

# Covanta Energy Corporation - Climate Change 2018

## C0. Introduction

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### C0.1

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**(C0.1) Give a general description and introduction to your organization.**

Covanta is a world leader in providing municipalities and corporate customers with sustainable waste and energy solutions. The Company's core business—operation and ownership of Energy-from-Waste (EfW) facilities—helps communities and businesses around the world convert millions of tons of waste (otherwise destined for landfills) into clean, renewable energy. These facilities reduce greenhouse gas (GHG) emissions, conserve land and complement recycling efforts.

Our Covanta Environmental Solutions business provides commercial and industrial waste clients a variety of sustainable waste management services, including consulting, logistics support, recycling and energy recovery services. Our expanded service offerings provide our clients with additional routes to meet their zero-waste, zero-waste-to-landfill and sustainability goals. As clients reduce, reuse, recycle and recover energy, they reduce environmental impacts associated with materials and waste in our society. Ultimately, we seek not only to divert materials from landfills, but also to find fully sustainable waste management solutions that consider economics and the environment.

Covanta also owns other waste management businesses, such as transfer stations, which broaden the geographic reach of our core facilities.

### C0.2

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**(C0.2) State the start and end date of the year for which you are reporting data.**

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
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	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1 2017	December 31 2017	No	<Not Applicable>
Row 2	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 3	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 4	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>

## C0.3

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**(C0.3) Select the countries/regions for which you will be supplying data.**

Canada  
Ireland  
Italy  
United States of America

## C0.4

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**(C0.4) Select the currency used for all financial information disclosed throughout your response.**

USD

## C0.5

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**(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.**

Equity share

## C-EU0.7

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**(C-EU0.7) Which part of the electric utilities value chain does your organization operate in? Select all that apply.**

Row 1

**Electric utilities value chain**

Electricity generation

**Other divisions**

Please select

**C1. Governance**

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**C1.1**

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**(C1.1) Is there board-level oversight of climate-related issues within your organization?**

Yes

**C1.1a**

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**(C1.1a) Identify the position(s) of the individual(s) on the board with responsibility for climate-related issues.**

Position of individual(s)	Please explain
Board/Executive board	Our Board has direct oversight of our sustainability strategy (see p. 8 of 2018 Proxy). Specifically, our Supply Chain and Public Policy Committee reviews all facets of our commitment to sustainability including our ongoing initiatives in (i) safety and health, (ii) environment, (iii) materials management, (iv) workforce engagement, and (v) community relations. Climate-related issues are addressed specifically within our environment sustainability initiatives.

**C1.1b**

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**(C1.1b) Provide further details on the board's oversight of climate-related issues.**

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Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
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Scheduled – some meetings	Reviewing and guiding strategy Monitoring and overseeing progress against goals and targets for addressing climate-related issues	At least annually, the Chief Sustainability Officer and Sr. Director Sustainability review sustainability performance with the board, including with regard to climate-focused sustainability goals. Changes to sustainability goals, which are closely aligned with our business, are also reviewed with the board. As identified in our latest Proxy (see p.8-9) the board has direct oversight of our sustainability strategy, inclusive of climate related issues. These issues include the interaction of climate and the services we provide to our customers. Since many of our customers specifically work with Covanta to address their own sustainability and climate goals, our performance in this area is directly tied to our business.
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## C1.2

**(C1.2) Below board-level, provide the highest-level management position(s) or committee(s) with responsibility for climate-related issues.**

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Sustainability Officer (CSO)	Both assessing and managing climate-related risks and opportunities	Annually

### C1.2a

**(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored.**

The SVP / Chief Sustainability Officer (CSO) has overall responsibility for the entire sustainability program, including the assessment, management, and strategy pertaining to climate related issues. The CSO reports both to the Chief Legal Consul / EVP and the Chief Operating Officer / EVP both of whom report directly to Covanta’s CEO. Climate related issues are monitored by the

retrospective departments consistent with the type of issue. For example, changes in legislative or regulatory policies pertaining to climate change are monitored by those responsible in the organization for government affairs and compliance who report through the CSO. Alternatively, climate issues pertaining to facility maintenance or exposure to rising sea levels are monitored by the maintenance group, which reports through the COO.

## C1.3

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### **(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?**

Yes

## C1.3a

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### **(C1.3a) Provide further details on the incentives provided for the management of climate-related issues.**

#### **Who is entitled to benefit from these incentives?**

Environment/Sustainability manager

#### **Types of incentives**

Monetary reward

#### **Activity incentivized**

Other, please specify (Overall management)

#### **Comment**

The company has assigned specific personnel to manage the company's progress and status regarding climate change and each of those individuals receives an annual bonus based on individual performance wherein their success in the area of climate change would be among the factors considered. Furthermore, specific individuals in the company are tasked with implementation of specific initiatives that, among other benefits, result in net GHG emissions reductions. These employees are also evaluated on their individual performance on these initiatives. These evaluations impact the employees' bonuses.

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#### **Who is entitled to benefit from these incentives?**

Management group

#### **Types of incentives**

Monetary reward

#### **Activity incentivized**

Emissions reduction project

### Comment

Covanta's Metal Management group has been tasked with the overall growth of our metals recovery efforts, including both the quantity and quality of metals recovered from the ash remaining after the combustion process. Covanta recovers over 550,000 tons of metal a year for recycling. The metals recovered for recycling save significant amount of GHG emissions. For each ton of aluminum recovered, for example, 10 tons of GHGs as CO2e are saved relative to manufacturing aluminum from raw materials. Covanta's Metal Management Group is responsible for a large share of the company's GHG emissions reduction initiatives.

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## C2. Risks and opportunities

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### C2.1

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**(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.**

	From (years)	To (years)	Comment
Short-term	0	3	
Medium-term	3	5	
Long-term	5	20	

### C2.2

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**(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.**

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

### C2.2a

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**(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.**

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Annually	>6 years	

## C2.2b

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### **(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.**

Covanta is unique in that our primary business, EfW, is a GHG mitigation technology. Therefore, risks presented by climate change are a key focus of our risk management processes. Primarily, we evaluate the potential impact of future climate regulations on our business. We are a highly regulated business, and any changes to regulations in response to climate change may have a significant impact. Risks are evaluated both on a corporate and facility level through the sustainability and environmental compliance departments. For example, risks posed by potential inclusion in cap and trade programs is evaluated at the facility level to determine the financial impact on the facility. These types of risks are identified and quantified during the annual facility budgeting period. More systemic risks, including those associated with federal and state policy changes, are identified and evaluated by our government affairs team with assistance from the local business organization to model potential impacts. Other risks, including legal, reputation, technology, and physical, are evaluated by their respective departments. Review of risk is incorporated into our regular materiality process included as part of our corporate sustainability reporting completed in line with the GRI Sustainability Reporting Standards: Core option.

## C2.2c

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### **(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?**

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	EfW is a net source of GHG mitigation relative to the business as usual practice of landfilling, as recognized by many international organizations and protocols, including the EU, U.S. EPA, and CDM methodologies. However, EfW facilities also have a significant stack emissions which can be subject to regulation if not viewed from a systemic level. Regulations can also impact our industry indirectly, by changing the types of wastes that are remaining after waste reduction and recycling efforts are exhausted. Because of the potential exposure, we are constantly evaluating our exposure to existing regulations.
Emerging regulation	Relevant, always included	EfW is a net source of GHG mitigation relative to the business as usual practice of landfilling, as recognized by many international organizations and protocols, including the EU, U.S. EPA, and CDM methodologies. However, EfW facilities also have a significant stack emissions which can be subject to regulation if not viewed from a systemic level. Because of the potential exposure, we are constantly evaluating our exposure to emerging regulations, legislation, and policy.

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	Relevance & inclusion	Please explain
Technology	Relevant, always included	EfW is a net source of GHG mitigation relative to the business as usual practice of landfilling, however, there are emerging technologies which could offer even more GHG-efficient means of managing wastes remaining after waste reduction and recycling efforts have been exhausted. To date, these technologies have not been proven to be practical and/or economic at scale. However, we keep abreast of technological development to evaluate risk to our business. We also closely track the evolution of carbon capture & sequestration as a potential technology that may one day further improve our carbon footprint.
Legal	Relevant, always included	We closely watch legal developments, particularly those related to attribution of damages to specific entities. While EfW is a source of carbon mitigation, legal precedent could impact how our industry is viewed.
Market	Relevant, always included	The market for the good and services we provide can change based on the perception of our technology, EfW, in helping to mitigate GHG emissions in the waste management sector. In addition, changes in products purchased and used by consumers and businesses that eventually wind up as waste can change based on climate initiatives.
Reputation	Relevant, always included	Many of our customers rely on us to provide sustainable waste management services and a low carbon alternative to landfilling to municipal solid waste (MSW) and certain non-hazardous industrial, institutional, and commercial waste streams. Consequently, we closely evaluate reputation risks related to climate, and our role in helping reduce GHG emissions from the waste management sector.
Acute physical	Relevant, sometimes included	While Covanta is subject to physical risks associated with climate change, we do not expect them to be significant at this time and therefore do not evaluate these types of risks as closely as others. Covanta owns/operates a portfolio of relatively modern facilities, the oldest of which began operation in 1987. The facilities were built to modern hurricane standards and should be able to withstand these and other weather-related events. Rising sea level attributable to climate change could become a long-term issue at several facilities; however, significant impacts are unlikely because the useful life of existing facilities would be expended by the time this phenomenon might result in sufficient sea level rise to impact these facilities. A few of our facilities in the United States are located on estuaries that could become affected by storm surge, and in fact did become effected during Hurricane Sandy that impacted the northeast during fall 2012. Several facilities were impacted on a short term basis due to disruption of MSW collection and transportation systems, local power distribution system outage, and equipment damage; however, the impacts were confined to the facilities impacted by the storm and did not impact the long-term ability of these facilities to operate. Covanta is currently evaluating appropriate steps that can be taken to minimize future storm-related damage and business disruption.
Chronic physical	Relevant, sometimes included	While Covanta is subject to physical risks associated with climate change, we do not expect them to be significant at this time and therefore do not evaluate these types of risks as closely as others. Covanta owns/operates a portfolio of relatively modern facilities, the oldest of which began operation in 1987. The facilities were built to modern hurricane standards and should be able to withstand these and other weather-related events. Rising sea level attributable to climate change could become a long-term issue at several facilities; however, significant impacts are unlikely because the useful life of existing facilities would be expended by the time this phenomenon might result in sufficient sea level rise to impact these facilities. A few of our facilities in the United States are located on estuaries that could become affected by storm surge, and in fact did become effected during Hurricane Sandy that impacted the northeast during fall 2012. Several facilities were impacted on a short term basis due to disruption of MSW collection and transportation systems, local power distribution system outage, and equipment damage; however, the impacts were confined to the facilities impacted by the storm and did not impact the long-term ability of these facilities to operate. Covanta is currently evaluating appropriate steps that can be taken to minimize future storm-related damage and business disruption.
Upstream	Relevant, always included	Climate change could impact the types and quantities of wastes that we receive at our facilities, either directly through regulation, or indirectly through market pressures that affect the types of materials that people purchase, and eventually need to dispose.



	Relevance & inclusion	Please explain
Downstream	Relevant, not included	There is growing interest in the impact of climate change on landfills, including from greater amounts of rainfall, higher water tables, and sea & estuary level rise. We use landfills to manage the ash that remains after the combustion process. However, the U.S. has ample landfill capacity, so we are currently evaluating other risk areas more closely.

## C2.2d

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### **(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.**

Covanta is unique in that our primary business, EfW, is a GHG mitigation technology. Therefore, risks and opportunities presented by climate change are a key focus of our risk management processes. Primarily, we evaluate the potential impact of future climate regulations on our business. We are a highly regulated business, and any changes to regulations in response to climate change may have a significant impact. Risks and opportunities are evaluated both on a corporate and facility level through the sustainability and environmental compliance departments. For example, the opportunities to generate carbon offsets are evaluated on a facility level. Opportunities to communicate our ability to mitigate greenhouse gas emissions are evaluated on a corporate level, taking into account several factors, including state and federal policy direction. In the corporate sustainability and government affairs departments, climate change risks and opportunities are evaluated continuously as part of the department's core responsibilities. The criteria applied to assess materiality and prioritize the risks and opportunities identified includes financial, public relations, policy, and strategic considerations.

## C2.3

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### **(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?**

Yes

### C2.3a

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#### **(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.**

##### **Identifier**

Risk 1

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Transition risk

**Primary climate-related risk driver**

Policy and legal: Increased pricing of GHG emissions

**Type of financial impact driver**

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

**Company- specific description**

The public and political debate over GHG emissions (principally CO<sub>2</sub> 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<sub>2</sub>, however EfW is recognized as creating net reductions in GHG emissions and is otherwise environmentally beneficial, because it: • avoids CO<sub>2</sub> 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 domestic source of 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. However, the recognition of EfW as a source of GHG mitigation requires a systemic view of the most GHG-efficient means of provided the service of managing those wastes remaining after landfilling. A broad national regulation which views only the stack GHG emissions from EfW facilities without a broader context could include EfW facilities. Concurrently, landfills could be exempted on the basis that their emissions are difficult to measure. Such a regulatory approach could increase Covanta's operating costs, while keeping those of landfilling artificially low as they would not see a cost of their carbon emissions. We view this scenario as unlikely. First, EfW is a well recognized source of GHG mitigation and is actually generating carbon offset credits both in the CDM and voluntary markets. Second, the Clean Power Plan rules promulgated under the Obama administration not only excluded EfW facilities from regulation, but recognized new EfW capacity as a source of emission rate credits that could be used to demonstrate a state's compliance with its targets under one of the two possible accounting approaches. While we do not expect the current administration to implement the Clean Power Plan, it was an additional important instance of EfW's recognition as a source of GHG reductions in developing policy.

**Time horizon**

Long-term

**Likelihood**

Unlikely

**Magnitude of impact**

Unknown

**Potential financial impact**

**Explanation of financial impact**

We cannot predict the potential financial impact of a cost imposed on stack GHG emissions at this time. A quantification of financial impact would depend on many variables, including the cost of carbon, allocation of emissions allowances (if any), and portion of our emissions that are covered by the program.

### **Management method**

We continue to engage with policy makers at the local, state, and federal levels to help design effective GHG policies that will treat the waste management sector equitably and encourage waste management methods that reduce GHG emissions. 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.

### **Cost of management**

#### **Comment**

Current costs of management of this risk are not significant relative to our normal costs of business.

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#### **Identifier**

Risk 2

#### **Where in the value chain does the risk driver occur?**

Direct operations

#### **Risk type**

Transition risk

#### **Primary climate-related risk driver**

Policy and legal: Increased pricing of GHG emissions

#### **Type of financial impact driver**

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

#### **Company- specific description**

California's Global Warming Solutions Act of 2006 ("AB 32"), seeks to reduce GHG emissions in California to 1990 levels by 2020. AB 32 includes an economy-wide "cap-and-trade" program, which could impact our California EfW facilities. Regulatory amendments finalized in 2017 extended an exclusion of EfW facilities from the cap-and-trade program through the end of 2017. A resolution passed by the Board of the California Air Resources Board ("CARB") directs the agency to provide transition assistance to EfW facilities beginning in 2018. The specific degree of assistance to be provided is uncertain at this time.

#### **Time horizon**

Short-term

**Likelihood**

Please select

**Magnitude of impact**

Unknown

**Potential financial impact****Explanation of financial impact**

This potential regulation would affect two of the facilities we operate in California. We cannot predict the financial impact of this developing policy issue at this time.

**Management method**

We continue to engage with policy makers at the state level to help design the appropriate level of transition assistance in accordance with the resolution discussed above that will treat the waste management sector equitably and encourage waste management methods that reduce GHG emissions and avoid a perverse incentive for landfilling in California.

**Cost of management****Comment**

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**C2.4**

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**(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?**

Yes

**C2.4a**

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**(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.**

**Identifier**

Opp1

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Type of financial impact driver**

Increased revenue through demand for lower emissions products and services

**Company- specific description**

EfW is a widely recognized source of GHG mitigation. As such, a properly designed carbon pricing policy (e.g. cap & trade, carbon tax) should result in a price signal that coincides with the GHG benefits of EfW relative to landfilling. Such an economic signal would improve EfW's cost competitiveness relative to landfills. We also offer other sustainable waste management services with low carbon footprints, including waste depackaging which allows for separate downstream use of the packaging (commonly recycled) and the packaged good (often treated, combusted for energy recovery, composted, or anaerobically digested).

**Time horizon**

Long-term

**Likelihood**

More likely than not

**Magnitude of impact**

Medium

**Potential financial impact****Explanation of financial impact**

Quantification of the financial impact is based on many variables, including elasticity of the waste market, the price of carbon applied, and the scope of the program. We cannot estimate the financial impact at this time.

**Strategy to realize opportunity**

We continue to engage with policy makers at the local, state, and federal levels to help design effective GHG policies that will treat the waste management sector equitably and encourage waste management methods that reduce GHG emissions. 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.

**Cost to realize opportunity****Comment**

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**C2.5**

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**(C2.5) Describe where and how the identified risks and opportunities have impacted your business.**

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	Impact	Description
Products and services	Impacted	Interest among certain municipal and business customers in reducing GHG emissions has led to increased demand for our services with certain customers. The U.K. and Ireland's efforts to comply with the EU's waste framework and landfill directives have led to development opportunities for Covanta in these markets. These two directives have been identified by the European Environmental Agency as drivers in the reduction of GHG emissions from the waste management sector. In addition, we have seen increased interest in customers requesting lifecycle or GHG footprint analyses associated with our management of their waste streams.
Supply chain and/or value chain	Not yet impacted	To date, climate-related risks and opportunities have not had a discernible impact on our supply chain. Certain policies, such as the diversion of food wastes for large-scale generators in Connecticut which have been driven, in part, by a policy interest in reducing GHG emissions, could, all else being equal, have a theoretical impact on the types of wastes we receive. However, we have not yet seen a discernible impact as a result specifically of climate related risks and opportunities.
Adaptation and mitigation activities	Not yet impacted	While increased awareness of sustainability in general and environmental issues specifically has increased the demand for sustainable waste management services, which has, in turn, contributed to our decision to make recent acquisitions in our Materials Processing facilities, we have not seen climate change as a direct driver of this activity, at this time.
Investment in R&D	Not yet impacted	Certain investments in R&D may impact our GHG footprint (e.g. enhanced metal recovery processes increasing the amount of GHGs saved through recycling); however, our decisions made to-date with regard to R&D investment have not been driven directly by climate related risks or opportunities.
Operations	Impacted	We have, at certain facilities, taken steps to improve their reliability and resiliency in response to certain weather events, specifically flooding caused by coastal storm surges . While singular weather events cannot be directly attributed to climate change, climate change has been demonstrated to contribute to sea level rise.
Other, please specify	Not evaluated	Not applicable.

## C2.6

### **(C2.6) Describe where and how the identified risks and opportunities have factored into your financial planning process.**

	Relevance	Description
Revenues	Impacted	The U.K. and Ireland's efforts to comply with the EU's waste framework and landfill directives have led to development opportunities for Covanta in these markets. These two directives have been identified by the European Environmental Agency as drivers in the reduction of GHG emissions from the waste management sector. Covanta completed the Dublin, Ireland EfW facility in 2018. This facility will aid Ireland in meeting its landfill diversion goals. The estimated adjusted EBITDA from Covanta's share of the Dublin project is \$30 to \$35 million (see <a href="http://s21.q4cdn.com/710767749/files/doc_presentations/2017/12/CVA-GIG-Partnership-Presentation.PDF">http://s21.q4cdn.com/710767749/files/doc_presentations/2017/12/CVA-GIG-Partnership-Presentation.PDF</a> )

	Relevance	Description
Operating costs	Not yet impacted	California's Global Warming Solutions Act of 2006 ("AB 32"), seeks to reduce GHG emissions in California to 1990 levels by 2020. AB 32 includes an economy-wide "cap-and-trade" program, which could impact our California EfW facilities. Regulatory amendments finalized in 2017 extended an exclusion of EfW facilities from the cap-and-trade program through the end of 2017. A resolution passed by the Board of the California Air Resources Board ("CARB") directs the agency to provide transition assistance to EfW facilities beginning in 2018. The specific degree of assistance to be provided is uncertain at this time. Any gap between stack emissions and allowances granted would impact our operating costs at our Stanislaus facility in California.
Capital expenditures / capital allocation	Impacted	The U.K. and Ireland's efforts to comply with the EU's waste framework and landfill directives have led to development opportunities for Covanta in these markets. These two directives have been identified by the European Environmental Agency as drivers in the reduction of GHG emissions from the waste management sector. Covanta completed the Dublin, Ireland EfW facility in 2018. We will continue to allocate capital to projects in the U.K. consistent with the country's goals to divert waste from landfills.
Acquisitions and divestments	Impacted	From 2011-2016, Covanta divested its interests in fossil-fuel fired electrical generation located in China, Bangladesh, India, and the Philippines.
Access to capital	Impacted	We believe that the ability of EfW to reduce GHG emissions provides us access to additional sources of capital. In December 2017, Covanta announced that it had entered into a strategic partnership with the Green Investment Group Limited ("GIG"), a subsidiary of Macquarie Group Limited ("Macquarie"), to develop, fund and own Energy-from-Waste ("EfW") projects in Ireland and the UK. The partnership is structured as a 50:50 joint venture (the "JV"), creating a platform to develop and invest in the combined project pipelines of the partners, as well as to pursue new opportunities for EfW project development or acquisitions. As the initial step in the partnership, GIG will invest in Covanta's Dublin plant through the JV, with proceeds from this transaction fully funding Covanta's anticipated equity requirements for all of the advanced projects in the JV's combined UK pipeline. GIG is a global leader in green investment, dedicated to supporting the growth of the global green economy. In the announcement of the partnership, the Head of GIG in Europe commented: "We are delighted to have signed a partnership agreement with Covanta, a world-leading owner and operator of waste-to-energy facilities. The projects developed under the partnership will extract energy from residual waste that would otherwise be lost to landfill, avoiding harmful methane emissions." As an initial step of the joint venture, announced on December 18, 2017, GIG agreed to invest €136 million for a 50% equity stake in the project.
Assets	Impacted	The U.K. and Ireland's efforts to comply with the EU's waste framework and landfill directives have led to development opportunities for Covanta in these markets. These two directives have been identified by the European Environmental Agency as drivers in the reduction of GHG emissions from the waste management sector. The assets reflected on our consolidated balance sheet include Covanta's share of the Dublin EfW project, which helps Ireland divert wastes from landfills and thereby reduce GHG emissions.
Liabilities	Impacted	The U.K. and Ireland's efforts to comply with the EU's waste framework and landfill directives have led to development opportunities for Covanta in these markets. These two directives have been identified by the European Environmental Agency as drivers in the reduction of GHG emissions from the waste management sector. The liabilities reflected on our consolidated balance sheet include Covanta's share of the Dublin EfW project, which helps Ireland divert wastes from landfills and thereby reduce GHG emissions.
Other	Please select	

### C3. Business Strategy



## C3.1

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### **(C3.1) Are climate-related issues integrated into your business strategy?**

Yes

## C3.1 a

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### **(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?**

No, and we do not anticipate doing so in the next two years

## C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b)

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### **(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.**

Yes

## C3.1 c

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### **(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.**

Covanta is unique in that our primary business, EfW, is a GHG mitigation technology. According to the U.S. Environmental Protection Agency (EPA), for every ton of municipal solid waste (MSW) diverted from landfill to an Energy-from-Waste (EfW) facility we can reduce life cycle GHG emissions by one ton of CO<sub>2</sub>e. EfW GHG reductions are quantified using a life cycle assessment (LCA) approach that includes GHG reductions from, A voided methane emissions from landfills (even when considering landfill gas capture and energy recovery), EfW electrical generation that offsets or displaces fossil-fuel-based electrical generation, and the recovery of metals for recycling reduces the amount of mining for new metal that must be done.

We have taken a deliberate approach to develop sustainability goals in concert with our business goals. As a consequence, we believe that strong performance on our sustainability goals is a key driver of our long-term financial performance demonstrated through the specific financial and stock performance metrics used in our management incentive program. In our Sustainability



Report, we articulate the linkage between our sustainability goals and financial performance (See <http://covanta-csr.com/goals-and-performance/future-goals/>). Providing sustainable waste management services is a key part of our business strategy as outlined on pages 6-7 of our most recent 10-K and meeting our sustainability 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. As described on pages 9-10 of our 2017 Proxy Statement, our Board Public Policy and Technology Committee maintains direct oversight of our sustainability strategies and goals.

## C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e

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### **(C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e) Disclose details of your organization's low-carbon transition plan.**

We believe that we have already implemented a low-carbon transition plan. Since 2011, we have taken steps to divest our interest in fossil-fuel fired electrical generation. Our core business, energy-from-waste, is widely recognized as a source of GHG mitigation. These facilities, and other like them around the world, are recognized internationally as a source of Greenhouse gas (GHG) emissions mitigation and low carbon energy generation, including by the U.S. EPA;<sup>[i],[ii]</sup> U.S. EPA scientists;<sup>[iii]</sup> the Intergovernmental Panel on Climate Change ("IPCC");<sup>[iv]</sup> the World Economic Forum;<sup>[v]</sup> the European Union;<sup>[vi],[vii]</sup> CalRecycle;<sup>[viii]</sup> California Air Resources Board;<sup>[ix]</sup> and the Joint Institute for Strategic Energy Analysis (NREL).<sup>[x]</sup> EfW facilities generate carbon offsets credits under both the Clean Development Mechanism (CDM) of the Kyoto Protocol and voluntary carbon offset markets.<sup>[xi],[xii]</sup> EfW was recognized as a compliance option for reducing GHG emissions from electricity generation in the final version of the U.S. EPA's Clean Power Plan promulgated in 2015. New EfW facilities were eligible to generate Emission Rate Credits (ERCs).<sup>[xiii]</sup> Existing facilities were not a covered source and were considered a source of zero carbon energy under the program.<sup>[xiv]</sup>

We continue to take steps to reduce our GHG emissions even further. The only way we can lower our stack, or Scope 1, GHG emissions would be to process less waste. Doing so would increase the amount of waste going to landfills, and as a result, increase overall net GHG emissions. So, we focus our GHG emission reduction efforts on energy efficiency, raw materials, metal recovery, and most importantly, helping our customers divert biodegradable wastes from landfills. More information is available in our sustainability report here: <http://covanta-csr.com/environment/reducing-greenhouse-gases/>

[i] U.S. EPA Webpage, Energy Recovery from the Combustion of Municipal Solid Waste (MSW), accessed September 19, 2016. <https://www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw>

[ii] U.S. EPA Archived Webpage, Air Emissions from MSW Combustion Facilities, accessed September 19, 2016. <https://archive.epa.gov/epawaste/nonhaz/municipal/web/html/airem.html>

[iii] Kaplan, P.O, J. DeCarolis, and S. Thorneloe, 2009, Is it better to burn or bury waste for clean electricity generation? *Environ. Sci. Technology* 43 (6) pp1711-1717. Available at: <http://pubs.acs.org/doi/abs/10.1021/es802395e>

[iv] EfW identified as a “key mitigation measure” in IPCC, “Climate Change 2007: Synthesis Report. Contribution of Work Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change” [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp. Available at: [http://www.ipcc.ch/publications\\_and\\_data/publications\\_ipcc\\_fourth\\_assessment\\_report\\_synthesis\\_report.htm](http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm)

[v] EfW identified as a key technology for a future low carbon energy system in World Economic Forum. *Green Investing: Towards a Clean Energy Infrastructure*. January 2009.

[vi] EU policies promoting EfW as part of an integrated waste management strategy have been an overwhelming success, reducing GHG emissions over 72 million metric tonnes per year, see European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2009: Tracking progress towards Kyoto targets* [http://www.eea.europa.eu/publications/eea\\_report\\_2009\\_9](http://www.eea.europa.eu/publications/eea_report_2009_9)

[vii] European Environmental Agency (2008) Better management of municipal waste will reduce greenhouse gas emissions. Available at: [http://www.eea.europa.eu/publications/briefing\\_2008\\_1/EN\\_Briefing\\_01-2008.pdf](http://www.eea.europa.eu/publications/briefing_2008_1/EN_Briefing_01-2008.pdf)

[viii] CalRecycle. 2012. CalRecycle Review of Waste-to-Energy and Avoided Landfill Methane Emissions. Available at: <http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=735&aiid=689>

[ix] See Table 5 of California Air Resources Board (2014) *Proposed First Update to the Climate Change Scoping Plan: Building on the Framework, Appendix C – Focus Group Working Papers, Municipal Solid Waste Thermal Technologies*.  
<https://www.arb.ca.gov/cc/waste/mswthermaltech.pdf>

[x] Joint Institute for Strategic Energy Analysis (2013) *Waste Not, Want Not: Analyzing the Economic and Environmental Viability of Waste-to-Energy (WTE) Technology for Site-Specific Optimization of Renewable Energy Options*. <http://www.nrel.gov/docs/fy13osti/52829.pdf>

[xi] Clean Development Mechanism: *Large-Scale Consolidated Methodology: Alternative waste treatment processes, ACM0022*. Available at:  
<https://cdm.unfccc.int/methodologies/PAmethodologies/approved>

[xii] Verified Carbon Standard Project Database, <http://www.vcsprojectdatabase.org/> See Project ID 290, Lee County Waste to Energy Facility 2007 Capital Expansion Project VCU, and Project ID 1036 Hillsborough County Waste to Energy (WtE) Facility 2009 Capital Expansion Unit 4.

[xiii] 40 CFR 60.5800

[xiv] 40 CFR 60.5845

## C3.1g

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### **(C3.1g) Why does your organization not use climate-related scenario analysis to inform your business strategy?**

We think that scenario analysis could be a very useful exercise to help demonstrate how more sustainable waste management, including the use of energy-from-waste for the materials remaining after recycling, could help meet climate change objectives, including limiting global warming to 2 degrees Celsius. However, we are still in the process of evaluating if taking such a step on a formal basis would materially help inform our business strategy.

We have already performed several analyses that have quantified the role that more sustainable waste management can play. In 2009, our engineers co-authored a paper that assessed how implementing the waste management hierarchy of the U.S. EPA and EU (i.e. in order of decreased preference: reduce, reuse, recycle, recover energy, disposal) to the extent proven by global leaders like Germany, Austria, and the Netherlands could reduce overall GHG emissions. The analysis found that by 2050, more sustainable waste management could reduce global GHG emissions by 1 Gigatonne of carbon equivalents per year (See Bahor *et al.*, *Integrated waste management as a climate stabilization wedge*, *Waste Management & Research*, 2009: 27: 839-849). However, the analysis did not relate those emissions reductions to a specific scenario, such as those referenced by CDP.

As identified in our latest 10-K Annual Report (see pp. 6-7), 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. Our core business, EfW, is a well recognized source of GHG mitigation, and two EfW facilities we operate generate carbon offset credits reflective of new capacity meeting program additionality rules.

Given the wide recognition of EfW as a source of GHG mitigation, the analyses we have performed to date that demonstrate the magnitude of GHG benefits attainable, and our current business focus on providing more sustainable waste management services, we are unsure of the incremental value that scenario planning will bring to continued evaluation of our business strategy at this time.

## C4. Targets and performance

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### C4.1

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**(C4.1) Did you have an emissions target that was active in the reporting year?**

Absolute target

#### C4.1 a

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**(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.**

**Target reference number**

Abs 1

**Scope**

Scope 3: Purchased goods & services

**% emissions in Scope**

90

**% reduction from base year**

10

**Base year**

2016

**Start year**

2017

**Base year emissions covered by target (metric tons CO2e)**

110000

**Target year**

2020

**Is this a science-based target?**

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

**% achieved (emissions)**

40

**Target status**

Underway

**Please explain**

Goal is to reduce our consumption of raw materials in our process (e.g. lime, carbon) while I facilities while also maintaining emissions at levels consistent with past performance, which are well below existing standards.

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## C4.2

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**(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.**

**Target**

Waste

**KPI – Metric numerator**

total wastes avoided, recycled, or reused

## **KPI – Metric denominator (intensity targets only)**

### **Base year**

2014

### **Start year**

2014

### **Target year**

2020

### **KPI in baseline year**

548000

### **KPI in target year**

685000

### **% achieved in reporting year**

100

### **Target Status**

Underway

### **Please explain**

Goal is to Increase total wastes avoided, recycled, or reused under our management by 25% by 2020 relative to a 2014 baseline of 548,000 tons. This includes both metals that we recover from our combustion ash, as well as waste recycling, reuse, or avoidance services we offer to our clients. For example, in 2014, we began a program to use industrial wastewaters as process make-up water at our SeMass energy from waste facility. We have exceeded our goal to increase wastes avoided, reuse, and recycled under our management, reaching over 900,000 tons in 2016, inclusive of, but not limited to, water pre-treatment, non-ferrous and ferrous metal recycling, and e-waste recycling. Waste reduction, reuse and recycling is recognized as generally reducing GHG emissions relative to both disposal (landfilling) and energy recovery. We are currently in the process of translating this target into CO2 equivalents.

### **Part of emissions target**

Meeting this target helps us expand the low carbon waste management offerings we provide to our clients, both by expanded our service offerings to include wastewater treatment, waste depackaging, composting, and recycling, as well as recover additional metals from those wastes we receive for energy recovery. In general, recycling reduces GHG emissions relative to making new products from virgin materials and resources.

### **Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

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### **Target**

Energy usage

### **KPI – Metric numerator**

Energy efficiency savings

**KPI – Metric denominator (intensity targets only)**

**Base year**

2016

**Start year**

2016

**Target year**

2020

**KPI in baseline year**

0

**KPI in target year**

60000

**% achieved in reporting year**

32

**Target Status**

Underway

**Please explain**

We recover energy from the combustion of municipal solid waste in energy-from-waste facilities. The more efficiently we can process the wastes, by reducing our internal energy consumption (parasitic load), the more energy we can export to the grid, thereby reducing the amount of electricity that must be generated by fossil fuel-fired grid connected electricity generators.

**Part of emissions target**

Reducing our parasitic load will help reduce emissions at fossil-fuel fired power plants as a result of lower system demand.

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

**Target**

Waste

**KPI – Metric numerator**

million short tons waste diverted from landfill

**KPI – Metric denominator (intensity targets only)**

**Base year**

2014

**Start year**

2014

**Target year**

2020

**KPI in baseline year**

20.7

**KPI in target year**

22.8

**% achieved in reporting year**

0

**Target Status**

Underway

**Please explain**

More sustainable waste and materials management can be a significant source of GHG emissions mitigation. Growing landfill diversion and moving up the waste hierarchy, both for our own operations and for our clients', are our most powerful drivers in reducing GHG emissions. By 2020, our target is to increase the amount of waste managed through energy recovery and other sustainable waste management operations by 10% relative to a 2014 baseline. Our production is currently down relative to 2014, but we expect that the start-up of our Dublin facility in 2017 as well as a pipeline of new development opportunities in the U.K. will help make progress toward our goal. Please note that this goal was set on an "Operational Control" basis, which is a different framework than the "Equity Share" approach used in our CDP inventory.

**Part of emissions target**

Diverting wastes from landfills will help reduce overall country and region GHG emissions from the waste management sector, particularly methane.

**Is this target part of an overarching initiative?**

Reduce short-lived climate pollutants

**C4.3**

**(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.**

Yes

**C4.3a**

**(C4.3a) Identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings.**

	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	2	



	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
To be implemented*	5	36000
Implementation commenced*		
Implemented*	54	430000
Not to be implemented		

## C4.3b

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**(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.**

**Activity type**

Process emissions reductions

**Description of activity**

New equipment

**Estimated annual CO2e savings (metric tonnes CO2e)**

470000

**Scope**

Scope 3

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

**Investment required (unit currency – as specified in CC0.4)**

**Payback period**

Please select

**Estimated lifetime of the initiative**

Please select

**Comment**

Covanta is in the midst of a significant investment in our capabilities to recover metals from the ash remaining after the processing of waste in our facilities through our Covanta Metals Management group. Since 2011, we have implemented over 54 projects and have a pipeline of projects still under consideration, in planning stages, or under construction. To date, these projects have resulted in additional annual GHG savings of 430,000 metric tonnes of CO<sub>2</sub> / year. The downstream use of recycled metal saves significant amounts of GHG emissions relative to using raw materials. Every Mg of aluminum, copper, and ferrous metal recovered for recycling saves 10, 5.2, and 2.0 metric tonnes of CO<sub>2</sub>e respectively.

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## C4.3c

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### (C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Financial optimization calculations	Many of the GHG emissions reductions opportunities that are within our control are aligned with financial signals. A greater return on metals recovery projects that results from higher separation efficiency also optimizes lifecycle GHG emissions reductions.
Other	We have embarked on a rigorous Continuous Improvement program aimed at making our operations more efficient. Many of the opportunities for optimizing efficiency also reduce lifecycle GHG emissions.
Dedicated budget for other emissions reduction activities	Our Covanta Metals Management group was specifically created to identify and implement projects to recover additional metals from the ash remaining after the combustion process at our energy-from-waste facilities. These projects both create additional revenue for Covanta and generate lifecycle GHG emissions reductions as a result of the additional metal recovered for recycling. The use of recycled metal saves significant amounts of GHG emissions relative to using raw materials.

## C4.5

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### (C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

## C4.5a

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### (C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

#### Level of aggregation

Company-wide

#### Description of product/Group of products

Our core business, energy-from-waste, is widely recognized as a source of GHG mitigation. These facilities, and other like them around the world, are recognized internationally as a source of Greenhouse gas (GHG) emissions mitigation and low carbon energy generation, including by the U.S. EPA; U.S. EPA scientists; the Intergovernmental Panel on Climate Change (“IPCC”); the World Economic Forum; the European Union; CalRecycle; California Air Resources Board; and the Joint Institute for Strategic Energy Analysis (NREL). EfW facilities generate carbon offsets credits under both the Clean Development Mechanism (CDM) of the Kyoto Protocol and voluntary carbon offset markets. EfW was recognized as a compliance option for reducing GHG emissions from electricity generation in the final version of the U.S. EPA’s Clean Power Plan

promulgated in 2015. New EfW facilities were eligible to generate Emission Rate Credits (ERCs). Existing facilities were not a covered source and were considered a source of zero carbon energy under the program.

**Are these low-carbon product(s) or do they enable avoided emissions?**

Low-carbon product and avoided emissions

**Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

Other, please specify (Lifecycle methodology, USEPA MSW DST)

**% revenue from low carbon product(s) in the reporting year**

99.7

**Comment**

On average, the U.S. EPA has determined that EfW facilities reduce GHG emissions by 1 ton of CO<sub>2</sub> equivalents (CO<sub>2</sub>e) for every ton of municipal solid waste (MSW) diverted from landfill and processed. By eliminating emissions that would have otherwise occurred, EfW is the only major source of electricity that reduces GHG emissions. Furthermore, EfW can generate carbon offset credits under the Kyoto Protocol's Clean Development Mechanism and the Verified Carbon Standard. Two U.S. EfW facilities, eligible due to their recent expansion, have sold carbon offset credits into the voluntary market. EfW was also eligible to generate emission rate credits under the U.S. EPA's Clean Power Plan. EfW contributes to the reduction of GHGs in the environment by: - generating energy that otherwise would likely be generated by fossil-fueled facilities; - diverting solid waste from landfills where it would have emitted methane for decades, even when factoring in landfill gas collection; and - recovering metals for recycling, saving the GHGs and energy associated with the production of products and materials from virgin inputs.

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## C-EU4.6

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**(C-EU4.6) Describe your organization's efforts to reduce methane emissions from your electricity generation activities.**

Our energy-from-waste (EfW) facilities generate net reductions in methane emissions through the avoidance of landfilling.

## C5. Emissions methodology

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### C5.1

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**(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).**

**Scope 1**

**Base year start**

January 1 2011

**Base year end**

December 31 2011

**Base year emissions (metric tons CO2e)**

3955726

**Comment**

**Scope 2 (location-based)**

**Base year start**

January 1 2011

**Base year end**

January 1 2011

**Base year emissions (metric tons CO2e)**

26224

**Comment**

**Scope 2 (market-based)**

**Base year start**

**Base year end**

**Base year emissions (metric tons CO2e)**

**Comment**

**C5.2**

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**(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.**

US EPA Climate Leaders: Indirect Emissions from Purchases/ Sales of Electricity and Steam

US EPA Mandatory Greenhouse Gas Reporting Rule

**C6. Emissions data**

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## C6.1

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**(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?**

**Row 1**

**Gross global Scope 1 emissions (metric tons CO2e)**

3996871

**End-year of reporting period**

<Not Applicable>

**Comment**

## C6.2

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**(C6.2) Describe your organization's approach to reporting Scope 2 emissions.**

**Row 1**

**Scope 2, location-based**

We are reporting a Scope 2, location-based figure

**Scope 2, market-based**

We have operations where we are able to access electricity supplier emission factors or residual emissions factors, but are unable to report a Scope 2, market-based figure

**Comment**

Covanta generates electricity for export to the grid. However, we do, on occasion, purchase electricity from the grid to sustain operations during maintenance outages or for other purposes. Our 2017 purchased electricity was equivalent to less than 2% of our total gross electrical generation. For consistency, we report using the average grid factors from U.S. EPA's eGRID tool which are a data-based set of emission factors for individual power control regions in the U.S.

## C6.3

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**(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?**

**Row 1**

**Scope 2, location-based**

24865

**Scope 2, market-based (if applicable)**

<Not Applicable>

**End-year of reporting period**

<Not Applicable>

**Comment**

C6.4

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**(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?**

Yes

C6.4a

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**(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.**

**Source**

Regional Offices

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

Emissions are not relevant

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

Emissions are not relevant

**Explain why the source is excluded**

Regional offices not located at other Covanta facilities are very small, consisting of one to no more than ten employees and are expected to have an immaterial impact on the overall inventory.

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**Source**

Transfer Stations

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

Emissions are not relevant

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

Emissions are not relevant

**Explain why the source is excluded**

A detailed assessment of GHG emissions performed in several states as part of our earlier participation in The Climate Registry found that transfer station Scope 1 and Scope 2 GHG emissions represented 0.02% of total Scope 1 and Scope 2 GHG emissions. Exclusion of transfer station emissions is not expected to have a material impact on the inventory.

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**Source**

PFCs

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

No emissions excluded

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

Emissions are not relevant

**Explain why the source is excluded**

A review of Covanta's operations in California, New Jersey, and New York completed as part of both voluntary reporting to the California Climate Action Registry (CCAR), mandatory reporting to the California Air Resources Board (CARB), and our earlier participation in The Climate Registry (TCR) voluntary reporting program, has revealed no emissions of perfluorocarbons (PFCs) from our current operations. Therefore, PFC emissions have not been considered as part of this inventory.

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**Source**

Mobile Equipment

**Relevance of Scope 1 emissions from this source**

Emissions are relevant but not yet calculated

**Relevance of location-based Scope 2 emissions from this source**

No emissions excluded

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

No emissions excluded

**Explain why the source is excluded**

Covanta consumes relatively small amounts of fossil fuels, predominately diesel, for operations of heavy equipment at its facilities. Our reporting experiences to date, described above, have revealed these sources to be very small relative to our stationary combustion emissions from our electrical and steam generation facilities; therefore, they have not been included in the CDP inventory. We do plan to include these sources in a future inventory for completeness.

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**Source**

SF6 Emissions

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

No emissions excluded

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

No emissions excluded

**Explain why the source is excluded**

Covanta also has relatively minor emissions of SF6, predominately associated with high-voltage switchgear. Our reporting experiences to date, described above, have revealed these sources to be very small relative to our stationary combustion emissions from our electrical and steam generation facilities; therefore, they have not been included in the CDP inventory.

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**C6.5**

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**(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.**

**Purchased goods and services****Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

113184

**Emissions calculation methodology**

Calculation based on consumption of relevant raw materials, including lime, carbon, limestone, urea, ammonia, steel, and Inconel metal and published emission factor data.

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

0

**Explanation**

We base our emissions estimates based on actual quantities of materials used in the reporting year, or, if this data is not available, purchasing records.

**Capital goods****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners**



**Explanation**

Peer-reviewed literature has found that capital goods and maintenance materials are a minor part of the GHG emissions associated with energy-from-waste and biomass-to-energy facilities.

**Fuel-and-energy-related activities (not included in Scope 1 or 2)****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO<sub>2</sub>e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

All emissions associated with Covanta's fuel and energy use (on an equity share basis) are included in our Tier 1 and Tier 2 emissions.

**Upstream transportation and distribution****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO<sub>2</sub>e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

In general, Covanta's energy-from-waste facilities are located close to transportation centers from which waste is procured. Analysis of upstream transportation for carbon offset credits generated at the Hillsborough County and Lee County facilities that we operate in

**Waste generated in operations****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO<sub>2</sub>e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Covanta's primary business is management of waste in our energy-from-waste facilities. These operations generate an inert ash that is either beneficially used, placed in MSW landfills, or placed in ash monofills. Long term testing of leachate from an ash disposal facility in Marion County, Oregon revealed no detectable concentrations of semi-volatile organic compounds (SVOCs). (See Roffman, Haia K. Municipal Waste Combustion Ash Landfill Leachate Quality – Long Term Monitoring. Presented at the Air & Waste Management Association 90th Annual Meeting & Exhibition, June 8-13, 1997, Toronto, Canada) The absence of SVOCs supports the

premise that minimal biological degradation of carbon, and subsequent evolution of methane, occurs with ash in landfills. Furthermore, ash was observed to solidify significantly in the monofill, likely rendering any remaining carbon in the ash unavailable to biological processes. Recent research has also identified municipal waste combustor ash as a slight GHG sink. (See Rendek, E., G. Ducom, P. Germain, Carbon dioxide sequestration in municipal solid waste incinerator (MSWI) bottom ash, Journal of Hazardous Materials, 128: 1, 73-79. doi:10.1016/j.jhazmat.2005.07.033)

## **Business travel**

### **Evaluation status**

Relevant, calculated

### **Metric tonnes CO2e**

6984

### **Emissions calculation methodology**

Emissions estimate provided by travel agency vendors for air, rental cars, and hotels.

### **Percentage of emissions calculated using data obtained from suppliers or value chain partners**

100

### **Explanation**

Emissions estimate provided by travel agency vendors for air, rental cars, and hotels.

## **Employee commuting**

### **Evaluation status**

Relevant, not yet calculated

### **Metric tonnes CO2e**

### **Emissions calculation methodology**

### **Percentage of emissions calculated using data obtained from suppliers or value chain partners**

### **Explanation**

## **Upstream leased assets**

### **Evaluation status**

Not relevant, explanation provided

### **Metric tonnes CO2e**

### **Emissions calculation methodology**

### **Percentage of emissions calculated using data obtained from suppliers or value chain partners**

### **Explanation**

Covanta Energy does not have any appreciable upstream leased assets.

## **Downstream transportation and distribution**

**Evaluation status**

Relevant, not yet calculated

**Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Covanta's primary products / outputs are energy products in the form of steam and electricity. Any downstream losses associated with delivery of these products are already included in our scope 1 emissions. After the combustion process, approximately 10% of the initial volume of wastes processed remains as an inert ash which must be managed, either in a regular MSW landfill, as landfill daily cover, or in an ash monofill. These applications are typically located off-site. In subsequent inventories, we plan to calculate the Scope 3 emissions associated with this transportation.

**Processing of sold products****Evaluation status**

Relevant, not yet calculated

**Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Covanta's sold products include electricity, steam and metals recovered for recycling. While metals recovered for recycling would generate GHGs during the recycling process, they offer a net savings relative to the use of raw materials. Steam and electricity are not subject to further processing. We plan to provide additional detail in subsequent Scope 3 inventories.

**Use of sold products****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Covanta's primary products are electricity, steam, and metals for recycling. The use of electricity and steam downstream does not generate emissions, although the processes in which these products are used may have different sources of emissions. Similarly, the metals sold for recycling are not finished products. They will likely be incorporated into other products that could have emissions in the use phase; however, those emissions would be attributable to a downstream manufacturer.

## **End of life treatment of sold products**

### **Evaluation status**

Not relevant, explanation provided

### **Metric tonnes CO2e**

### **Emissions calculation methodology**

### **Percentage of emissions calculated using data obtained from suppliers or value chain partners**

### **Explanation**

Covanta's primary products steam and electricity, do not require end of life treatment. The recovery of metals for recycling is further processed and the end of life emissions associated with the final product into which the recovered metal is used is not attributable to Covanta.

## **Downstream leased assets**

### **Evaluation status**

Not relevant, explanation provided

### **Metric tonnes CO2e**

### **Emissions calculation methodology**

### **Percentage of emissions calculated using data obtained from suppliers or value chain partners**

### **Explanation**

Covanta does not have downstream leased assets.

## **Franchises**

### **Evaluation status**

Not relevant, explanation provided

### **Metric tonnes CO2e**

### **Emissions calculation methodology**

### **Percentage of emissions calculated using data obtained from suppliers or value chain partners**

### **Explanation**

Covanta does not have any franchises.

## **Investments**

### **Evaluation status**

Not relevant, explanation provided

### **Metric tonnes CO2e**

### **Emissions calculation methodology**

### **Percentage of emissions calculated using data obtained from suppliers or value chain partners**

**Explanation**

Covanta does not have significant investments outside of equity investments already included in our Scope 1 inventory.

**Other (upstream)**

**Evaluation status**

Not evaluated

**Metric tonnes CO2e**

**Emissions calculation methodology**

Percentage of emissions calculated using data obtained from suppliers or value chain partners

**Explanation**

**Other (downstream)**

**Evaluation status**

Not evaluated

**Metric tonnes CO2e**

**Emissions calculation methodology**

Percentage of emissions calculated using data obtained from suppliers or value chain partners

**Explanation**

C6.7

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**(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?**

Yes

C6.7a

---

**(C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO2.**

5780627

C6.10

---

**(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.**

**Intensity figure**

0.0023

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

4021735

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

1752000000

**Scope 2 figure used**

Location-based

**% change from previous year**

12

**Direction of change**

Decreased

**Reason for change**

Scope 1 and 2 emissions were down 9.2% from 2016 as a result of a slightly higher biogenic fraction present in the waste stream received and a decrease in the total tons processed predominately due to the long-term shutdown of one of our facilities for repairs following a fire. At the same time, revenues increased 3.1% from 2016 to 2017. It is important to note that while Scope 1 and 2 emissions were down from 2016 to 2017 as a result of less MSW processed, this decrease resulted in an overall increase in national GHG emissions when evaluated on a lifecycle basis. Energy from waste (EfW) facilities, like those that Covanta operates, are widely recognized as a source of GHG mitigation. Therefore, fewer tons processed means more tons headed to landfills, which generate more GHG emissions per ton of waste managed over its lifetime.

---

**Intensity figure**

1081

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

4021735

**Metric denominator**

full time equivalent (FTE) employee

**Metric denominator: Unit total**

3719

**Scope 2 figure used**

Location-based

### **% change from previous year**

12.6

### **Direction of change**

Decreased

### **Reason for change**

Scope 1 and 2 emissions were down 9.2% from 2016 as a result of a slightly higher biogenic fraction present in the waste stream received and a decrease in the total tons processed predominately due to the long-term shutdown of one of our facilities for repairs following a fire. At the same time, FTE increased 3.8% from 2016 to 2017. It is important to note that while Scope 1 and 2 emissions were down from 2016 to 2017 as a result of less MSW processed, this decrease resulted in an overall increase in national GHG emissions when evaluated on a lifecycle basis. Energy from waste (EfW) facilities, like those that Covanta operates, are widely recognized as a source of GHG mitigation. Therefore, fewer tons processed means more tons headed to landfills, which generate more GHG emissions per ton of waste managed over its lifetime.

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## **C7. Emissions breakdowns**

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### **C7.1**

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#### **(C7.1) Does your organization have greenhouse gas emissions other than carbon dioxide?**

Yes

### **C7.1a**

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#### **(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).**

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	3955715	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	1273	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	39881	IPCC Fourth Assessment Report (AR4 - 100 year)

### **C-EU7.1b**

**(C-EU7.1b) Break down your total gross global Scope 1 emissions from electric utilities value chain activities by greenhouse gas type.**

	Gross Scope 1 CO2 emissions (metric tons CO2)	Gross Scope 1 methane emissions (metric tons CH4)	Gross Scope 1 SF6 emissions (metric tons SF6)	Gross Scope 1 emissions (metric tons CO2e)	Comment
Fugitives					
Combustion (Electric utilities)					
Combustion (Gas utilities)					
Combustion (Other)					
Emissions not elsewhere classified					

## C7.2

**(C7.2) Break down your total gross global Scope 1 emissions by country/region.**

Country/Region	Scope 1 emissions (metric tons CO2e)
United States of America	3909430
Canada	989
Italy	8827
Ireland	77625

## C7.3

**(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.**

By activity

### C7.3c

**(C7.3c) Break down your total gross global Scope 1 emissions by business activity.**

Activity	Scope 1 emissions (metric tons CO2e)
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Activity	Scope 1 emissions (metric tons CO2e)
Energy-from-Waste	3917810
Natural Gas Steam Generation	63618
Material Processing Facilities	6328
Waste Transportation	9114
Hydroelectric facility	0

## C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

**(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.**

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility generation activities		<Not Applicable>	
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

## C7.5

**(C7.5) Break down your total gross global Scope 2 emissions by country/region.**

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
United States of America	23651	0	61267	0
Canada	241	0	961	0
Italy	3	0	8	0
Ireland	969	0	2264	0

## C7.6

---

**(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.**

By activity

### C7.6c

---

**(C7.6c) Break down your total gross global Scope 2 emissions by business activity.**

Activity	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Energy-from-Waste	22348	0
Hydroelectric facility	9	0
Material Processing Facilities	2508	0

## C7.9

---

**(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?**

Decreased

### C7.9a

---

**(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year.**

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	150000	Decreased		The fraction of carbon in the waste stream from biogenic sources increased slightly from 2016 to 2017, resulting in lower emissions of fossil CO2 from the stack. Impact was calculated by multiplying the difference in carbon content from 2016 to 2017 by the total tons of waste process in 2017.
Other emissions reduction activities		<Not Applicable>		
Divestment		<Not Applicable>		
Acquisitions	6300	Increased		2017 was the first year that many of materials processing facilities were incorporated into our GHG inventory. These facilities were acquired to help us expand our service to commercial and industrial non-hazardous waste generators. The impact of these acquisitions was calculated based on their contribution to the inventory.
Mergers		<Not Applicable>		
Change in output	240000	Decreased	0	We processed fewer tons of waste in 2017 relative to 2016 largely as a result of a shutdown of one of our facilities to repair fire damage. This decrease was partially offset by the start-up of our Dublin energy-from-waste facility. The impact of this change was calculated by determining the theoretical emissions resulting from the change in throughput.
Change in methodology	0	No change	0	
Change in boundary		<Not Applicable>		
Change in physical operating conditions		<Not Applicable>		
Unidentified		<Not Applicable>		
Other		<Not Applicable>		

**C7.9b**

**(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?**

Location-based

## C8. Energy

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### C8.1

---

**(C8.1) What percentage of your total operational spend in the reporting year was on energy?**

More than 0% but less than or equal to 5%

### C8.2

---

**(C8.2) Select which energy-related activities your organization has undertaken.**

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

### C8.2a

---

**(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.**

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	17009856	14534554	31544410
Consumption of purchased or acquired electricity	<Not Applicable>	9610	54889	64499
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>

---

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	17019466	14589443	31608910

## C8.2b

---

**(C8.2b) Select the applications of your organization's consumption of fuel.**

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

## C8.2c

---

**(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.**

**Fuels (excluding feedstocks)**

General Municipal Waste

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

30861582

**MWh fuel consumed for the self-generation of electricity**

25331481

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

189090

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

5341011

---

**Fuels (excluding feedstocks)**

Distillate Oil

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

85566

**MWh fuel consumed for the self-generation of electricity**

75891

**MWh fuel consumed for self-generation of heat**

9587

**MWh fuel consumed for self-generation of steam**

88

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

589017

**MWh fuel consumed for the self-generation of electricity**

82337

**MWh fuel consumed for self-generation of heat**

20903

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

485777

---

**Fuels (excluding feedstocks)**

Propane Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

3121

**MWh fuel consumed for the self-generation of electricity**

2588

**MWh fuel consumed for self-generation of heat**

533

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Wood

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

5124

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

5124

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**(C8.2d) List the average emission factors of the fuels reported in C8.2c.**

**Distillate Oil**

**Emission factor**

2.71

**Unit**

kg CO2 per liter

**Emission factor source**

Converted from U.S. EPA Greenhouse Gas Reporting Rule, 40 CFR 98, Tables C-1 and C-2

**Comment**

Approximately 50% of our Scope 1 emissions are measured using continuous emission rate monitors in accordance with the U.S. EPA GHG Reporting Program or other such similar program. We only use the emission factors presented here for those facilities or operations without continuous monitoring systems in place. As a consequence, our reported emissions will differ slightly from a calculation based on heat input times the emission factor provided above.

**General Municipal Waste**

**Emission factor**

91.95

**Unit**

kg CO2e per million Btu

**Emission factor source**

U.S. EPA Greenhouse Gas Reporting Rule, 40 CFR 98, Tables C-1 and C-2

**Comment**

Approximately 50% of our Scope 1 emissions are measured using continuous emission rate monitors in accordance with the U.S. EPA GHG Reporting Program or other such similar program. We only use the emission factors presented here for those facilities or operations without continuous monitoring systems in place. As a consequence, our reported emissions will differ slightly from a calculation based on heat input times the emission factor provided above.

**Natural Gas**

**Emission factor**

0.056

**Unit**

metric tons CO2e per GJ

**Emission factor source**

Converted from U.S. EPA Greenhouse Gas Reporting Rule, 40 CFR 98, Tables C-1 and C-2

**Comment**

Approximately 50% of our Scope 1 emissions are measured using continuous emission rate monitors in accordance with the U.S. EPA GHG Reporting Program or other such similar



program. We only use the emission factors presented here for those facilities or operations without continuous monitoring systems in place. As a consequence, our reported emissions will differ slightly from a calculation based on heat input times the emission factor provided above.

**Propane Gas**

**Emission factor**

0.067

**Unit**

metric tons CO2e per GJ

**Emission factor source**

Converted from U.S. EPA Greenhouse Gas Reporting Rule, 40 CFR 98, Tables C-1 and C-2

**Comment**

Approximately 50% of our Scope 1 emissions are measured using continuous emission rate monitors in accordance with the U.S. EPA GHG Reporting Program or other such similar program. We only use the emission factors presented here for those facilities or operations without continuous monitoring systems in place. As a consequence, our reported emissions will differ slightly from a calculation based on heat input times the emission factor provided above.

**Wood**

**Emission factor**

1.83

**Unit**

metric tons CO2e per Mg

**Emission factor source**

Converted from U.S. EPA Greenhouse Gas Reporting Rule, 40 CFR 98, Tables C-1 and C-2

**Comment**

Approximately 50% of our Scope 1 emissions are measured using continuous emission rate monitors in accordance with the U.S. EPA GHG Reporting Program or other such similar program. We only use the emission factors presented here for those facilities or operations without continuous monitoring systems in place. As a consequence, our reported emissions will differ slightly from a calculation based on heat input times the emission factor provided above.

**C8.2e**

**(C8.2e) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.**

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	4847140	0	4794321	0

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Heat	0	0	0	0
Steam	249650	0	2497370	0
Cooling	0	0	0	0

## C-EU8.2e

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(C-EU8.2e) For your electric utility activities, provide a breakdown of your total power plant capacity, generation, and related emissions during the reporting year by source.

### Coal – hard

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO<sub>2</sub>e)

Scope 1 emissions intensity (metric tons CO<sub>2</sub>e per GWh)

Comment

### Lignite

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO<sub>2</sub>e)

Scope 1 emissions intensity (metric tons CO<sub>2</sub>e per GWh)

Comment

### Oil

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO<sub>2</sub>e)

Scope 1 emissions intensity (metric tons CO<sub>2</sub>e per GWh)

Comment

## Gas

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

## Biomass

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

## Waste (non-biomass)

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

## Nuclear

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

## Geothermal

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

## Hydroelectric

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

## Wind

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

## Solar

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

## Other renewable

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

Other non-renewable

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

Total

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

## C8.2f

---

(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

**Basis for applying a low-carbon emission factor**

Grid mix of renewable electricity

**Low-carbon technology type**

Solar PV

Concentrated solar power (CSP)

Wind

Hydropower  
Biomass (including biogas)

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

**Emission factor (in units of metric tons CO2e per MWh)**

**Comment**

We apply the U.S. EPA eGRID emissions factors which account for the amount of zero or low carbon emitting energy generated within the respective grid regions. We do not specifically contract for low or zero carbon electricity at a material level.

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## C-EU8.4

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**(C-EU8.4) Does your electric utility organization have a global transmission and distribution business?**

No

## C9. Additional metrics

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### C9.1

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**(C9.1) Provide any additional climate-related metrics relevant to your business.**

**Description**

Waste

**Metric value**

900000

**Metric numerator**

Total wastes avoided, recycled or reused

**Metric denominator (intensity metric only)**

**% change from previous year**

**Direction of change**

<Not Applicable>

**Please explain**

More sustainable waste and materials management can be a significant source of GHG emissions mitigation. Growing landfill diversion and moving up the waste hierarchy, both for our own operations and for our clients', are our most powerful drivers in reducing GHG emissions. We set a target to increase total wastes avoided, recycled or reused under our management by 25% by 2020 relative to a 2014 baseline of 548,000 tons. In 2016, we avoided, recycled, or reused over 900,000 tons, a 60% increase in just two years. Figure represents 2016 data - 2017 data not yet available at this time.

**Description**

Energy use

**Metric value**

19300

**Metric numerator**

Energy efficiency project savings

**Metric denominator (intensity metric only)**

**% change from previous year**

**Direction of change**

<Not Applicable>

**Please explain**

We set a sustainability target to achieve additional energy efficiency improvements at our energy recovery facilities of 60,000 MWh in total by the end of 2020. As of the end of 2016, 19,300 MWh of additional energy efficiency improvements, roughly one-third of our goal of 60,000 MWh, has been completed. Figure represents 2016 data - 2017 data not yet available at this time.

**C-EU9.5a**

**(C-EU9.5a) Break down, by source, your total planned CAPEX in your current CAPEX plan for power generation.**

Primary power generation source	CAPEX planned for power generation from this source	Percentage of total CAPEX planned for power generation	End year of CAPEX plan	Comment
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**C-EU9.5b**

**(C-EU9.5b) Break down your total planned CAPEX in your current CAPEX plan for products and services (e.g. smart grids, digitalization, etc.).**

Products and services	Description of product/service	CAPEX planned for product/service	Percentage of total CAPEX planned products and services	End of year CAPEX plan
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## C-CO9.6/C-EU9.6/C-OG9.6

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**(C-CO9.6/C-EU9.6/C-OG9.6) Disclose your investments in low-carbon research and development (R&D), equipment, products, and services.**

## C10. Verification

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### C10.1

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**(C10.1) Indicate the verification/assurance status that applies to your reported emissions.**

	Verification/assurance status
Scope 1	No third-party verification or assurance
Scope 2 (location-based or market-based)	No third-party verification or assurance
Scope 3	No third-party verification or assurance

### C10.2

---

**(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?**

No, we do not verify any other climate-related information reported in our CDP disclosure

## C11. Carbon pricing

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### C11.1

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**(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?**

Yes

## C11.1a

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**(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.**

California CaT

RGGI

## C11.1b

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**(C11.1b) Complete the following table for each of the emissions trading systems in which you participate.**

**California CaT**

**% of Scope 1 emissions covered by the ETS**

2.4

**Period start date**

January 1 2017

**Period end date**

December 31 2017

**Allowances allocated**

93866

**Allowances purchased**

0

**Verified emissions in metric tons CO<sub>2</sub>e**

93866

**Details of ownership**

Facilities we own and operate

**Comment**

California's Global Warming Solutions Act of 2006 ("AB 32"), seeks to reduce GHG emissions in California to 1990 levels by 2020. AB 32 includes an economy-wide "cap-and-trade" program, which could impact our California EfW facilities. Regulatory amendments finalized in 2017 extended an exclusion of EfW facilities from the cap-and-trade program through the end of 2017. The exclusion is managed in California's program by providing EfW facilities in California 100% of the allowances required to cover their verified stack emissions. To date, EfW have been

effectively excluded because landfills are not subject to the cap. The inclusion of EfW facilities in the cap and trade program would create an economic disparity between EfW and landfills, and would improperly incentivize landfills, a higher GHG emitting method of waste management. A resolution passed by the Board of the California Air Resources Board (“CARB”) directs the agency to provide transition assistance to EfW facilities beginning in 2018. The specific degree of assistance to be provided is uncertain at this time.

## **RGGI**

### **% of Scope 1 emissions covered by the ETS**

0.4

### **Period start date**

January 1 2017

### **Period end date**

December 31 2017

### **Allowances allocated**

0

### **Allowances purchased**

30000

### **Verified emissions in metric tons CO2e**

18623

### **Details of ownership**

Facilities we own and operate

### **Comment**

We operate one natural gas-fired boiler at our Niagara Falls, NY facility that is used as a back-up source of steam for an industrial park steam loop. While the use of the boiler is strictly to satisfy steam demand, the high-pressure output of the boiler is connected to a turbine which operates in a combined heat and power mode. Therefore, according to RGGI rules, all of the emissions from the boiler are subject to the program.

## **C11.1d**

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### **(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?**

Covanta is subject to the RGGI cap and trade program for an auxiliary boiler installed at our Niagara Falls, NY facility. Our current strategy is to purchase allowances needed through the secondary market. Our core business, EfW, is not subject to the RGGI cap and trade program. Therefore, we currently have minimal market exposure to this program.

In 2017, Covanta was effectively exempt from the California cap and trade program under AB32. The state placed 100% of the allowances required to meet our compliance obligation in our compliance account. If we begin to have some exposure to the market in the future, as a result of having a shortfall of allowances relative to our compliance obligation, we will likely obtain allowances through the secondary market as needed to ensure compliance.

## C11.2

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**(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?**

Yes

## C11.2a

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**(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.**

**Credit origination or credit purchase**

Credit origination

**Project type**

Methane avoidance

**Project identification**

Project Name: Hillsborough County Waste to Energy (WtE) Facility 2009 Capital Expansion Unit 4  
Registry ID: VCSR720 <https://vcsregistry2.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=720>

**Verified to which standard**

VCS (Verified Carbon Standard)

**Number of credits (metric tonnes CO2e)**

38000

**Number of credits (metric tonnes CO2e): Risk adjusted volume**

38000

**Credits cancelled**

No

## Purpose, e.g. compliance

Voluntary Offsetting

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### C11.3

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#### (C11.3) Does your organization use an internal price on carbon?

Yes

### C11.3a

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#### (C11.3a) Provide details of how your organization uses an internal price on carbon.

##### Objective for implementing an internal carbon price

Navigate GHG regulations  
Stakeholder expectations  
Identify and seize low-carbon opportunities

##### GHG Scope

Scope 1

##### Application

We use the U.S. Federal Government's Social Cost of Carbon (2013) to demonstrate and communicate the economic benefits of landfill diversion and energy from waste with policy and decision makers.

##### Actual price(s) used (Currency /metric ton)

50

##### Variance of price(s) used

To date, we use a static, uniform price, but anticipate moving toward evolutionary pricing over time. Given the uncertainty in the social cost of carbon, we use a range of \$11 - \$89 / metric tonne, reflecting range in 2010 Social Cost of Carbon from Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866, authored by the Interagency Working Group on Social Cost of Carbon, United States Government

##### Type of internal carbon price

Shadow price

##### Impact & implication

Applying a cost of carbon has helped us demonstrate the economic efficiency of using energy-from-waste technologies to help mitigate climate change. In general, the operation of energy-from-waste plants is more expensive per ton of waste managed than landfilling. However, normal accounting practices do not account for the social cost of the higher GHG emissions

from landfilling. Considering the social cost of carbon allows policymakers to better understand the relative cost of energy-from-waste and landfilling when the GHG externalities are considered.

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## C12. Engagement

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### C12.1

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#### **(C12.1) Do you engage with your value chain on climate-related issues?**

Yes, our customers

### C12.1b

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#### **(C12.1b) Give details of your climate-related engagement strategy with your customers.**

##### **Type of engagement**

Education/information sharing

##### **Details of engagement**

Run an engagement campaign to educate customers about the climate change impacts of (using) your products, goods, and/or services

##### **Size of engagement**

75

##### **% Scope 3 emissions as reported in C6.5**

100

##### **Please explain the rationale for selecting this group of customers and scope of engagement**

We engage with as many of our municipal customers as we can to communicate the GHG emissions reductions benefits of energy-from-waste (EfW) through an annual letter, open houses, community meetings, and other interactions.

##### **Impact of engagement, including measures of success**

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##### **Type of engagement**

Collaboration & innovation

##### **Details of engagement**

Other – please provide information in column 5

## Size of engagement

1

### % Scope 3 emissions as reported in C6.5

#### Please explain the rationale for selecting this group of customers and scope of engagement

One of our steam customers at our Niagara facility produces recycled paper using the steam that we produce from waste. In turn, they send us rejected materials that we can't recycle, which becomes part of the waste stream that helps generate the steam that they use in their plant. The synergy demonstrates how materials can be put to their highest and best use, and is an example of the circular economy in practice. The more circular we can make our economy, the lower GHG emissions from the manufacturing and disposal of products can be. The case study is provided as part of our sustainability report here: <http://covanta-csr.com/materials-management/covanta-and-the-circular-economy/>

#### Impact of engagement, including measures of success

Both parties involved in the collaboration have made use of the engagement story and materials developed. We also both participated in a GreenBiz webinar (<https://www.greenbiz.com/webcast/putting-circular-economy-practice-real-world-examples>) that reached over 500 attendees.

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## C12.3

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### (C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Direct engagement with policy makers
- Trade associations
- Funding research organizations

## C12.3a

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### (C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Mandatory carbon reporting	Support with minor exceptions	Submittal of comments in response to proposed regulation.	Covanta recommended that the latest science pertaining to emission factors and the determination of biogenic carbon through the latest radiocarbon dating methods be incorporated into revisions to the US EPA's mandatory GHG reporting rule.

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Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Cap and trade	Support with minor exceptions	Direct engagement with policymakers and regulators.	Covanta supports cap and trade programs as long as their design and scope provide for the recognition of energy-from-waste's well proven ability to mitigate GHG emissions or the relative lifecycle GHG emissions of EfW and landfilling.
Clean energy generation	Support with minor exceptions	Direct engagement with policymakers and regulators.	Covanta supports clean energy and renewable energy generation policies that include energy-from-waste technologies.
Carbon tax	Support with minor exceptions	Direct engagement with policymakers and regulators.	Covanta supports a carbon tax, as long as the tax can be implemented equitably. We propose the best path forward is an aggressive strategy targeting short-lived climate pollutants like methane coupled with upstream carbon tax approach on fossil fuels capturing the vast majority of GHG emissions in an equitable manner.

## C12.3b

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**(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?**

Yes

## C12.3c

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**(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.**

**Trade association**

Energy Recovery Council

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

The Energy Recovery Council is active in communicating energy-from-waste's (EfW's) role as a key source of GHG mitigation and advocating for the proper treatment of EfW in state and federal policies in recognition of its benefits.

**How have you, or are you attempting to, influence the position?**

As a member of the Energy Recovery Council's board, we are involved in developing policy positions for the organization.

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**Trade association**

Biomass Power Association

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

The Biomass Power Association (BPA) is actively involved in the legislative process, promoting biopower as an important addition to America's energy portfolio, and helping to shape government policies that encourage the development and use of biomass energy. BPA's advocacy efforts are vital as American policymakers at every level explore ways to reduce our nation's dependence on foreign oil, and reduce the greenhouse gas emissions that contribute to global warming.

**How have you, or are you attempting to, influence the position?**

As a member of the Biomass Power Association's board, we are involved in developing policy positions for the organization.

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## C12.3d

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**(C12.3d) Do you publicly disclose a list of all research organizations that you fund?**

No

## C12.3f

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**(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?**

Covanta's direct and indirect activities that influence policy are coordinated through our Chief Sustainability Officer. In the corporate sustainability and government affairs departments, our policy positions pertaining to climate change are part of the department's core responsibilities. The Chief Sustainability Officer regularly (at least annually) updates the board's Public Policy committee on key issues, including policy developments, related to climate change.

## C12.4

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(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

[Covanta Holding 10-K 2017.pdf](#)

**Content elements**

Strategy

Risks & opportunities

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**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

[Covanta 2018 Proxy Filing.pdf](#)

**Content elements**

Governance

Strategy

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**Publication**

In voluntary sustainability report

**Status**

Underway – previous year attached

**Attach the document**

[Covanta 2016 Sustainability Report.pdf](#)

**Content elements**

Emissions figures

Emission targets

Other metrics

Other, please specify (Goals, lifecycle analysis)

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**Publication**

In voluntary communications

**Status**

Complete

**Attach the document**

[Waste and Climate.pdf](#)

**Content elements**

Other, please specify (Waste management role in climate change)

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**Publication**

In voluntary communications

**Status**

Complete

**Attach the document**

[EfW Lifecycle GHG Emissions Summary \(2016-02\).pdf](#)

**Content elements**

Other, please specify (Details of lifecycle calculation for EfW)

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## C14. Signoff

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### C-FI

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**(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.**

Please note that we have reported "renewable energy" in two different ways in our response. In question C8.2a, we have reported the energy consumed assuming that only the biogenic portion of the waste we processed at our energy-from-waste (EfW) facilities is considered to be renewable. In contrast, we have responded to question C8.2e consistent with the treatment of electricity from energy-from-waste by country. In Ireland and Italy, the fraction of electricity associated with the biogenic source materials is considered renewable. In the United States, all of the electrical output is considered renewable. EfW facilities are defined as renewable in 31 states, the District of Columbia, and by the federal government for the past thirty years, including in the American Recovery and Reinvestment Act of 2009 and the 2005 Energy Policy Act.

### C14.1

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**(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

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	Job title	Corresponding job category
Row 1	Sr. Director, Sustainability	Environment/Sustainability manager

## Submit your response

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### In which language are you submitting your response?

English

### Please confirm how your response should be handled by CDP

	Public or Non-Public Submission	I am submitting to
I am submitting my response	Public	Investors

### Please confirm below

I have read and accept the applicable Terms



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