

C0. Introduction

C0.1

(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

(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
Row 1	January 1 2018	December 31 2018	No	<Not Applicable>

C0.3

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

Canada
Ireland
Italy
United States of America

C0.4

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

USD

C0.5

(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

(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

C1.1

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

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	Our Board has direct oversight of our sustainability strategy. 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

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
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 reviews 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. 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.

C1.2

(C1.2) Provide the highest management-level 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 (do not include the names of individuals).

The SVP / Chief Sustainability Officer (CSO) has overall responsibility for the entire sustainability program, including the assessment, management, and strategy development for 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 the Government Affairs group. Alternatively, exposure to physical climate risks are monitored by the maintenance group, which reports through the COO. In addition to climate change issues, the CSO is responsible for all elements of Covanta's sustainability program, Community Affairs, Environmental Compliance, Permitting, Government Affairs and environmental testing. The CSO position is identified as an Executive Officer in the company's annual report. The responsibilities of the position, as well as its dual-reporting to operations as well as legal, make it ideally suited to address risks and opportunities to climate change, as well as to coordinate the organizations' response.

Reporting to the CSO are the VP Environmental Compliance, Permitting and Sustainability; the Senior Directors and VPs of the Government Affairs Team, the Director of Community Affairs, and the Director of Compliance Testing. Total staff is 23 full-time employees. Specific responsibility for the sustainability program, encompassing all of its goals and programs, lies with the Senior Director of Sustainability, who reports to the CSO through the VP Environmental Compliance, Permitting and Sustainability.

C1.3

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

Yes

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

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.

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 approximately 600,000 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.

C2. Risks and opportunities

C2.1

(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

(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

(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

(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 by the Sustainability and Government Affairs groups together with accounting and business management to determine the financial impact on the facility. These types of risks are identified and quantified during the annual facility budgeting period as well as part of quarterly Sarbanes-Oxley meetings held to identify and review environmental liabilities.

Risks to our operations and facilities are reviewed by our operations department as part of operating and capital budget planning. Review of these risks is heavily centered around risk to physical structures and operations, including projects identified that would aid facility resilience in the event of a storm. For example, the flooding caused by Superstorm Sandy significantly impacted our Essex County WTE facility. In response, we implemented several projects, including relocation of electrical equipment and emergency generators, to improve the resilience of the facility in case of a repeat occurrence.

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

(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 stack emissions of CO2 which can be subject to regulation if not viewed consistently against other forms of waste management (e.g. landfilling). Our Sustainability and Government Affairs teams are charged with helping to educate policymakers on the advantages of energy recovery (EfW) relative to landfilling and to assess how current regulatory and legislative proposals can impact our business. 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 carbon offset methodologies. However, EfW facilities also have stack emissions of CO2 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.
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	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	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. The more likely scenario is an increased risk in storm-related flooding. 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.
Downstream	Relevant, always 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. While ample landfill capacity is available in the U.S., we are currently taking steps to reduce the amount of material that we send to landfills, and therefore, reliance on this technology that may be impacted. In 2019, Covanta broke ground on a new facility, called Total Ash Processing (TAPS), that will recover aggregate materials from the ash for material reuse. Climate related risks can also impact the price of ferrous and non-ferrous metals and can impact market availability.

C2.2d

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

Decisions to mitigate, transfer, accept or control climate-related risks and to capitalize on opportunities are made by cross-functional teams including operations, sustainability, legal, environmental, business management, accounting, sales, and other groups as appropriate. Not all risks and opportunities will require all groups involved, instead, risk and opportunities are evaluated in an approach proportional to their potential impact, positive or negative, on the business and likelihood of occurrence.

For example, the New York Independent System Operator's design of a Carbon Pricing Scheme for the the Wholesale Power market represents a significant potential transition risk to energy-from-waste facilities in New York State. Covanta's exposure to this potential risk was reviewed by a team from legal, government affairs, sustainability, energy markets, and business management. The effort to mitigate the risk, consisting of an education effort with regulators and legislators, was developed by the same team, with input from our customers and clients who would be potentially impacted. A similar approach was taken in California with regard to its cap and trade program as well as the cap and trade program that was considered by the Oregon legislature in its 2019 session.

We have also identified several transition opportunities, including the potential to generate carbon offset credits as well as increased interest in our services from businesses interested in reducing their GHG emissions, particularly their Scope 3 emissions. The decision to proceed with the development of carbon offset credits was made by the sustainability department, which led the effort together with our partner communities, together with our business management group. The decision making process considered potential revenue, the disposition of environmental attributes per the current contract, costs to develop the offsets, and the potential to develop additional recognition for energy-from-waste (EfW) as a GHG mitigation technology.

Decisions pertaining to physical risks are led by the facility and/or regional operations management with input and resources from corporate operations as appropriate. This decentralized approach takes into account the unique design characteristics (e.g. layout, elevation) and risks (e.g. projected rainfall amounts / wind speeds) of each facility and its location. For example, after the impacts on the Essex County facility as a result of Superstorm Sandy led to significant investment not only in the repair, but in the mitigation of future flooding risks.

C2.3

(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

(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

<Not Applicable>

Company- specific description

As is the case with all combustion, our facilities emit CO₂, however EfW is recognized as creating net reductions in GHG emissions and is otherwise environmentally beneficial, because it: • avoids CO₂ 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. For policy makers at the local level who make decisions on sustainable waste management alternatives, we believe that using EfW instead of landfilling will result in significantly lower net GHG emissions, while also introducing more control over the cost of waste management and supply of local electrical power. We are actively engaged in encouraging policy makers at state and federal levels to enact legislation that supports EfW as a superior choice for communities to avoid both the environmental harm caused by landfilling waste, and reduce local reliance on fossil fuels as a source of energy. Many of these same policy considerations apply equally to other renewable technologies. The extent to which such potential legislation and policy initiatives will affect our business will depend in part on whether EfW and our other renewable technologies are included within the range of clean technologies that could benefit from such legislation. Several jurisdictions are looking at carbon policies, including Oregon, New York, and Pennsylvania. As these policies are still various stages of development, it is difficult to determine their impact. However, a compliance cost based on total stack CO₂ emissions, without any consideration for energy-from-waste's (EfW's) GHG benefits relative to landfilling is possible, albeit unlikely given the recognition afforded to EfW as a source of GHG mitigation.

Time horizon

Medium-term

Likelihood

Very unlikely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

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, and the treatment of other facilities in the waste management sector (e.g. landfills).

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.

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

<Not Applicable>

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, through an economy-wide "cap-and-trade" program. EfW facilities were exempt from the cap-and-trade program through the end of 2017. A regulation finalized in 2019 resulted in a partial compliance obligation for our Stanislaus facility. The exposure was reduced by the allocation of free allowances to the facility as provided for in the 2019 regulation. A resolution passed by the Board of the California Air Resources Board ("CARB") directed the agency to provide additional transition assistance to EfW facilities beginning in 2018. The specific degree of additional assistance to be provided is uncertain at this time.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

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**

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Supply chain

Risk type

Transition risk

Primary climate-related risk driver

Market: Increased cost of raw materials

Type of financial impact

<Not Applicable>

Company- specific description

Several of the raw materials we use for air pollution control, including lime and activated carbon, as well as materials we used on regular facility maintenance (e.g. steel), are carbon intensive in their manufacturing process. If the manufacturing sector is covered by a cap and trade program, it could result in higher prices paid for these commodities. However, as current cap and trade programs generally have leakage mitigation mechanisms in place to reduce the movement of manufacturing outside of the regulated area and as most markets for raw materials are quite broad, we expect the impact to be minimal.

Time horizon

Long-term

Likelihood

About as likely as not

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Given the longer term nature of this risk, the usage of free allowances in many cap and trade programs to minimize leakage in emissions intensive / trade exposed industries, and the relatively small impact it would have on our overall expenses, we have not modeled the potential financial impact.

Management method

Our procurement teams maintain a diverse set of suppliers that can help mitigate any additional carbon costs that might be incurred by a subset of suppliers producing materials in a geographic region subject to carbon pricing.

Cost of management

0

Comment

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

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Market: Changing customer behavior

Type of financial impact

<Not Applicable>

Company- specific description

As a result of our EfW facilities' ability to avoid all generate of methane from landfills, the use of MSW for energy recovery is actually a net-carbon negative source of electricity, given the current composition of waste. 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. Both Europe and China also classify EfW as a source of renewable energy. However, buyers of our electricity may find other sources of renewable electricity to be preferable and energy-from-waste may lose access to incentives available for other forms of electrical generation.

Time horizon

Medium-term

Likelihood

Unlikely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure**Management method**

We continue to engage with policy makers at the local, state, and federal levels to help design effective energy policies that will encourage the use of MSW for electricity generation after recycling options have been exhausted and recognize the benefits of EFW relative to landfilling and landfill gas to energy.

Cost of management**Comment**

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Supply chain

Risk type

Physical risk

Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

Type of financial impact

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

Company- specific description

Continued operation of our facilities can be subject to interruptions in the supply of waste. While storms can create additional wastes that need proper management, they can also disrupt transportation networks. Grid outages can prevent certain facilities not equipped with "black-start" capabilities from returning to operation.

Time horizon

Current

Likelihood

Likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

While we judge this risk to be likely, outages caused by grid failure or supply chain interruptions are generally of relatively short duration.

Management method

We have reviewed our facilities and identified certain opportunities to more quickly resume operations after an interruption. For example, we installed a water-tight bunker around the emergency generator used to restore start-up power at our Essex County facility to eliminate the need to have grid power before start-up.

Cost of management

Comment

C2.4

(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

(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

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.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

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

Identifier

Opp2

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

In our Covanta Environmental Solutions (CES) business unit, many of our customers pursue our energy-from-waste (EfW) service offering as a way to divert wastes from landfills and, increasingly, reduce GHG emissions from waste management. 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

Current

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Zero landfill goals have been a significant driver in the growth of Covanta Environmental Solutions.

Strategy to realize opportunity

In addition to our focus on EfW and related waste sourcing activities, we are seeking to expand our environmental service offerings through both organic growth and acquisitions. Providing sustainable waste, materials, and energy services to our customers is the cornerstone of our business. Our corporate culture is focused on the triple bottom line of sustainability (people, planet, prosperity) in support of our mission. In addition to robust financial reporting, we are committed to transparently reporting our environmental, social and governance standards, policies, and performance through our corporate sustainability report. We seek to continuously improve our performance across these aspects to remain an industry leader

Cost to realize opportunity

Comment

As more sustainable waste management services are core to our service offerings, we have not separately identified the cost associated with those opportunities that are specifically related to carbon or GHG emissions.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Resilience

Primary climate-related opportunity driver

Resource substitutes/diversification

Type of financial impact

Increased revenue through new products and services related to ensuring resiliency

Company-specific description

EfW facilities can be a resilient source of energy and waste management for communities. When weather and other natural events disrupt the grid, EfW facilities can remain operational, managing both routine waste and the resulting debris from those events, regardless of whether the grid is able to receive the power it can generate.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

The variety of different possible project types make forecasting the financial impact difficult to determine, but the recognition of the role that energy-from-waste (EfW) facilities can play in community resiliency could have a material impact.

Strategy to realize opportunity

Covanta is actively working with state and local policymakers to help develop opportunities where energy-from-waste facilities can help with community resiliency. For example, the New Jersey Board of Public Utilities is working to improve energy resiliency and emergency preparedness by establishing microgrids throughout the state. A microgrid is a group of interconnected loads and distributed energy resources that acts as a single controllable entity that can connect and disconnect from the grid. Covanta and the Camden County Municipal Utility Authority (CCMUA) are working together to assess connecting our EfW facility with CCMUA's wastewater treatment facility and other critical facilities within the City of Camden. A microgrid system will provide electric power to CCMUA from Covanta while providing treated wastewater to Covanta, allowing us to reduce our use of potable water and lessen stress on the local aquifer system.

Cost to realize opportunity**Comment**

C2.5

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

	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	We have not identified any risks or opportunities	Not applicable.

C2.6

(C2.6) Describe where and how the identified risks and opportunities have been 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. As we look ahead, we see substantial growth over the next five years with a significant new fleet of facilities operating in the UK, driven by sustainable waste management policies. We view the aggregate magnitude of the impact as high.
Operating costs	Impacted for some suppliers, facilities, or product lines	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. Regulations finalized in 2019 result in a compliance obligation for our Stanislaus facility that is tempered by the allocation of free allowances. A resolution passed by the Board of the California Air Resources Board ("CARB") directs the agency to provide additional 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. We view the aggregate magnitude of the impact as low.
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. We view the aggregate magnitude of the impact as high.
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. We view the aggregate magnitude of the impact as low.
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. We view the aggregate magnitude of the impact as low.
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. We view the aggregate magnitude of the impact as high.
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. GHG emissions and related policies have not materially affected our ability to finance our operations or projects. We view the aggregate magnitude of the impact as low.
Other	Please select	

C3. Business Strategy

C3.1

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

Yes

C3.1a

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

No, but we 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

(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

C3.1c

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

Covanta is unique in that our primary business, energy-from-waste (EfW), is a GHG mitigation technology. This GHG benefit of EfW is widely recognized, including by the U.S. EPA, Columbia University scientists, U.S. EPA scientists, the Intergovernmental Panel on Climate Change ("IPCC"), the World Economic Forum, the European Union, California's Solid Waste Management Regulator (CalRecycle), the 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. As a result, three of the EfW facilities that Covanta operates have been validated as offset projects under the Verified Carbon Standard and two of these projects have sold carbon offset credits on the voluntary market. EfW achieves these net reductions, after accounting for stack emissions of fossil-based CO₂ by 1. avoiding landfill methane emissions, 2. displacing fossil-fuel fired grid connected electricity or steam production, and 3. recovering metals for recycling. Our business strategy is less linked to an emissions reduction target or energy reduction target as it is linked to practices, like EfW, that are specifically identified as sources of GHG mitigation relative to business as usual practices.

The climate benefits of EfW have influenced our business objective and strategy. Providing sustainable waste, materials, and energy services to our customers is the cornerstone of our business. 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. These goals, and the waste management hierarchy itself, are designed to reduce the environmental impacts of waste management, including the emission of GHGs. As indicated above, each of our service offerings is focused on providing cost effective and sustainable solutions that leverage our extensive network of EfW facilities and transfer stations in North America. Our new partnership with Green Investment Group (GIG), was, in part, founded on development of sustainable waste management infrastructure.

For 2018, we identified several key business decisions / actions that were influenced by our objective to provide more sustainable waste management services, an objective inextricably tied to reducing GHG emissions from waste management. For example, in late 2017, we announced our strategic partnership with the Green Investment Group ("GIG"). Our first step in the partnership was GIG's investment in Covanta's Dublin EfW facility. In 2018, the partnership began to execute on its goal of building out a fleet of EfW facilities in the UK, the demand for which is driven by the UK's compliance with EU Directives aimed at reducing environmental impacts from waste management. In December of last year, we reached financial close on the first project, the Earls Gate Energy Centre ("Earls Gate").

In March 2018, we received notice to proceed from the Department of Sanitation of New York City ("DSNY") to develop the infrastructure supporting the East 91st Street Marine Transfer Station ("MTS"). We expect to commence operations in the second quarter of 2019. The MTS is the second in a pair of marine transfer stations under a 20-year waste transport and disposal agreement between Covanta and DSNY which is key toward advancing the City's goals of achieving zero waste to landfill. Zero Waste to Landfill style goals are often grounded in GHG emissions reductions. In September 2018, we acquired the Palm Beach Resource Recovery Corporation ("PBRRC") for \$46 million. PBRRC holds longterm contracts for the operation and maintenance of two EfW facilities located in Palm Beach County, Florida. This acquisition expands our operations of EfW facilities, recognized as a source of GHG mitigation. In January 2019, we commenced construction of our first Total Ash Processing System located in Fairless Hills, Pennsylvania, adjacent to our metal processing facility. This technology separates the combined ash from EfW facilities into its component parts enabling increased recycling of small metal fractions and the recovery of aggregate for reuse as construction material while reducing the volume of ash requiring landfill disposal. Operational start-up is expected in the second half of 2019. Recovery of additional metal for recycling helps reduce GHG emissions associated with production of metals from raw materials. The diversion of ash from landfilling also helps reduce the GHG impacts associated with transportation and the placement of ash in the landfill.

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

(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 (EfW), 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.

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 or install carbon capture and sequestration (CCS) equipment. Currently, installing CCS equipment is cost-prohibitive, even with government incentives. Reducing the amount of waste processed 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/>

C3.1g

(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. Previously, we did not complete a climate-related scenario analysis because of the already recognized role of energy-from-waste (EfW) in reducing GHG emissions, including by CDM, CDP, and the World Economic Forum. In addition, 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.

However, given the growing development of more quantitative scenarios, many of which include changes in key parameters of our own climate models (e.g. waste composition, methane GWP, electricity grid carbon intensity, metal manufacturing carbon intensity), we have determined that scenario analysis could help better inform our long-term business strategy and we plan to move forward in this area within the next two years.

C4. Targets and performance

C4.1

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

Intensity target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Scope

Scope 3: Purchased goods & services

% emissions in Scope

94.7

Targeted % reduction from base year

10

Metric

Other, please specify (metric tonnes CO₂ / thousand short tons of MSW processed)

Base year

2016

Start year

2017

Normalized base year emissions covered by target (metric tons CO₂e)

120755

Target year

2022

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

% of target achieved

31.3

Target status

Revised

Please explain

In our 2018 CDP report, we reported our target to reduce GHG emissions associated with raw material consumption as an absolute target. However, this type of a target was incompatible with our overall goals to grow our energy-from-waste (EfW) business, which, as a source of carbon offsets, is a source of GHG mitigation itself. Leaving the goal as an absolute target would create a small incentive to reduce throughput at our EfW facilities, which would actually result in greater economy-wide GHG emissions. Therefore, we have recast our goal as an intensity target.

% change anticipated in absolute Scope 1+2 emissions

-0.3

% change anticipated in absolute Scope 3 emissions

-9.5

C4.2

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

Achieved

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.

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?

Reduce short-lived climate pollutants

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

45

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 initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	1	300000
To be implemented*		
Implementation commenced*	1	150000
Implemented*	1	290000
Not to be implemented		

C4.3b

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

Initiative type

Other, please specify (Lifecycle GHG emissions reduction from additional metals recovery)

Description of initiative

<Not Applicable>

Estimated annual CO2e savings (metric tonnes CO2e)

290000

Scope

Scope 3

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)

Payback period

4 - 10 years

Estimated lifetime of the initiative

11-15 years

Comment

Our efforts to increase the amount of ferrous and non-ferrous metals recovered from the ash remaining after the combustion process for recycling continued in 2018. The initiative includes capital improvements, process optimization, and the use of a mobile ash processing system that can processes ash at smaller facilities where the installation of a stand-alone metals recovery system may not be economically viable. Additional ferrous and non-ferrous metals recovered for recycling reduces GHG emissions associated with the manufacturing of virgin metals from raw materials.

C4.3c

(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

(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

(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 Obama Administration'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

Comment

On average, the U.S. EPA has determined that EfW facilities reduce GHG emissions by 1 ton of CO2 equivalents (CO2e) 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 Obama Administration'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.

C-EU4.6

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

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

C5. Emissions methodology

C5.1

(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

December 31 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

(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

C6.1

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

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

4329143

Start date

January 1 2018

End date

December 31 2018

Comment

C6.2

(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 are reporting 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 the location-based figure, 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. For the market-based figure, we use utility-supplied carbon emission factors, where available. Where the emissions factors were unknown, region-based eGRID factors are used instead.

C6.3

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

Reporting year

Scope 2, location-based

23066

Scope 2, market-based (if applicable)

21453

Start date

January 1 2018

End date

December 31 2018

Comment

C6.4

(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

(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 this source is excluded

Regional offices not located at other Covanta facilities are very small, consisting of one to no more than ten employees (compared to the almost 4000 Covanta employees) and are expected to have an immaterial impact on the overall inventory.

Source

PFC's

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 this 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.

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 this 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.

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 this 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.

C6.5

(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

129123

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

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

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 CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Explanation

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

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

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 CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

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

6796

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

Not relevant, calculated

Metric tonnes CO2e

15800

Emissions calculation methodology

We have assumed that each employee travels an average of 40 miles a day to get to and from work. The total CO2 emissions are based on mileage and the average passenger vehicle CO2e emission values given by the EPA.

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

0

Explanation

The resulting Scope 3 CO2e emissions are less than 1% of the total emissions (Scope 1, 2, and 3) and are considered irrelevant.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Explanation

Covanta Energy does not have any appreciable upstream leased assets.

Downstream transportation and distribution

Evaluation status

Relevant, not yet calculated

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

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

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

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

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

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

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

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

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Explanation

Covanta does not have downstream leased assets.

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Explanation

Covanta does not have downstream franchises.

Investments

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

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

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Explanation

Other (downstream)

Evaluation status

Not evaluated

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Explanation

C6.7

(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.

Row 1

Emissions from biologically sequestered carbon (metric tons CO2)

6288618

Comment

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)

4352209

Metric denominator

unit total revenue

Metric denominator: Unit total

1868000000

Scope 2 figure used

Location-based

% change from previous year

1.4

Direction of change

Increased

Reason for change

Scope 1 and 2 emissions were up 8.1% from 2017 as a result of increased production. The Dublin facility, for example, opened in mid 2017 and completed its first full year of operation in 2018. This caused a significant increase, along with other facilities that were down for maintenance in 2017 and reached operating capacity in 2018. Overall, Covanta processed 8% more tons of MSW in 2018 than 2017, which is proportional to the amount of released emissions. It is important to also note that energy from waste (EfW) facilities, like those that Covanta operates, are widely recognized as a source of GHG mitigation. Therefore, more tons processed means less tons headed to landfills, which generate more GHG emissions per ton of waste managed over its lifetime.

Intensity figure

1121

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

4352209

Metric denominator

full time equivalent (FTE) employee

Metric denominator: Unit total

3884

Scope 2 figure used

Location-based

% change from previous year

3.5

Direction of change

Increased

Reason for change

Scope 1 and 2 emissions were up 8.1% from 2017 as a result of increased production and slightly higher fossil CO2 content. Overall, Covanta processed 8% more tons of MSW in 2018 than 2017, which is proportional to the amount of released emissions. However, employment at Covanta increased from 2017 which lessened the intensity of the emissions per FTE metric. It is important to also note that energy from waste (EfW) facilities, like those that Covanta operates, are widely recognized as a source of GHG mitigation. Therefore, more tons processed means less tons headed to landfills, which generate more GHG emissions per ton of waste managed over its lifetime.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(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	4282766	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	1437	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	44940	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	4211718
Canada	531
Italy	13492
Ireland	103402

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)
Energy-from-Waste	4246718
Natural Gas Steam Generation	69892
Material Processing Facilities	4294
Waste Transportation	8238
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	22369	20755	58343	0
Canada	246	246	981	0
Italy	3	3	132	0
Ireland	399	399	931	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	20329	0
Hydroelectric facility	0	0
Material Processing Facilities	2738	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?

Increased

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	13600	Decreased	0.3	The fraction of carbon in the waste stream from biogenic sources increased slightly from 2017 to 2018, resulting in lower emissions of fossil CO2 from the stack. Additionally, more renewable auxiliary fuel was used this year. Impact was calculated by multiplying the difference in carbon content from 2017 to 2018 by the total tons of waste process in 2018. The biogenic CO2 from the renewable auxiliary fuel was also added.
Other emissions reduction activities	0	No change	0	
Divestment	0	No change		
Acquisitions	0	No change	0	
Mergers	0	No change	0	
Change in output	431800	Increased	0	Total mass of MSW processed at our facilities in which we had an equity share increased in 2018 relative to 2017, including from full ramp up of the Dublin EfW facility and the resumption of operations at our Fairfax EfW facility after a fire in 2017.
Change in methodology	0	No change	0	
Change in boundary	0	No change	0	
Change in physical operating conditions	91300	Decreased	7	The average carbon content of waste decreased from 2017 – 2018, lowering CO2 emissions per ton of MSW processed.
Unidentified	0	No change	0	
Other	0	No change	0	

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

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)	19137323	16464271	35601594
Consumption of purchased or acquired electricity	<Not Applicable>	8979	51283	60262
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>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	19146302	16515554	35661856

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 heat	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

34784007

MWh fuel consumed for self-generation of electricity

28845987

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

188231

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

5749789

Comment

Fuels (excluding feedstocks)

Distillate Oil

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

89354

MWh fuel consumed for self-generation of electricity

86833

MWh fuel consumed for self-generation of heat

2508

MWh fuel consumed for self-generation of steam

12

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

718822

MWh fuel consumed for self-generation of electricity

83579

MWh fuel consumed for self-generation of heat

19510

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

615733

Comment

Fuels (excluding feedstocks)

Propane Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

3293

MWh fuel consumed for self-generation of electricity

2708

MWh fuel consumed for self-generation of heat

584

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

Comment

Fuels (excluding feedstocks)

Wood

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

6120

MWh fuel consumed for self-generation of electricity

6120

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

0

Comment

C8.2d

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

2.71

Unit

kg CO2e 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	6478712	890967	6356336	878453
Heat	0	0	0	0
Steam	3139062	0	3139062	0
Cooling	0	0	0	0

C-EU8.2e

(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 CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

Lignite

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

Oil

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

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

No purchases or generation of low-carbon electricity, heat, steam or cooling accounted with a low-carbon emission factor

Low-carbon technology type

<Not Applicable>

Region of consumption of low-carbon electricity, heat, steam or cooling

<Not Applicable>

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

<Not Applicable>

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

<Not Applicable>

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.

C-EU8.4

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

No

C9. Additional metrics

C9.1

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

Description

Waste

Metric value

Metric numerator

Total wastes avoided, recycled or reused

Metric denominator (intensity metric only)

% change from previous year

Direction of change

<Not Applicable>

Please explain

Description

Energy usage

Metric value

Metric numerator

Energy efficiency project savings

Metric denominator (intensity metric only)

% change from previous year

Direction of change

<Not Applicable>

Please explain

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
---------------------------------	---	--	------------------------	---------

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
-----------------------	--------------------------------	-----------------------------------	---	------------------------

C-CO9.6/C-EU9.6/C-OG9.6

(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

C10.1

(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

C11.1

(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

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

California CaT
RGGI

C11.1b

(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

2.3

Period start date

January 1 2018

Period end date

December 31 2018

Allowances allocated

83056

Allowances purchased

0

Verified emissions in metric tons CO2e

99304

Details of ownership

Facilities we own and operate

Comment

RGGI

% of Scope 1 emissions covered by the ETS

0.9

Period start date

January 1 2018

Period end date

December 31 2018

Allowances allocated

39361

Allowances purchased

50000

Verified emissions in metric tons CO2e

39361

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

(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

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

No

C11.3

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

Yes

C11.3a

(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.

C12. Engagement

C12.1

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

Yes, our customers

C12.1b

(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

% of customers by number

25

% Scope 3 emissions as reported in C6.5

0

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

Many of our customers have an interest in the GHG emissions from their downstream waste management. We engage with those customers that are interested periodically in response to their questions or questions they receive from their communities. The exact nature of the engagement varies depending on the client, and can range from 1. assistance with lifecycle inventories and analysis, 2. development of GHG emissions savings metrics associated with operating milestones, 3. assistance with Scope 3 inventory development, and 4. public meetings and hearings.

Impact of engagement, including measures of success

Educating our customers generally results in a more engaged relationship and collaboration on key issues related to GHG emissions, including state and federal policy design.

C12.3

(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

(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.
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

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

Yes

C12.3c

(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 influenced, or are you attempting to influence their position?

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

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 influenced, or are you attempting to influence their position?

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

C12.3d

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

No

C12.3f

(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

(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 2018.pdf

Page/Section reference

See pp.5-8.

Content elements

Strategy

Risks & opportunities

Comment

Publication

In mainstream reports

Status

Complete

Attach the document

Covanta 2019 Proxy Filing.pdf

Page/Section reference

See pp.9-10.

Content elements

Governance

Strategy

Comment

Publication

In voluntary sustainability report

Status

Underway – previous year attached

Attach the document

Covanta 2016 Sustainability Report.pdf

Page/Section reference

Full report: <http://covanta-csr.com/> GHG Emissions Discussion: <http://covanta-csr.com/environment/reducing-greenhouse-gases/>

Goals: <http://covanta-csr.com/data-pages/progress-on-goals/> Data & emissions reporting: <http://covanta-csr.com/data-pages/performance-tables/>

Content elements

Strategy

Emissions figures

Emission targets

Other metrics

Other, please specify (Sustainable waste management role in addressing climate change)

Comment

C14. Signoff

C-FI

(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.

C14.1

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

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

Submit your response

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