regarding our executive officers is incorporated by reference herein from the discussion under *Item 1. Business — Executive Officers* of this Annual Report on Form 10-K. We have a Code of Conduct and Ethics for Senior Financial Officers and a Policy of Business Conduct. The Code of Conduct and Ethics applies to our Chief Executive Officer, Chief Financial Officer, Chief Accounting Officer, Controller or persons performing similar functions. The Policy of Business Conduct applies to all of our directors, officers and employees and those of our subsidiaries. Both the Code of Conduct and Ethics and the Policy of Business Conduct are posted on our website at www.covanta.com on the Corporate Governance page. We will post on our website any amendments to or waivers of the Code of Conduct and Ethics or Policy of Business Conduct for executive officers or directors, in accordance with applicable laws and regulations. The remaining information called for by this Item 10 is incorporated by reference herein from the discussions under the headings "Election of Directors," "Board Structure and Composition — Committees of the Board," and "Security Ownership of Certain Beneficial Owners and Management — Section 16(a) Beneficial Ownership Reporting Compliance" in our definitive Proxy Statement for the 2020 Annual Meeting of Stockholders.

Item 11. ***EXECUTIVE COMPENSATION***

The information required by Item 11 of Form 10-K is incorporated by reference herein from the discussions under the headings "Compensation Committee Report," "Board Structure and Composition — Compensation of the Board," and "Executive Compensation" in our definitive Proxy Statement for the 2020 Annual Meeting of Stockholders.

Item 12. ***SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS***

The information required by Item 12 of Form 10-K is incorporated by reference herein from the discussion under the headings "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information" in our definitive Proxy Statement for the 2020 Annual Meeting of Stockholders.

Item 13. ***CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE***

The information required by Item 13 of Form 10-K is incorporated by reference herein from the discussions under the headings "Board Structure and Composition" and "Certain Relationships and Related Person Transactions" in the definitive Proxy Statement for the 2020 Annual Meeting of Stockholders.

Item 14. ***PRINCIPAL ACCOUNTANT FEES AND SERVICES***

The information required by Item 14 of Form 10-K is incorporated by reference herein from the discussion under the heading "Independent Registered Public Accountant Fees" in the definitive Proxy Statement for the 2020 Annual Meeting of Stockholders.

PART IV

Item 15. ***EXHIBITS, FINANCIAL STATEMENT SCHEDULES***

(a) Documents filed as part of this report:

(1) Consolidated Financial Statements of Covanta Holding Corporation:

Included in Part II of this Report:

Consolidated Statements of Operations for the years ended December 31, 2019, 2018 and 2017
Consolidated Statements of Comprehensive Income for the years ended December 31, 2019, 2018 and 2017
Consolidated Balance Sheets as of December 31, 2019 and 2018
Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017
Consolidated Statements of Equity for the years ended December 31, 2019, 2018 and 2017
Notes to Consolidated Financial Statements, for the years ended December 31, 2019, 2018 and 2017

Report of Ernst & Young LLP, Independent Registered Public Accounting Firm, on the consolidated financial statements of Covanta Holding Corporation for the years ended December 31, 2019, 2018 and 2017

(2) Financial Statement Schedules of Covanta Holding Corporation:

Included in Part II of this report: Schedule II — Valuation and Qualifying Accounts

Separate financial statements of subsidiaries not consolidated and fifty percent or less owned persons.The financial statements included in Exhibit 99.1 are filed as part of Item 15 of the Company's Annual Report filed on February 25, 2020 and should be read in conjunction with the Company's consolidated financial statements. See Exhibit 99.1.

All other schedules are omitted because they are not applicable, not significant or not required, or because the required information is included in the financial statement notes thereto.

(3) Exhibits:

EXHIBIT INDEX

Exhibit No.	Description
Articles of Incorporation and By-Laws.	
3.1†	Restated Certificate of Incorporation of Covanta Holding Corporation (incorporated herein by reference to Exhibit 3.1 of Covanta Holding Corporation's Current Report on Form 8-K dated January 19, 2007 and filed with the SEC on January 19, 2007).
3.2†	Amended and Restated Bylaws of Covanta Holding Corporation, effective December 12, 2019 (incorporated herein by reference to Exhibit 3.1 of Covanta Holding Corporation's Current Report on Form 8-K dated December 13, 2019 filed with the SEC on December 13, 2019).
Instruments Defining Rights of Security Holders, Including Indentures.	
4.1†	Registration Rights Agreement dated November 8, 2002 among Covanta Holding Corporation and SZ Investments, L.L.C. (incorporated herein by reference to Exhibit 10.6 of Covanta Holding Corporation's Annual Report on Form 10-K for the year ended December 27, 2002 and filed with the SEC on March 27, 2003).
4.2†	Registration Rights Agreement between Covanta Holding Corporation, D.E. Shaw Laminar Portfolios, L.L.C., SZ Investments, L.L.C., and Third Avenue Trust, on behalf of The Third Avenue Value Fund Series, dated December 2, 2003 (incorporated herein by reference to Exhibit 4.1 of Covanta Holding Corporation's Current Report on Form 8-K dated December 2, 2003 and filed with the SEC on December 5, 2003).
4.3†	Indenture dated as of January 18, 2007 between Covanta Holding Corporation and Wells Fargo Bank, National Association, as trustee (incorporated herein by reference to Exhibit 4.1 of Covanta Holding Corporation's Registration Statement on Form S-3 (Reg. No. 333-140082) filed with the SEC on January 19, 2007).
4.4†	Third Supplemental Indenture dated as of March 19, 2012 between Covanta Holding Corporation and Wells Fargo Bank, National Association, as trustee (incorporated herein by reference to Exhibit 4.2 of Covanta Holding Corporation's Current Report on Form 8-K dated March 19, 2012 and filed with the SEC on March 19, 2012).
4.5†	Fourth Supplemental Indenture dated as of March 6, 2014 between Covanta Holding Corporation and Wells Fargo Bank, National Association, as trustee (incorporated herein by reference to Exhibit 4.2 of Covanta Holding Corporation's Current Report on Form 8-K dated March 6, 2014 and filled with the SEC on March 6, 2014).
4.6†	Fifth Supplemental Indenture dated as of March 16, 2017 between Covanta Holding Corporation and Wells Fargo Bank, National Association, as trustee (incorporated herein by reference to Exhibit 4.2 of Covanta Holding Corporation's Current Report on Form 8-K dated March 16, 2017 and filled with the SEC on March 16, 2017).
4.7†	Sixth Supplemental Indenture dated as of October 18, 2018 between Covanta Holding Corporation and Wells Fargo Bank, National Association, as trustee (incorporated herein by reference to Exhibit 4.2 of Covanta Holding Corporation's Current Report on Form 8-K dated October 18, 2018 and filed with the SEC on October 18, 2018).
4.8	Description of common stock registered pursuant to Section 12 of the Securities Exchange Act of 1934
Material Contracts.	
10.1†*	Covanta Energy Savings Plan, as amended by December 2003 amendment (incorporated herein by reference to Exhibit 10.25 of Covanta Holding Corporation's Annual Report on Form 10-K for the year ended December 31, 2004 and filed with the SEC on March 16, 2005).

10.2†	Rehabilitation Plan Implementation Agreement, dated January 11, 2006, by and between John Garamendi, Insurance Commissioner of the State of California, in his capacity as Trustee of the Mission Insurance Company Trust, the Mission National Insurance Company Trust and the Enterprise Insurance Company Trust, on the one hand, and Covanta Holding Corporation, on the other hand (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Current Report on Form 8-K dated March 2, 2006 and filed with the SEC on March 6, 2006).
10.3†	Amendment to Rehabilitation Plan Implementation Agreement, accepted and agreed to on March 17, 2006 (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Current Report on Form 8-K dated March 17, 2006 and filed with the SEC on March 20, 2006).
10.4†	Amendment to Agreement Regarding Closing (Exhibit A to the Rehabilitation Plan Implementation Agreement), dated January 10, 2006, by and between John Garamendi, Insurance Commissioner of the State of California, in his capacity as Trustee of the Mission Insurance Company Trust, the Mission National Insurance Company Trust, and the Enterprise Insurance Company Trust, on the one hand, and Covanta Holding Corporation, on the other hand (incorporated herein by reference to Exhibit 10.2 of Covanta Holding Corporation's Current Report on Form 8-K dated March 2, 2006 and filed with the SEC on March 6, 2006).
10.5†	Pledge and Security Agreement, dated as of August 21, 2018, between each of Covanta Energy Corporation and the other grantors party thereto, and Bank of America, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.5 of Covanta Holding Corporation's Annual Report on Form 10-K for the year ended December 31, 2018 and filed with the SEC on February 19, 2019).
10.6†	Intercompany Subordination Agreement, dated as of August 21, 2018, among Covanta Energy Corporation, Covanta Holding Corporation, certain subsidiaries of Covanta Energy Corporation, as Guarantor Subsidiaries, certain other subsidiaries of Covanta Energy Company, as non-guarantor subsidiaries, and Bank of America, N.A., as Administrative Agent (incorporated herein by reference to Exhibit 10.6 of Covanta Holding Corporation's Annual Report on Form 10-K for the year ended December 31, 2018 and filed with the SEC on February 19, 2019).
10.7†	Form of Covanta Holding Corporation Indemnification Agreement, entered into with each Director and Officer (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Current Report on Form 8-K dated December 6, 2007 and filed with the SEC on December 12, 2007.
10.8†	Equity Commitment for Rights Offering between Covanta Holding Corporation and SZ Investments L.L.C. dated February 1, 2005 (incorporated herein by reference to Exhibit 10.2 of Covanta Holding Corporation's Current Report on Form 8-K dated January 31, 2005 and filed with the SEC on February 2, 2005).
10.9†	Equity Commitment for Rights Offering between Covanta Holding Corporation and EGI-Fund (05-07) Investors, L.L.C. dated February 1, 2005 (incorporated herein by reference to Exhibit 10.3 of Covanta Holding Corporation's Current Report on Form 8-K dated January 31, 2005 and filed with the SEC on February 2, 2005).
10.10†	Loan Agreement, dated as of August 29, 2018, by and between Covanta Holding Corporation and the Niagara Development Corporation (incorporated by reference to Exhibit 1.2 of Covanta Holding Corporation's Current Report on Form 8-K dated August 30, 2018 and filed with the SEC on August 30, 2018).
10.11†	Loan Agreement, dated as of August 29, 2018, by and between Covanta Holding Corporation and the New Hampshire National Finance Authority (incorporated herein by reference to Exhibit 1.1 of Covanta Holding Corporation's Current Report on Form 8-K dated August 30, 2018 and filed with the SEC on August 30, 2018).
10.12†	Agreement, dated as of August 22, 2013, by and among Covanta Holding Corporation and John M. Huff, as Director of the Missouri Department of Insurance, Financial Institutions and Professional Registration (the "Trustee") solely in his capacity as trustee and statutory receiver of the Mission Reinsurance Corporation Trust and the Holland-America Insurance Company Trust (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Quarterly Report on Form 10-Q dated October 24, 2013 and filed with the SEC on October 24, 2013).
10.13†*	Covanta Holding Corporation 2014 Equity Award Plan (incorporated herein by reference to Exhibit 4.1 of Covanta Holding Corporation's Registration Statement on Form S-8 filed with the SEC on May 8, 2014).
10.14†*	Form of Covanta Holding Corporation Stock Option Agreement for Employees and Officers (incorporated herein by reference to Exhibit 4.3 of Covanta Holding Corporation's Registration Statement on Form S-8 filed with the SEC on May 7, 2008).
10.15†*	First Amendment to the Covanta Holding Corporation 2014 Equity Award Plan (incorporated herein by reference to Exhibit 4.3 of Covanta Holding Corporation's Registration Statement on Form S-8 filed with the SEC on May 15, 2019).
10.16†*	Form of Growth Equity Award Agreement (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Current Report on Form 8-K dated February 24, 2010 and filed with the SEC on March 2, 2010).
10.17†*	Covanta Energy Corporation Senior Officers Severance Plan (incorporated herein by reference to Exhibit 10.2 of Covanta Holding Corporation's Current Report on Form 8-K dated February 24, 2010 and filed with the SEC on March 2, 2010).
10.18†*	Form of Covanta Holding Corporation Restricted Stock Award Agreement for Directors (incorporated by reference to Exhibit 10.25 of Covanta Holding Corporation's Annual Report on Form 10-K filed with the SEC on February 16, 2018).

10.19†*	Form of Covanta Holding Corporation TSR Award Agreement for Employees and Officers (incorporated herein by reference to Exhibit 10.4 of Covanta Holding Corporation's Quarterly Report on Form 10-QA dated August 11, 2014 and filed with the SEC on August 11, 2014).
10.20†*	Form of Covanta Holding Corporation Stock Option Award Agreement for Directors (incorporated herein by reference to Exhibit 10.5 of Covanta Holding Corporation's Quarterly Report on Form 10-QA dated August 11, 2014 and filed with the SEC on August 11, 2014).
10.21†*	Form of Covanta Holding Corporation Restricted Stock Unit Agreement for Directors (incorporated herein by reference to Exhibit 10.35 of Covanta Holding Corporation's Annual Report on Form 10-K for the year ended December 31, 2016 and filed with the SEC on February 28, 2017).
10.22†	Second Amended and Restated Credit and Guaranty Agreement, dated as of August 21, 2018, among Covanta Energy, LLC, Covanta Holding Corporation, certain subsidiaries of Covanta Energy, LLC, as guarantors, the lenders party thereto, Bank of America, N.A., as Administrative Agent, Collateral Agent and Issuing Bank, Credit Agricole Corporate and Investment Bank, JPMorgan Chase Bank, Citizens Bank, N.A. MUFG Union Bank, N.A and Sumitomo Mitsui Banking Corporation as Syndication Agents, and TD Bank, N.A., Capital One, National Association, Cobank, ACB and Compass Bank , as Co-Documentation Agents (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Current Report on Form 8-K dated August 21, 2018 and filed with the SEC on August 21, 2018).
10.23†*	Offer Letter from Covanta Holding Corporation to Stephen J. Jones dated January 5, 2015 (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Current Report on Form 8-K dated January 5, 2015 and filed with the SEC on January 5, 2015).
10.24†*	Offer Letter from Covanta Holding Corporation to Michael J. de Castro dated May 12, 2015 (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Current Report on Form 8-K dated June 2, 2015 and filed with the SEC on June 2, 2015).
10.25†*	Form of Covanta Holding Corporation 2014 Equity Award Plan Performance Share Award Agreement for Employees and Officers (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Current Report on Form 8-K dated March 2, 2016 and filed with the SEC on March 3, 2016).
10.26†*	Form of Covanta Holding Corporation Restricted Stock Award Agreement for Senior Officers (incorporated herein by reference to Exhibit 10.34 of Covanta Holding Corporation's Annual Report on Form 10-K for the year ended December 31, 2016 and filed with the SEC on February 28, 2017).
10.27†*	Form of Covanta Holding Corporation Restricted Stock Unit Agreement for Senior Officers (incorporated herein by reference to Exhibit 10.35 of Covanta Holding Corporation's Annual Report on Form 10-K for the year ended December 31, 2016 and filed with the SEC on February 28, 2017).
10.28†	Receivables Purchase Agreement dated as of December 6, 2019 among Covanta Finance LLC, as seller, Covanta Energy LLC, individually and as initial servicer, the purchasers and purchaser agents from time to time party hereto and Crédit Agricole Corporate and Investment Bank, as administrator. (incorporated herein by reference to Exhibit 10.1 of Covanta Holding Corporation's Current Report on Form 8-K dated December 9, 2019 and filed with the SEC on December 9, 2019).

Other.

21.1	Subsidiaries of the Registrant
23.1	Consent of Independent Registered Public Accounting Firm, EY Iselin, NJ
23.2	Consent of Independent Auditors, EY Dublin, Ireland
31.1	Certification pursuant to Section 302 of Sarbanes-Oxley Act of 2002 by the Chief Executive Officer.
31.2	Certification pursuant to Section 302 of Sarbanes-Oxley Act of 2002 by the Chief Financial Officer.
32	Certification of periodic financial report pursuant to Section 906 of Sarbanes-Oxley Act of 2002 by the Chief Executive Officer and Chief Financial Officer.
99.1	Covanta Europe Assets Limited Audited Consolidated Financial Statements as of December 31, 2019. Separate financial statements of subsidiaries not consolidated and fifty percent or less owned persons
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	XBRL Taxonomy Extension Schema
101.CAL	XBRL Taxonomy Calculation Linkbase
101.LAB	XBRL Taxonomy Extension Labels Linkbase
101.PRE	XBRL Taxonomy Extension Presentation Linkbase
101.DEF	XBRL Taxonomy Extension Definition Document
104	Cover Page Interactive Data File - (formatted as Inline XBRL and contained in Exhibit 101)

† Not filed herewith, but incorporated herein by reference.

* Management contract or compensatory plan or arrangement.

Pursuant to paragraph 601(b)(4)(iii)(A) of Regulation S-K, the registrant has omitted from the foregoing list of exhibits, and hereby agrees to furnish to the Securities and Exchange Commission, upon its request, copies of certain instruments, each relating to long-term debt not exceeding 10% of the total assets of the registrant and its subsidiaries on a consolidated basis.

(b) Exhibits: See list of Exhibits in this Part IV, Item 15(a)(3) above.

(c) Financial Statement Schedules: See Part IV, Item 15(a)(2) above.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized.

COVANTA HOLDING CORPORATION
(Registrant)

By: /S/ STEPHEN J. JONES
Stephen J. Jones
President and Chief Executive Officer

Date: February 25, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Name	Title	Date
/S/ STEPHEN J. JONES Stephen J. Jones	President and Chief Executive Officer and Director (Principal Executive Officer)	February 25, 2020
/S/ BRADFORD J. HELGESON Bradford J. Helgeson	Executive Vice President, Chief Financial Officer (Principal Financial Officer)	February 25, 2020
/S/ MANPREET S. GREWAL Manpreet S. Grewal	Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 25, 2020
/S/ SAMUEL ZELL Samuel Zell	Chairman of the Board	February 25, 2020
/S/ DAVID M. BARSE David M. Barse	Director	February 25, 2020
/S/ RONALD J. BROGLIO Ronald J. Broglio	Director	February 25, 2020
/S/ PETER C. B. BYNOE Peter C. B. Bynoe	Director	February 25, 2020
/S/ LINDA J. FISHER Linda J. Fisher	Director	February 25, 2020
/S/ JOSEPH M. HOLSTEN Joseph M. Holsten	Director	February 25, 2020
/S/ OWEN MICHAELSON Owen Michaelson	Director	February 25, 2020
/S/ DANIELLE PLETKA Danielle Pletka	Director	February 25, 2020
/S/ MICHAEL W. RANGER Michael W. Ranger	Director	February 25, 2020
/S/ ROBERT S. SILBERMAN Robert S. Silberman	Director	February 25, 2020
/S/ JEAN SMITH Jean Smith	Director	February 25, 2020