

C0. Introduction

C0.1

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

Waste Management is North America's leading provider of comprehensive environmental services. Since 2007, we have been working toward a set of sustainability goals designed to support our customers' environmental stewardship, reduce our overall impact on the environment and differentiate us from competitors. In 2018, we updated our goals to better reflect our efforts to reduce our GHG emissions in accordance with the Paris Climate Accord, and new 2025 and 2038 goals.

Materials management solutions play an important role in mitigating emissions that contribute to climate change. Our actions to decrease emissions in our operations, and for our customers reduces our contribution to climate change, while ensuring that we remain resilient to climate impacts. Efforts to reduce emissions are multi-dimensional, including recycling to conserve energy and decrease life cycle emissions; production of renewable energy at our organics facilities and landfills; use of renewable energy in our fleet and operations to displace the use of fossil fuel; the hosting of solar energy facilities at closed landfills.

These efforts encompass a broad and ongoing focus for our company. To make progress in each, Waste Management continues to commit resources to developing new technologies, and to deploying solutions and programs to reduce emissions from our operations. We engage in policy discussions at the federal and state level, support strategies to reduce emissions associated with our industry; take action to mitigate risk, actively engage in education and outreach efforts, and manage material responsibly to protect our environment and our communities.

Waste Management has the opportunity to tackle climate change through reductions in greenhouse gas (GHG) emissions from our landfills, fleet and electricity use, and through the services we provide our customers. We continue to develop and implement solutions to reduce our own and our customers' carbon footprint, including:

Fleet

- Transitioning our fleet to natural gas vehicles
- Using renewable fuel, including landfill gas and gas from dairy manure, in our fleet
- Using smart logistics technologies to reduce fleet miles travelled
- Using hybrid dozers at our landfills

Recycling

- Investing in technology to improve the quality of recycled material that we sell
- Focusing on recycling materials that provide the greatest GHG reduction benefits
- Turning food waste into energy or compost
- Purchasing products made with recycled content

Customers

- Providing climate-related sustainability consulting services to customers who want to reduce their carbon footprints
- Helping create new markets for recycled products
- Educating customers on how and what to recycle, and how to reduce waste

Energy

- Creating renewable electricity and fuel from biogas at our landfills
- Creating renewable energy from food waste at our CORE facilities
- Hosting solar farms at our landfills for renewable electricity generation into the electric grid
- Using renewable electricity at our sites

Please note that answers in this questionnaire are supplied on behalf of Waste Management, Inc., which is a holding company; all operations are conducted by its subsidiaries. Hereafter, Waste Management, Inc., its consolidated subsidiaries and consolidated variable interest entities are referred to as "Waste Management", "WM", "the company", "we" or "us".

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
Reporting year	January 1 2019	December 31 2019	No	<Not Applicable>

C0.3

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

- Canada
- 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 chosen approach for consolidating your GHG inventory.

- Operational control

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
Chief Executive Officer (CEO)	Our strategies on climate change are led from the top. Waste Management's CEO and senior leadership team maintain a public dialogue on GHG emissions reductions from low-carbon services. In 2019, Waste Management established a dedicated sustainability team to research, track and report on sustainability issues related to climate change at the company. This team maintains knowledge of climate issues, providing Waste Management's senior leaders and Board of Directors with information on key issues that may impact our business. The CEO, who is also a member of our Board of Directors, is responsible for managing information on climate-related issues, making decisions about what the company will do and adapting those decisions based on climate-related information. Climate issues such as the ability to provide GHG emissions-avoiding services, the physical risks of climate change on WM facilities and services, and meeting WM's GHG reduction goals impact WM's recycling, composting, renewable energy production, fleet composition, advisory services and operations of our business. In addition, carbon reduction and response to climate change are central factors in our municipal and private sector customers' decisions to employ our services. In 2019, the CEO underscored WM's commitment to reducing greenhouse gas emissions by signing We Are Still In.

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	Scope of board-level oversight	Please explain
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	<Not Applicable>	Due to the overlapping nature of WM climate-related issues, they are discussed, in whole or in part, at each meeting through one or all of the following governance mechanisms: strategy, major plans of action, risk management policies, annual budgets, business plans, performance objectives, major capital expenditure, and progress against goals and targets for addressing climate-related issues. Specifically, reviewing and guiding strategy is scheduled into every board meeting to inform the entire board and contribute to managing information, making decisions about what the company will do, and adapting those decisions based on climate-related information. Issues discussed in the reporting year include (1) the ability to provide carbon-reduction services such as recycling, composting, low-carbon/renewable energy, and advisory services; (2) direct GHG reductions from changes associated with our fleet, use of renewable energy, and operational efficiencies; (3) physical risk of severe weather to our employees, facilities, and ability to provide services, and (4) regulatory risk associated with climate change policy issues. Successful management of these issues relies not only upon significant investment in, for example, collection of landfill gas and production of renewable natural gas and technologically advanced material recovery facilities and robotics, but also an overarching strategic plan to address the financial viability of recycling, deployment of capital in our fleet, and WM's ongoing development of landfill-gas-to-fuel facilities. Therefore, reviewing and guiding strategy at each board meeting is essential to meeting goals and targets.

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)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly

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).

Responsibilities for climate-related issues have been assigned to our President and CEO because the CEO sets short and long-term strategy, including strategy for investment and risk/opportunity forecasts for WM's climate-related services, in particular recycling, renewable energy and fuel production, fleet emissions reduction, and advisory services. As North America's leading residential recycler and a major producer of renewable energy from waste, climate-related services are core to our operations. WM's CEO is responsible not only for quarterly reviews of the finances for these services and the competitive landscape, he is the public face of WM and the industry more broadly. He routinely discusses our climate-related services in investor-related media, at the annual Waste Management Sustainability Forum (which is open to the public and can be streamed live), and in numerous presentations to trade associations and annual conventions. He relies on the specific quarterly data from department managers (i.e., operations, recycling, renewable energy, investor relations, sales and marketing) for real-time refinement of longer-term WM investment and profitability goals and forecast. Note that changes in public understanding of the scope, impact and timing of physical changes associated with climate change are a necessary component of this analysis because perceptions of carbon-reduction urgency impact customer service requirements, services selected and the stability of pricing for recycling, waste reduction and renewable energy sales. The CEO also interacts directly with major institutional investors, who increasingly engage in specific discussions of market conditions for recycling and the profitability of renewable energy.

The CEO reports to the Board of Directors. Reporting to him on climate-related issues are the EVP and CFO, the Corporate Development and Chief Legal Officer, the EVP and Chief Operating Officer, and the SVP, Chief Customer Officer, and indirectly the Senior Director for Sustainability and Policy, and the VP of Recycling Operations.

C1.3

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

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	WM's Long-Term Incentive Program (LTIP) is intended to motivate and sustain high performance levels from our employees. A direct relationship is created between employee compensation and Company performance by aligning the Company and employee's long-term strategic objectives. These incentives reflect corporate financial performance, which in turn is impacted by the success of safety and sustainability platforms like recycling and sale of green energy and sustainability consulting services. In addition, individual performance is considered, which for a growing number of employees will include a sustainability component.

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).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction target	The WM CEO has set goals for conversion to a lower GHG emissions fleet, engages with the investment community on the importance of lower GHG emissions vehicles and reducing landfill emissions, frequently does presentations on carbon reduction services like recycling. He is rewarded for his for the company's financial performance, which is impacted by these matters.
Management group	Monetary reward	Please select	Management is rewarded for execution of WM's financial goals, which benefit from reducing greenhouse gases from fleet vehicles by using alternative fuels and reducing fuel use and vehicle miles.
Process operation manager	Monetary reward	Emissions reduction project Emissions reduction target	Management is rewarded for execution of WM's logistics efficiency protocols, including reduce fuel use, vehicle miles and emissions.
Environment/Sustainability manager	Monetary reward	Emissions reduction target	Environmental managers are rewarded for success in achieving regulatory and internal corporate goals to reduce emissions, e.g., seek efficiency in operating gas collection systems, seek to employ "green remediation" practices, seek energy efficiencies.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	3	This short-term time horizon is aligned with the following other business practice time horizons: (1) WM annual budget and financial reporting. (2) Analyzing risk of economic collapse of recycling programs and opportunities for improving the economics of recycling programs. (3) Risk and opportunity from increased frequency and intensity of hurricanes, floods, fires, and droughts.
Medium-term	3	10	This medium-term time horizon is aligned with the following other business practice time horizons: (1) WM five-year strategic planning process. (2) Meeting new goals for recycling and production of renewable natural gas (2025 and 2038), with an overarching goal of offsetting 4 times the GHG emissions we generate through our operations. (3) Deployment of the lower-carbon technologies we have already commercialized and identifying geographic targets for our commercial recycling and green fuel projects over a 5-year time frame. (4) Sustainability Services works with our customers to achieve sustainability and climate change goals along this same time horizon.
Long-term	10	30	This long-term time horizon is aligned with the following other business practice time horizons: (1) Infrastructure Investments (10 and 20 years).

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

Waste Management defines substantive strategic impact as events that directly impact the day-to-day operations of our facilities for an extended period of time, not only in terms of additional costs to maintain operations but also in potential lost revenues from the inability to service our customers via collection, hauling, and disposal of materials. Minimal risk is under 10% likelihood, moderate is 10-51%, strong is over 52%. For climate-related risk, potential costs are between \$25M and \$100M, or up to a 1% reduction in profits and therefore a substantive financial impact of moderate magnitude.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

At the company level, WM uses an enterprise risk management (ERM) process involving senior leaders and subject matter experts from all major divisions to assess the materiality of all risks across the enterprise. Facilitated by our Treasury & Risk Management department, a standardized risk profile created for each headline risk is submitted to the Senior Leadership Team (SLT) and the Board of Directors. If a headline risk or risks have trended over time, action is taken: the SLT is briefed on the risks with a scorecard for each. A headline risk with a high weighted average rating is identified as a "Priority Risk" and receives a more granular assessment, quantification of that risk, and is elevated for further discussion with the SLT and the Board of Directors. Risks and opportunities are prioritized according to (financial) impact, likelihood (of event), outlook (of risk exposure) and confidence (in risk management). The executive team that manages our enterprise risk reporting to the Board reviews all submissions for consistency in determining scope of impacts, and comprehensiveness in determining the adequacy of current support by internal staff, the sufficiency of financial support for contractors or mitigation measures needed to manage and reduce risk, sufficiency of legal support, and the extent and sufficiency of third-party consulting support. All headline risks have a standardized scorecard which includes an overall weighted average rating, individual ratings for sub-risks, forward-looking action plans with measurable indicators and progress updates on action plans from previous assessments. The environmental impacts, risks, and opportunities, including climate-related, associated with our carbon reduction service lines are discussed each year. WM's Corporate Development & Innovation department briefs the Board at least annually on potentially disruptive technologies, sometimes related to customer expectations with regard to carbon reduction services. Moreover, the staff working on the ERM documentation coordinate with those drafting the risk factor description for the Annual Report Form 10-K to assure thoroughness in response. The recycling industry provides an example of risk associated with changing customer preferences, and the risks associated with global policy changes. Commodity market values are 30% of 2017 levels and quality requirements are stringent, requiring more investment in improving the quality of recyclables sold. The shift to more plastic packaging combined with China's halt to imports of recyclables and the consequent impact on commodity pricing and quality expectations have impacted lifecycle greenhouse gas reduction benefits associated with recycling and meeting sustainability goals for WM and our customers. Considered a Priority Risk, recycling was analyzed and discussed by the SLT and the Board, who determined WM should be a sector leader, engaging and educating consumers and customers. WM created a focused campaign to engage our customers, both municipal contracts and commercial and industrial customers, by providing information necessary to maximize GHG reductions to be achieved by effective (contamination-free) recycling of the commodities providing the greatest life-cycle reductions at the lowest cost. Our "Recycle Right" campaign works on-the-street to educate customers about proper recycling and has reduced inbound contamination from 24% to 19% (20%) at our recycling facilities, reducing costs and improving marketing of recyclables. Severe storms provide an example of physical risk. Increased risk from severe storms, such as major hurricanes, flooding and fires in our service areas, impact WM facilities, employees and our ability to service customers. This headline risk resulted in discussions with SLT, impacted Area and Operations Managers. An enterprise-wide Emergency Preparedness and Contingency Response Plan was created along with market areas-specific plans for most at-risk business divisions. These are updated annually. Major hurricanes and fires in our service areas have subsequently demonstrated how our planning and commitment can assist our customers in rebounding rapidly from weather-related emergencies, strengthening our customer loyalty. In addition, WM has a formalized process in place that is performed annually and reviewed with the Chief Procurement Officer for identifying sustainability risks in our supply chain. Sustainability risks include: financial and insurance-related risks (including compliance and governance considerations), safety and health, and lack of supplier diversity. We monitor insurance declarations, conduct site visits and unannounced inspection of suppliers' facilities, and also work closely with the operations in the field to observe the service level provided to our operations.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Changes to current regulations are a relevant risk and always included in WM's climate-related risk assessments because of their effects on operating costs, operational flexibility and investment in new projects. Our Government and Regulatory Affairs team monitors regulatory developments at a company-wide level, including climate-related regulations, which feed into quarterly or biannual enterprise risk management strategy. Examples of specific risks related to current regulations include (i) landfill air emission requirements and (ii) the implementation of the Renewable Fuel Standard. (i) In 2016, EPA updated its New Source Performance Standards (NSPS) and Emission Guidelines (EG) for Existing MSW Landfills, which included more stringent emissions thresholds and additional surface emissions monitoring at gas collectors. In March 2020, EPA updated its National Emissions Standards for Hazardous Air Pollutants for MSW Landfills, which also updated certain provisions set forth in the 2016 NSPS and EG and included additional requirements for landfill gas control, operating, monitoring, recordkeeping, and reporting. (ii) Price of cellulosic biofuel renewable identification numbers (RINs) under the Renewable Fuel Standard (RFS). WM participates in the RFS by producing renewable natural gas (RNG) from sophisticated gas upgrading facilities located on our landfills, which fuels our compressed and liquefied natural gas collection fleet with RNG, generating a cellulosic biofuel RIN—credits that can be sold or traded to prove compliance with RFS requirements. Historically, the RFS has provided attractive and stable returns to producers of renewable natural gas and transportation fleet owners, allowing the advanced biofuels industry to flourish and grow. However, the value of cellulosic RINs has fluctuated in recent years, declining from an average of \$2.78 in 2017 to \$1.15 in 2019. WM has invested heavily in RNG infrastructure, with 4 facilities that create RNG from landfill biogas while increasing the use of RNG in our fleet, which comprised over 40% of our natural gas vehicles as of 2019. Instability in the market for our RINs, however, has the potential to influence our investment outlook. Accordingly, WM seeks long-term stability in the implementation of the RFS to ensure continued investment in RNG infrastructure.
Emerging regulation	Relevant, always included	Emerging regulation is a relevant risk we evaluate and include in WM's climate-related risk assessments because of the potential effects on operating costs, operational flexibility and investment in new projects. Our Government and Regulatory Affairs team monitors regulations at a company-wide level, including climate-related regulations, which feed into quarterly or biannual enterprise risk management strategy. An example of a WM-specific risk related to emerging regulation and considered in our assessment is the global concern over the use of fossil fuel-derived plastics and their impact on the environment, which is driving increased regulation around recycling. The potential benefits of significantly increased recycling are enormous. According to EPA, 67 million tons of materials recycled in 2017 provided an annual benefit of more than 174 million metric tons of carbon dioxide equivalent (MTCO2e) life cycle emissions avoided. In 2019, WM avoided 30,062,623 MTCO2e by managing over 15 million tons of recyclable material. Several states are considering extended producer responsibility (EPR) legislation to transfer cost and responsibility for recycling to the manufacturing industry. China's ban of recycling imports resulted in a global downturn for recycling, negatively impacting community recycling programs everywhere. COVID-19 has exacerbated municipal budget constraints. Municipalities across the U.S. have been impacted by China's policy and the recent pandemic, leading many communities to cancel their curbside recycling programs, thus increasing the risk of EPR. As the largest residential recycler in North America, with 7% of our revenue coming from our recycling operations, the risk to our industry is significant since the need for our existing infrastructure investments would be uncertain and WM could be unable to provide this emissions reduction service to our customers.
Technology	Relevant, always included	Technology is a relevant risk and always included in WM's climate-related risk assessments because it has the ability to impact our logistics capacity. WM's Executive Officers, Board of Directors and Audit Committee, Digital Group, Government and Regulatory Affairs, Corporate Public Affairs and Disposal Operations, WM Sustainability Services, Public Sector Service group Corporate Development & Innovation group, and Engineering department all monitor technology, including climate-related impacts and solutions, which feed into quarterly or biannual enterprise risk management strategy. An example of a WM-specific risk related to technology and considered in our assessment is measurement technologies for determining fugitive landfill methane emissions. WM initiated a study in 2019 to evaluate emerging measurement technologies for determining fugitive landfill methane emissions. Landfills currently must rely on models and other factors to estimate methane emissions. Studies comparing these emission estimates from models to measurements have shown that the existing models can overstate emissions by up to 30 times. Identifying improved methane measurement systems and technologies is key to measuring and meeting emission reduction goals.
Legal	Relevant, always included	"Legal" is a relevant risk we evaluate and include in WM's climate-related risk assessments in the form of legal review, to assure compliance, consistency with contract obligations, and reporting requirements. WM's Executive Officers, Board of Directors and Audit Committee, Legal Department, Government and Regulatory Affairs, Corporate Public Affairs monitor legal risks, which feed into quarterly or biannual enterprise risk management strategy. An example of WM-specific risk related to legal review and considered in our assessment continues to be assuring operations are meeting a municipal customer's recycling goals (which is aligned with the general GHG reduction goal) by producing the recyclable quality demanded by the contract. WM's legal team is mitigating the risk of recycling by reviewing all contracts for opportunities to improve the quality of material collected for recycling, as well as the economics of these programs, which are directly related to GHG emissions and climate change activities.
Market	Relevant, always included	The Market is a relevant risk we evaluate and always include in WM's climate-related risk assessments because any shifts in market demand and commodity prices have significant impacts on the on-going financial viability of our fixed assets, as well as customer preferences and procurement trends. WM's Executive Officers, Board of Directors and Audit Committee, Government and Regulatory Affairs, Corporate Public Affairs and Disposal Operations, WM Sustainability Services, Public Sector Service group, Corporate Development & Innovation group, and Engineering department monitor climate-related market impacts and solutions, which feed into quarterly or biannual enterprise risk management strategy. An example of a WM-specific risk related to the market and considered in our assessment continues to be WM's recycling capacity, which is capital intensive with 103 material recovery facilities (MRFs) in North America, and thousands of municipal contracts, which are fixed for often long terms. China's ban on receipt of recyclables has had dramatic impact on global markets, the geography of WM's commodity sales and prices, and our search for domestic and international outlets for these commodities. According to U.S. EPA's Waste Reduction Model, lifecycle greenhouse gas emissions are avoided when mixed recyclable material is recycled into new products instead putting this material into a landfill and using virgin material.
Reputation	Relevant, always included	Reputation is a relevant risk and always included in WM's climate-related risk assessments because WM is a full-service environmental services company, and part of our value as a service provider includes our anticipation and response to risk and threats. WM's Executive Officers, Board of Directors and Audit Committee, Government and Regulatory Affairs, Corporate Public Affairs and Disposal Operations, WM Sustainability Services, Public Sector Service group, Corporate Development & Innovation group, and Engineering department monitor reputational risk, including climate-related reputational risk, which feeds into quarterly or biannual enterprise risk management strategy. An example of a WM-specific risk related to reputation continues to be our ability to mitigate the impacts of China's new import policies. WM realized early the reputational risk associated with the perception of landfilling recyclables and we made a corporate decision to continue to move our material to available markets even at a cost. We worked with municipal customers to engage their support in improving commodity quality and marketability to, avoid landfilling of recyclables. Our investments in our WM's Recycle Right training program provided municipal and private customers with tools to engage the community to reduce recycling contamination and therefore enhance the financial sustainability of recycling programs. Our ability to sustain our investment in recycling infrastructure even in the face of highly variable commodity prices is a tangible and intangible value realized in our ability to compete in the environmental service market. We have worked to educate our customers about the long-term negative impacts of eliminating recycling programs, encouraging ongoing collection – even at higher costs. Our demonstrated progress in providing GHG reducing services like recycling and production of renewable energy differentiates us, and our reputation for leadership in this area affords the opportunity to work with customers in support of the kinds of services and energy products that mitigate climate change.
Acute physical	Relevant, always included	Acute physical risk is relevant and always included in WM's climate-related risk assessments because WM incurs increased operational costs. Government and Regulatory Affairs, Corporate Public Affairs, Collection and Disposal Operations, WM Sustainability Services, Public Sector Service group, and Engineering department monitor climate-related acute physical risk, which feed into quarterly or biannual enterprise risk management strategy. Examples of WM-specific acute physical risks considered in our assessment are responding to and maintaining emergency response plans and supplies for drought-related fires and storm events at high-risk facilities, and damage to facilities; 2% of WM facilities are in extremely high riverine flood areas; these are evenly spread across facility type; 2% are in high coastal flood areas; all are in areas of low to medium risk for drought severity. The unpredictability of severe weather events requires that our facilities be prepared to respond at all times, requiring significant investments in response planning, supplies and equipment. WM updates its Corporate Emergency Response Plan and site-specific continuity plans annually, expanding and improving these plans in response to recent, more extreme climatic events like wildfires in the west. We prioritize our emergency planning by using climatological mapping.
Chronic physical	Relevant, always included	Chronic physical risk is relevant and always included in WM's climate-related risk assessments because operational costs are incurred to respond to these extremes. Government and Regulatory Affairs, Corporate Public Affairs and Disposal Operations, WM Sustainability Services, Public Sector Service group, and our Engineering department monitor climate-related chronic physical risk, which feeds into quarterly or biannual enterprise risk management strategy. An example of a WM-specific chronic physical risk considered in our assessment continues to be the impact of changes in precipitation patterns on the function of MSW landfills. MSW landfills are weather-exposed entities that are affected by both drought and flood conditions. Both types of weather can negatively impact integrity of the protective landfill cover which is largely comprised of soil and vegetation. Shifts in weather patterns could cause additional or exacerbating existing operational challenges. The protective soil cover prevents water infiltration. Heavy and repeat wet conditions can cause erosion which can negatively impact landfill gas and leachate collection activities. Drought conditions can also cause erosion of the soil cover. Both extreme conditions result in additional labor and materials required to maintain the protective soil cover in accordance with regulatory requirements. Sustained extreme conditions could also cause scarcity of cover soil materials.

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 & Primary climate-related risk driver

Current regulation	Enhanced emissions-reporting obligations
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Primary potential financial impact

Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Air pollution limits – Federal regulation of MSW Landfills: On August 29, 2016, EPA promulgated two new rules to update the 1996 standards governing New Source Performance Standards (NSPS) and Emission Guidelines for MSW Landfills. Working with our trade associations and other landfill owners and operators, we identified significant legal, technical, and implementation concerns with the rules and together filed a judicial appeal of the rules while also filing administrative petitions asking that EPA stay the rules and initiate a rulemaking process. We also alerted EPA that its August 2016 rulemakings led to an inconsistent regulatory structure in which six separate overlapping and inconsistent sets of work practices now govern the disposal industry. In May 2017 EPA granted industry's administrative petitions for reconsideration and rulemaking, EPA signalled its intent to reconsider its 2016 rulemakings, although it has taken no action at this time. Meanwhile, on March 29, 2020, the EPA promulgated updates to the existing National Emissions Standards for Hazardous Air Pollutants for MSW Landfills; meanwhile, the agency continues to move forward with an additional rulemaking to develop a federal plan where state and tribal plans are not in effect. The confusion stemming from these overlapping and inconsistent requirements for MSW landfills has the potential to create misinterpretations and the potential for penalties and fines, and may negatively impact our ability to respond to municipal contracts bids as well as our reputation with the investment community, which monitors regulatory compliance.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

13200000

Potential financial impact figure – maximum (currency)

18200000

Explanation of financial impact figure

(1) 3,200,000 - 8,200,000 - NESHAP rule enhanced monitoring requirements, assuming 100 wells and 52 weeks of monitoring. The range depends on (a) ability to use portable devices and (b) if samples must be sent to a lab for analysis. Note that the potential financial impact is \$13.2-18.2M/year, not in total. (2) Of the remaining, 75% new monitoring required by changes to the NSPS/EG rules. The 2016 Federal NSPS and EG rules require earlier installation of gas collection and control systems at some sites, and longer operation periods due to a lower emission threshold. Expanded monitoring, record keeping and reporting beyond the 1996 rules will add cost for each facility subject to the new rules. Surface emissions monitoring costs may double due to new monitoring required at gas collectors. The 2016 rules also include new record keeping elements (root cause and corrective action analysis for wellhead temperature and pressure exceedances) and new reporting requirements (annual liquids addition reporting). The 2020 rule also requires enhanced monitoring, record keeping and reporting, and most sites will be required to modify existing Title V permits to incorporate the 2016 and 2020 rule requirements.

Cost of response to risk

1000000

Description of response and explanation of cost calculation

The total annual cost of response includes WM staff (60% - EMG, Field Disposal Ops, Legal, Regulatory Affairs) and external legal/third party consulting (40%), the sum of which results in approximately \$1,000,000. WM assembled a coalition of municipal and private sector landfill (LF) operators and trade associations to engage U.S. EPA on the need for specific terms for making the new rules clear, consistent and technically achievable. The coalition has proven to be more effective than the private sector alone in engaging both state and federal governments in the need to reform a specific set of regulations. As a result, technical negotiations have ensued, and administrative and judicial actions have been filed, which affords a procedural opportunity to revise the rules so they are both technically and economically feasible to achieve. WM foresees experiencing delays, and associated costs, in receiving updated air permits particularly as state agencies will be managing additional and unfamiliar permitting requirements. Because of omissions and conflicts between the existing and newly released regulations, all permitted parties are vulnerable to state-assessed penalties of up to \$37,500 per day. Such potential fines are in addition to the estimated compliance costs for enhanced monitoring record keeping and reporting.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical	Other, please specify (Increased severity and frequency of extreme weather events such as cyclones and floods and increased likelihood and severity of wildfires)
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Primary potential financial impact

Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

WM incurs increased operational costs from responding to and maintaining contingency response plans and supplies for severe storm events at its facilities due to the uncertainty of risk associated with severe weather events. Other impacts include service interruptions, risk of lost property and risk to employees. Impacts from climate change are reaching a broader swath of our business in North America. Our operations have been impacted by fires and floods in the West and by hurricanes, super storms, and tornadoes in the East, South and Midwest. WM has lost operating facilities-including buildings and fleets of trucks, and spends increasing amounts of staff time, investments in equipment, training and event management to mitigate the impacts of climate change on our employees, our customers and our operations. In particular in 2019, winter storm events decreased revenue because we could not operate for periods of time. WM updates its contingency plans each year, including refreshing training and supplies, and communications to our customers. We have extensive plans for protecting our employees, facilities and equipment, from moving trucks to securing equipment from other areas. We have generators, fuel and other supplies on site in those locations with a high risk of impact from wind, storm surges, flooding, drought, and fires. We have escape and recovery plans for our employees. Electricity outages and fuel shortages have the potential to exacerbate the initial impacts, which in turn could reduce revenues and increase operational costs. The unpredictability of these events requires that we be prepared to respond at all times, requiring investments in response planning, supplies and equipment. WM has adjusted facility design and IT capabilities to mitigate our risk, changing the configuration of electrical systems, making provision for emergency fuel and upgrading our logistics capacity to maintain service in these events. We prioritize our emergency planning by using climatological mapping. Floods and fires in the West have required additional planning. Planning costs continue to represent <1% annual operating cost. Increased operational cost is <0.05% annual operating cost. WM's emergency plans place an importance on ensuring the safety of our employees. By helping our employees, and offering extensive support, we are better able to quickly recover to help our customers.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2500000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Financial implications from severe floods, storms and fires include repair of damaged facilities, equipment and loss of revenue from logistics interruption. Emergency plan development undertaken in response to climatic events has allowed us to improve our facility design and IT capabilities to mitigate this risk, which we estimate to be \$250,000 for each week of facility disruption, at each landfill located in the impacted area. The cost estimate assumes 10 impacted sites per year. \$250,000*10 = 2,500,000.

Cost of response to risk

20245000

Description of response and explanation of cost calculation

The cost of responding to this risk comes from 2019 costs, and includes overtime labor and operational support (30%), extra equipment and fuel (15%), and landfill operating costs (55%), the sum of which results in \$20,245,000. Mitigating and controlling this risk requires business continuity planning, emergency response planning, preventative measures to protect assets and preparing for future climate scenarios. Actions taken: 1. Using GIS based spatial visualization program, Waste Analyzer and Visualization Explorer (WAVE), a multi-disciplinary tool that functions as a disaster management tool for our facilities in the field to anticipate potential impact of weather events and plan ahead to provide efficient services in aid of clean-up and disaster recovery, including a daily action guide for the week before a storm is expected (using NOAA data). Hurricane and weather warning data layers were updated in 2018; no relevant updates to the tool in 2019. 2. After significant events, we review and update our plans and implement any new mitigation measures that we identify 3. WM Areas identified through these processes incorporate mitigation measures like elevation of equipment, use of in-vehicle internet capability to assure efficient logistics during storm events and during the subsequent cleanup when we provide essential services. In early 2019, we were still supporting the response to Hurricane Michael and clean up from wildfires in California from the year before. We also responded to winter weather events, extreme and torrential rain, flooding, and Hurricane Dorian.

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation	Mandates on and regulation of existing products and services
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Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Global concern over the use of fossil fuel-derived plastics and their impact on the environment is driving increased regulation around recycling. Several states are considering extended producer responsibility (EPR) legislation to transfer cost and responsibility for recycling from the waste management industry to the manufacturing

industry. China's ban of recycling imports resulted in a global downturn for recycling, negatively impacting community recycling programs everywhere. COVID-19 has exacerbated municipal budget constraints. Municipalities across the U.S. have been impacted by China's policy and the recent pandemic, leading many communities to cancel their curbside recycling programs, thus increasing the risk of EPR. Waste Management is the largest residential recycler in North America with 7% of our revenue coming from our recycling operations. Recycling is a service differentiation that is critical to our market advantage connected to 50% of our annual revenues. Our customers value our recycling services for the GHG emissions reductions that we provide to them through these services. In 2019, WM avoided 30,062,623 MTCO₂e by managing over 15 million tons of recyclable material. As global attention focuses on packaging in general, and more specifically on plastic, there is an increasing risk of regulation of plastic and bulky cardboard packaging. For example, Amazon has recently implemented a requirement for all mid to large size items to be "Shipped in Own Container" (SIOC) to reduce packaging and is using lightweight plastic shipping mailers for certain products. Cardboard is the largest quantity of material that WM sells, and a reduction in cardboard will have negative financial impacts on the company.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

300000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Our risk management process has quantified the risk associated with lost recycling contracts at \$200M. Another \$100M is at risk from packaging reductions, for a total of \$300M of at-risk revenue associated with changes to our recycling programs.

Cost of response to risk

100000000

Description of response and explanation of cost calculation

The cost of mitigating and controlling this risk includes the design of new MRFs to handle the changing materials in the recycling stream (50%), equipment upgrades to process current material at existing MRFs (45%) and participating in stakeholder organizations (5%), the sum of which results in \$100,000,000. Packaging trends can change quickly, historically with little warning but large repercussions to the management of post-consumer waste. Material type manufacturing can determine if packaging is reused, recycled, composted or sent to landfill, and if that end-of-life has the greatest environmental benefit; communication of end-of-life management determines if the packaging ends up where it was intended; ease-of-use and services available to the consumer determine if the greatest environment benefit is realized. Choices made in each phase impact GHG reductions for WM and our customers. WM works with a variety of stakeholders including the packaging and CPG industries, other trade organizations and our customers to understand packaging trends, educate all parties of the risks and benefits of various types of packaging, and the importance of recycling as it reduces GHG emissions. Results so far are that challenges are better understood by all participants in the packaging value chain; material recovery facility (MRF) technologies are advancing to be able to adjust to changes in materials (optical sorter, robotics, movable screens/conveyors); manufacturers are becoming more aware of the need to use recycled content; circular economy trends are becoming part of more common dialect.

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

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Reduced direct costs

Company-specific description

Waste Management is reducing our fleet's greenhouse gas (GHG) emissions by transitioning from diesel to cleaner-burning natural gas—much of which renewable natural gas produced at our own landfills. The biogas in our landfills is a gaseous product of the decomposition of organic matter through anaerobic digestion. With cleanup to remove water, carbon dioxide and other trace elements, this biogas can be used as vehicle fuel. Our landfill-gas-to-fuel plants convert landfill gas into RNG, a pipeline-quality gas that is fully interchangeable with conventional natural gas and thus can be used in our vehicles in the form of compressed natural gas (CNG) or liquefied natural gas (LNG). At the end of 2019, our natural gas fleet totalled 8,924 trucks, which comprise the largest heavy-duty natural gas truck fleet of its kind in North America. For

every diesel truck we replace with natural gas, we reduce annual use of diesel fuel by an average of 8,000 gallons, reducing GHG emissions by 14 metric tons. We currently fuel over 40 percent of our natural gas fleet with RNG produced from biogas at three of our own facilities plus third-party producers (both third party landfills and dairies). The dairy producers use manure from tens of thousands of dairy cows to operate anaerobic digester systems. The RNG is then injected into the natural gas grid, and Waste Management uses a corresponding amount in CNG collection trucks in California. Converting waste manure to RNG is a win-win: it reduces methane emissions at the dairy and reduces vehicles emissions from trucks on the road.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

250000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

The potential financial impact figure is based on fuel savings from using 90% renewable natural gas (RNG) in WM's collection fleet in 2038 instead of diesel. Using the the difference between EIA's projected average cost of diesel and proprietary information based on WM fleet modeling, using 90% RNG saved WM \$250,000,000.

Cost to realize opportunity

945000000

Strategy to realize opportunity and explanation of cost calculation

Cost to realize this opportunity is based on investment in our near-zero fleet; 40% of the cost is investment in CNG trucks, which and 60% of the cost is investment in filling stations. A CNG truck can cost up to \$300,000 each. WM has invested heavily in its compressed natural gas (CNG) fleet and is now using renewable natural gas (RNG) fuel in this fleet, which reduces greenhouse gases (GHGs) by over 90% and NOx by over 90%. The Federal Renewable Fuel Standard (RFS2) and state incentive programs (low carbon fuel credits) encourage investment in our facilities that produce renewable fuel from landfill gas. In 2038, WM is expected to have 2,215 diesel collection vehicles and 19,939 natural gas collection vehicles running on renewable natural gas. In 2019, we set an interim goal for 70 percent of our collection fleet to use compressed natural gas (CNG) engines by 2025, with 50 percent running on RNG.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Ability to diversify business activities

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

(i) Extreme weather events do not produce "opportunities"; they produce loss and hardship. However, our services are an important means to assist the community and relieve hardship. WM services its customers with our 17,846 collection routes. Our 650 facilities are equipped and WM personnel are trained to respond quickly and safely to certain damage caused by extreme weather events such as hurricanes, wildfires, winter weather, torrential rain and floods, and we do so when such services are needed.

(ii) WM facilities in 17 market areas across the United States and Canada have equipment, supplies and trained staff to secure our operations after damage from extreme weather events. They also can offer assistance to others who may not be well equipped. WM facilities offer the equipment and skills needed for early response and clean-up after extreme events, securing and preserving the health and property of the communities we serve. WM is proud to be able to offer these services, as well as support for later-phase state and federally mandated clean-ups, to help the communities we serve recover from events as quickly, safely, and cost effectively as possible. Lessons from storm events has informed our on-going emergency planning for elevating electrical equipment, adding generator capacity, upgrading logistical capabilities during storm events at priority sites identified by climatological mapping. We have seen that annual, ongoing preparation and improvements have successfully mitigated our risk of losses due to uncontrollable events.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

10000000

Potential financial impact figure – maximum (currency)

35000000

Explanation of financial impact figure

The potential financial impact figure is based on revenue from emergency response services. It is not possible to predict the number and impact of extreme weather events that will take place. However, profits providing emergency response services for one event in one year can range from \$10 million to \$35 million. Our calculation assumes 1 small event (1*10,000,000) as a minimum, and up to 3 small events (3*10,000,000) or 1 large event (1*35,000,000) at a maximum per year. WM's emergency response services, for example providing safe disposal of contaminated soil and other materials after extreme weather events, can be a multi-year project. WM was cleaning up from Hurricane Michael and the Camp Fire for the first half of 2019; both events occurred in 2018. Winter weather, torrential rains, flooding, Hurricane Dorian and Tropical Storm Imelda are other events WM helped communities respond to in 2019.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Cost to realize opportunity is incorporated into WM's existing operational structures, utilizing existing assets and employees and incorporating emergency response preparation into existing duties. Up until an extreme weather event is approaching, there are no costs, therefore there is no cost to realize the opportunity. WM has support infrastructure in place to respond to extreme weather events that may potentially affect its businesses and customers. It is a phased approach that begins 7 days prior to landfall in the case of a hurricane (beyond scheduled annual preparation efforts) and focuses on protection of physical assets and employees before the severe weather event. WM's plans have established standardized lines of communication and prearranged methods of communication post-event to account for all employees, communication with customers and re-establishment of services. Each operating site has a Waste Management Continuity Plan in accordance with the Company's guidance document, which is then used to make site-specific plans. These change annually or more often based on area needs. After each event, we revise our plans with knowledge gained.

Comment**Identifier**

Opp3

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

Recent consumer response to climate change and the circular economy movement could result in more value being assigned to opportunities for reuse, recycling, use of renewable alternative fuels and sustainability consulting offerings. This would enhance the revenue generation of these products and services and could give us a market advantage because of the breadth of our offerings both in variety of technology and locations. As an example of a new opportunity related to recycling and consulting, trends in global manufacturing and consumer behavior have ushered post-consumer textiles to the top of the list of fastest growing fractions of the US waste stream, constituting 6-8% of the waste stream, with few options for consumers to donate or recycle clothing. As the largest post-consumer residential recycler in North America, Waste Management has engaged in initiatives to create a more circular supply chain for post-consumer textiles by investing in technology companies that are recycling clothing. Of primary importance is ensuring a high-quality recycled product with viable end markets. Waste Management has engaged in initiatives to create a more circular supply chain for post-consumer textiles by investing in technology companies that are recycling clothing. Of primary importance is ensuring a high-quality recycled product with viable end markets. Waste Management also engaged with the Slow Factory in 2019, hosting fashion design students at a landfill, followed by discussions on how natural resources can be conserved throughout the textile design/manufacturing/sales/end-of-life processes. We are continuing this engagement at the local level and as part of the Waste Management Sustainability Forum, which is live-streamed. The potential benefits of significantly increased recycling are enormous. According to EPA, in 2017 67 million tons of recycled materials provided an annual benefit of more than 174 million metric tons of life cycle carbon dioxide equivalent emissions avoided.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

355000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

The financial impact figure is based on changing consumer behavior to (1) reduce contamination costs: reducing contamination by the consumer when producing the recyclables we receive saves us \$125 per ton in processing costs and lost commodity sales, assuming 70,000 tons (125*70,000=8750000); and (2) grow our recycling revenue: if our recycling revenue of \$1.04B were to grow 5% due to changing consumer behavior and increased recycling demand, revenues could increase over \$50M (1.04B*5%=52M).

Cost to realize opportunity

368000000

Strategy to realize opportunity and explanation of cost calculation

The cost to realize these opportunities includes estimated cost of new sorting technology and partial costs of new materials recycling facilities (99%), and the cost of partnerships and educational campaign to change consumer behavior (<1%), the sum of which results in \$368,000,000. To improve consumer recycling practices, we have

implemented a public education campaign called Recycle Right. See <https://www.wm.com/us/en/recycle-right>. Customers are looking for ways to operate more sustainably and reduce the waste they generate. WMSS, our advisory services business, allows us to partner with customers to reduce their environmental impact. WM has launched a major educational campaign to inform consumers about the benefits, including carbon reduction benefits (i.e., displaying the CO₂e reductions per ton of commodity recycling), of recycling. We are partnering with The Recycling Coalition, Keep America Beautiful, the National Waste and Recycling Association, Solid Waste Association of North America (SWANA), The Institute for Scrap Recycling Industries (ISRI), numerous associations representing consumer product manufacturers, U.S. EPA and local governments to increase recycling rates and thereby achieve carbon reductions beyond those to which WM has committed as a company. We sponsored the Coalition for Sustainable Materials Management, which authored two reports on increasing recycling and more sustainable materials management throughout the life cycle of consumer and business product use.

Comment

Identifier

Opp4

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Waste that reaches a landfill can have value as it decomposes. At more than half of our landfills, Waste Management creates economic and environmental value by turning landfill gas into energy. As organic material decomposes in an anaerobic environment, it naturally produces landfill gas, which is roughly half carbon dioxide and half methane. At our landfill gas-to-energy (LFGTE) facilities, we capture this methane and use it beneficially as an alternative to fossil fuel. Landfill gas is recognized by the U.S. EPA as a renewable energy resource. Our most frequent application for collected landfill gas is to use the processed methane to generate electricity that is sold to public utilities, municipal utilities and power cooperatives. Beyond electricity generation, we are also a leader in converting landfill gas into natural gas fuels that are distributed for use in residences, businesses and commercial vehicles, including our own. Renewable natural gas (RNG) produced from processed landfill gas now fuels over 40 percent of our natural gas trucks. Today, Waste Management is the largest LFGTE developer and operator in North America. In 2019, approximately 55 percent of landfill gas collected at Waste Management-owned-and -operated facilities was used for beneficial use projects. WM does not incinerate waste for energy recovery. We are continually looking for opportunities to develop new beneficial use projects. Proximity and accessibility to energy infrastructure makes projects more cost effective. While larger landfills tend to have greater potential, smaller landfills can also support beneficial use projects. Our newest and most advanced RNG facility is located at our Skyline Landfill in Ferris, Texas. The facility uses a membrane-based separation system that removes CO₂ and trace components from the raw landfill gas stream. It began injecting pipeline-quality gas into the Atmos Energy system in early 2020.

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

140000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Financial impact figure is based on revenue and incentives from selling energy from WM landfill gas to energy projects, which is \$140,000,000.

Cost to realize opportunity

350000000

Strategy to realize opportunity and explanation of cost calculation

Cost to realize opportunity comes from WM investment of \$350MM in 5-7 RNG fuel projects, with the cost offset by revenue gained by operating the business and benefits of other lines of business.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

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

Yes, qualitative and quantitative

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
2DS	<p>Selected scenarios were chosen because they are publicly available, peer-reviewed, issued by an independent body, supported by publicly available data sets, updated, and link to mapping tools or visualizers. We used the IEA's World Energy Outlook (WEO) 2DS scenario analysis again for this reporting year, analyzing emissions reductions and energy flows mainly related to transport fuels, from 2025 to 2060. WM continued to use the time horizons embedded in the publicly available scenarios. The 2DS scenario uses time horizons of 2025, 2035, 2040 and 2060. We used the 2025, 2038 and 2040 time horizons because they are close to our current set of greenhouse gas reduction goals and fit within our short-, medium- and long-term climate strategies. Since the 2DS model sets the target of cutting CO2 emissions by almost 60% by 2050, followed by continued decline after 2050 until carbon neutrality is reached, we included the 2060 time horizon in our analysis. Although it is a challenge to incorporate that planning so far into the future, the data obtained from the models is valuable. WM's largest Scope 1 emissions categories are landfills and transportation, therefore, in 2019, these areas were the primary focus of the scenario analysis. This includes landfill gas capture systems and programs, as well as capital investments in fleet vehicles and subsequently fuel types. WM discovered through analysis of the 2DS scenario that one of the primary levers identified in reducing heavy duty vehicle emissions in the short- and medium-term is the use of biomethane, also referred to as Renewable Natural Gas (RNG). As owners and operators of municipal solid waste landfills in North America, WM has a particular advantage in accessing and developing landfill gas (LFG) capture systems for the purposes of processing the gas to generate electricity or for fuel, use within our own fleet as well as public sale. Utilizing the results of the climate-related scenario analysis and aligned renewable energy incentives, the business case has been made to continue to pursue LFG capture and invest capital expense in CNG trucks. At the end of 2019, WM's collection fleet consisted of 17,846 vehicles. 8,924 of these vehicles have CNG engines, and 4,114 (23 percent) run on RNG. Our vehicles powered by compressed natural gas (CNG) emit nearly zero particulate emissions, cut GHG emissions by 15 percent and are quieter than diesel trucks. For every diesel truck we replace with natural gas, we reduce our use of diesel fuel by an average of 8,000 gallons per year along with a reduction of 14 metric tons of GHG emissions annually. Using RNG fuel reduces GHG emissions and nitrous oxide by over 90%. In 2019, WM's senior leadership approved the following new 2025 goals which will further these efforts: +70% of WM's fleet to run on CNG +50% of WM's CNG trucks to run on RNG</p>
Other, please specify (WRI Aqueduct Water Risk Atlas)	<p>Selected scenarios were chosen because they are publicly available, peer-reviewed, issued by an independent body, supported by publicly available data sets, updated, and link to mapping tools or visualizers. For 2020 reporting, WM again chose to use the time horizons embedded in the publicly available scenarios. The WRI Aqueduct Water Risk Atlas looks at baseline, 2030 and 2040 time horizons. We used the baseline, 2030 and 2040 scenarios because they are close to our current set of greenhouse gas reduction goals and fit within our medium- and long-term climate strategies. In August 2019, WRI released an updated version of the Aqueduct Water Risk Atlas (Aqueduct 3.0) based on feedback from users, experience from applying previous data, and improvements in hydrological data and databases. This update has resulted in significant changes to WM's water scenario analysis. We specifically looked at flood, drought, groundwater stress, regulatory and reputational risks, media coverage, and projected change in water stress at 100% of our material recovery facilities (MRFs), landfills and transfer stations (hereafter referred to as Facilities). Just one percent of these WM Facilities are currently in locations with medium to high public awareness around water issues, which could carry higher reputational risks if water is not sustainably managed. 16% of WM Facilities are in medium to high riverine flood areas, 9% are in high riverine flood areas, and 2% are in extremely high riverine flood areas; these are evenly spread across facility type. 2% of WM Facilities are in medium to high coastal flood areas and 2% are in high coastal flood areas. 100% of WM Facilities are in areas of low, low to medium or medium drought severity. In a business as usual scenario, 80% of WM Facilities are located in areas projected to experience near normal water stress in 2030, decreasing to 59% in 2040. 18% of these may experience up to 1.4 times increase in water stress in 2030, 38% in 2040. In 2030, seven landfills, nine transfer stations, one MRF and nine hauling facilities may experience twice the water stress. In 2040, fifteen landfills, six transfer stations, two MRFs and eleven hauling facilities may experience twice the water stress, with 2 landfills and one hauling facility may experience 2.8 or greater increase in water stress. To date, results of the scenario analysis have been reported in CDP only; however, in the last 20 years WM has been directly impacted by severe weather and previously reported publicly related risks and opportunities via CDP, WM sustainability report and the Regulation and Risk Factors section of our Annual Report on Forum 10-K. Our operations located in the path of recent hurricanes and wildfires are intimately aware of the risks, with Contingency Response Plans (Plans) in place. Scenario analyses of the physical impact of climate change on all locations where WM has a facility of any kind has resulted in taking a closer look at potential future impacts. WM realized that we should expand our scenario analysis to include more facilities and look to the longer-term future to consider locations that might be similarly impacted in 2030 and 2040, and begin to adapt existing plans for these locations. Our 2019 analysis shows that approximately 15% of WM Facilities are currently in medium-high to extremely high flood areas. We are considering multiple scenarios where WM operations are impacted to varying degrees and put plans in place to utilize the closest operations that would be out of the severe weather path. Another example is plotting WM locations into scenario analysis that shows areas of high drought severity and high likelihood of wildfires to try to predict where we may need to be prepared in the future. Specific departments responsible for analysis and implementation of these changes will meet to discuss them, and the results.</p>

C3.1d

(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Risks and opportunities related to increased severity and frequency of extreme weather events such as cyclones and floods and increased likelihood and severity of wildfires due to climate change (as reported in C2.3a Risk 2 and C2.4a Opportunity 2) have influenced our services-related strategy. This has a short-term time horizon. Severe weather events are destructive, causing hardship and generating significant debris. WM facilities have invested in the equipment, supplies, and trained staff and skills needed for the planning, early response and clean-up of these events, as well as support for later phase state and federally mandated clean-ups, to help communities recover from events as quickly, safely, and cost effectively as possible. The 2018 Woolsey fire impacted WM's SoCal market area such that we were still providing clean-up services into 2019.
Supply chain and/or value chain	Yes	The opportunities related to the impact of using of lower-emission sources of energy (as reported in C2.4a Opportunity 1) to reduce direct costs and GHG emissions have influenced aspects of our supply chain strategy, which has a medium-term time horizon. WM has a collection fleet of 17,846 trucks, and a goal to reduce greenhouse gas (GHG) emissions 45% from our fleet. WM worked with its primary engine manufacturers in the development of a new "Near Zero" carbon emissions engine that is now the only natural gas (NG) truck engine that WM is purchasing. We are also transitioning from diesel fuel to compressed natural gas and renewable natural gas. In 2019, we set a goal for 70 percent of our collection fleet to use compressed natural gas (CNG) engines by 2025, with 50 percent running on RNG. By 2038, WM is expected to have 2,215 diesel collection vehicles and 19,939 natural gas collection vehicles running on renewable natural gas.
Investment in R&D	Yes	WM is finding increased demand for renewable fuels, which reduce GHGs and in particular reduce NOx by 90% and impacts investment in landfill gas projects at WM landfills. The Federal Renewable Fuel Standard and state incentive programs encourage investment in our facilities that produce renewable fuel from landfill gas. WM has invested over \$2.2 billion in its commitment to a lower carbon collection fleet and renewable fuel, the most substantial business decision made. Risks and opportunities related to regulation of existing products and services (as reported in C2.4a Opportunity 4) impacts this investment in R&D and have a medium-term time horizon. WM's fleet operations and landfills offer lower carbon opportunities, and our senior leadership team developed a business strategy to invest in a low carbon fleet, fueling infrastructure, and infrastructure at our landfills to develop low carbon fuel from landfill biogas. WM allocates significant capital and invests in infrastructure to process biogas from our landfills into renewable natural gas (RNG). In addition, WM has partnered with over 30 innovators, and managed investments in firms evaluating innovative treatment technologies across North America and Europe. We have prioritized our investments to focus on continued funding of those projects most likely to succeed at commercial scale. WM's Corporate Development & Innovation group manages a portfolio of investments in innovate waste reduction and treatment technologies.
Operations	Yes	The Federal New Source Performance Standards (NSPS) and Emission Guidelines for MSW Landfills require earlier installation of gas collection and control systems at some sites, and longer operation periods due to a lower emission threshold (as disclosed in C2.3a Risk 1). Surface emissions monitoring costs may double due to new monitoring required at gas collectors. In 2019 WM initiated a study to evaluate emerging measurement technologies for determining fugitive landfill methane emissions. Landfills currently must rely on models and other factors to estimate methane emissions. Studies comparing these emission estimates from models to measurements have shown that the existing models can overstate emissions by up to 30 times. The study will evaluate satellite and aerial platform data, flux calculations and modeling assumptions to better understand advantages and limitations of these technologies. This is a short- to medium-term time horizon.

C3.1e

(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Indirect costs Capital expenditures Assets	In 2018 Waste Management announced an overarching goal to reduce or avoid four times the emissions we generate by 2038. Planning to achieve that goal includes investment in recycling infrastructure and education/behavior change, renewable energy generation and procurement, and reducing emissions from our fleet. Budgeting for capital expenditures such as renewable energy and "Near Zero" carbon emissions engines has a medium-term horizon. At the end of 2019, WM's fleet included 8,924 natural gas trucks, the largest heavy-duty natural gas truck fleet of its kind in North America.

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

Goals regarding our fleet, recycling operations and generation of renewable energy will help us continue to respond appropriately to emerging opportunities and risks. Waste Management updated our goals in 2018 to establish science-based goals that align with the Paris Agreement to limit planetary warming to two degrees Celsius. These goals include the impact of low-carbon products and services that avoid and/or reduce our customers emissions.

To keep our efforts on track, in 2019 we added interim targets to reach by 2025. These new goals include purchasing 100 percent renewable energy at facilities that we control, developing solutions for measuring fugitive emissions at our landfills and expanding our use of renewable fuel to power our vehicle fleet.

These goals matter greatly to WM stakeholders – our employees, our customers and surrounding communities, and our shareholders. Waste Management’s customer base is increasingly aware of climate risks and wants to ensure that their products and materials will not have adverse impacts on the environment. As such, they are likely to choose suppliers who focus on solutions such as recycling, GHG reductions, support for renewable energy, and long-term liability protection. Therefore, setting long-term goals related to climate change affects 100 percent of our business strategy.

C4. Targets and performance

C4.1

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

Absolute target

C4.1a

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

Target reference number

Abs 1

Year target was set

2017

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1

fleet emissions

Base year

2010

Covered emissions in base year (metric tons CO2e)

1880932

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

9

Target year

2038

Targeted reduction from base year (%)

45

Covered emissions in target year (metric tons CO2e) [auto-calculated]

1034512.6

Covered emissions in reporting year (metric tons CO2e)

1209237

% of target achieved [auto-calculated]

79.357231178775

Target status in reporting year

Underway

Is this a science-based target?

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

Please explain (including target coverage)

Abs1 is based on 2.1% year-over-year reduction of emissions between the base year and the target year from our fleet, in line with climate science.

Target reference number

Abs 2

Year target was set

2017

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based) +3 (downstream)

Base year

2011

Covered emissions in base year (metric tons CO2e)

13006771

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2028

Targeted reduction from base year (%)

42

Covered emissions in target year (metric tons CO2e) [auto-calculated]

7543927.18

Covered emissions in reporting year (metric tons CO2e)

% of target achieved [auto-calculated]

<Calculated field>

Target status in reporting year

Retired

Is this a science-based target?

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

Please explain (including target coverage)

Abs 2 was based on a 2.1% year-over-year reduction of life cycle emissions between the base year and the target year, in line with climate science. Material management choices have a direct impact on greenhouse gas emissions generated. For example, according to the EPA's Waste Reduction Model, three times the lifecycle emissions are generated when mixed recyclable material is put in a landfill instead of being recycled. In the base year, 25,750,786 MTCO₂e lifecycle emissions would have been generated if the material management choice had been disposed in landfill instead of recycling, generating electricity or creating compost from organics. WM is the largest residential recycler in North America, regularly investing in programs such as our Recycle Right campaign to encourage our residential, commercial and municipal customers to recycle and decrease contamination, and engaged broadly with stakeholders on means to increase the productivity and sustainable economics of recycling. Achieving this goal also requires that we work with designers and the manufacturing industry to design material for recyclability to avoid raw material processing, to increase collection of material for recycling, and use recycled materials in the manufacture of their products. We do this by utilizing our materials recovery facility infrastructure to teach designers and manufacturers about the recycling process and through our Sustainability Services consulting group. WM's recycling activities result in a wide variety of GHG reductions that otherwise very likely would not occur. WM explicitly advocates that GHG reductions become the focus of federal, state and local government and private sector recycling goals, replacing current weight-based goals with science-based emissions reductions goals. WM avoided 30,062,623 MTCO₂e GHGs in 2019.

Target reference number

Abs 3

Year target was set

2018

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Base year

2011

Covered emissions in base year (metric tons CO₂e)

13006771

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2038

Targeted reduction from base year (%)

75

Covered emissions in target year (metric tons CO₂e) [auto-calculated]

3251692.75

Covered emissions in reporting year (metric tons CO₂e)**% of target achieved [auto-calculated]**

<Calculated field>

Target status in reporting year

Retired

Is this a science-based target?

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

Please explain (including target coverage)

Abs 3 was based on a 2.1% year-over-year reduction of life cycle emissions between the base year and the target year, in line with climate science. Material management choices have a direct impact on greenhouse gas emissions generated. For example, according to the EPA's Waste Reduction Model, three times the lifecycle emissions are generated when mixed recyclable material is put in a landfill instead of being recycled. In the base year, 25,750,786 MTCO₂e lifecycle emissions would have been generated if the material management choice had been disposed in landfill instead of recycling, generating electricity or creating compost from organics. WM is the largest residential recycler in North America, regularly investing in programs such as our Recycle Right campaign to encourage our residential, commercial and municipal customers to recycle and decrease contamination, and engaged broadly with stakeholders on means to increase the productivity and sustainable economics of recycling. Achieving this goal also requires that we work with designers and the manufacturing industry to design material for recyclability to avoid raw material processing, to increase collection of material for recycling, and use recycled materials in the manufacture of their products. We do this by utilizing our materials recovery facility infrastructure to teach designers and manufacturers about the recycling process and through our Sustainability Services consulting group. WM's recycling activities result in a wide variety of GHG reductions that otherwise very likely would not occur. WM explicitly advocates that GHG reductions become the focus of federal, state and local government and private sector recycling goals, replacing current weight-based goals with science-based emissions reductions goals. WM avoided 30,062,623 MTCO₂e GHGs in 2019.

Target reference number

Abs 4

Year target was set

2018

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 2 (location-based)

Base year

2018

Covered emissions in base year (metric tons CO2e)

246091

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

1

Target year

2025

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

238341

% of target achieved [auto-calculated]

3.14924154073087

Target status in reporting year

New

Is this a science-based target?

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

Please explain (including target coverage)

Abs 2 goes beyond the recommended 2.1% year-over-year reduction of life cycle emissions between the base year and the target year, to purchase 100% renewable energy by 2025.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Other climate-related target(s)

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number

Oth 1

Year target was set

2018

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Low-carbon vehicles	Percentage of low-carbon vehicles in company fleet
---------------------	--

Target denominator (intensity targets only)

<Not Applicable>

Base year

2017

Figure or percentage in base year

30

Target year

2038

Figure or percentage in target year

90

Figure or percentage in reporting year

39

% of target achieved [auto-calculated]

15

Target status in reporting year

Underway

Is this target part of an emissions target?

Oth1 is part of Abs1 to reduce emissions from our collection fleet.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

Target reference number

Oth 2

Year target was set

2019

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Engagement with suppliers	Other, please specify (Increase spend associated with sustainability projects by at least 10% each year)
---------------------------	--

Target denominator (intensity targets only)

<Not Applicable>

Base year

2019

Figure or percentage in base year

263893881

Target year

2038

Figure or percentage in target year

1613950973

Figure or percentage in reporting year

263893881

% of target achieved [auto-calculated]

0

Target status in reporting year

New

Is this target part of an emissions target?

No, not at this time.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

In recent years, WM Supply Chain team has had a focused effort on adding Sustainability Projects into our Project Management portfolio and in 2019, set an actual target to increase sustainability spend by 10% each year through 2038. Because tracking against the target only started in 2019 we are reporting 0% achieved, even though historic efforts have resulted in a spend of more than \$260M. To be considered a Sustainability Project, the initiative must have a proven Environmental or Social benefit, such as material reduction, use of recycled content materials, reduce GHG emissions, etc. For 2019, our verified spend on sustainability-based projects was \$263,893,811. With the new tools, including the Sustainable Supplier Partnership Playbook and requirements for each supply chain person to include sustainability targets in their yearly goals, we are confident this number will increase steadily in the future. Further details of WM's Purchasing Program are available online: https://sustainability.wm.com/downloads/WM_Purchasing_Program.pdf and <https://sustainability.wm.com/esg-hub/company/supply-chain>

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	0
To be implemented*	1	238341
Implementation commenced*	0	0
Implemented*	5	32315946
Not to be implemented	0	0

C4.3b

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

Initiative category & Initiative type

Low-carbon energy generation	Solar PV
------------------------------	----------

Estimated annual CO2e savings (metric tonnes CO2e)

25793

Scope(s)

Scope 3

Voluntary/Mandatory

Voluntary

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

0

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

0

Payback period

No payback

Estimated lifetime of the initiative

16-20 years

Comment

Initiative category & Initiative type

Waste reduction and material circularity	Product/component/material recycling
--	--------------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

30062623

Scope(s)

Scope 3

Voluntary/Mandatory

Voluntary

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

0

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

110000000

Payback period

4-10 years

Estimated lifetime of the initiative

16-20 years

Comment

Reductions in market prices for recycling commodities, and reduction in demand for recycling commodities and recycling services, have negatively impacted our operating income and cash flows in 2018 and 2019. The decline in market prices in 2019 and 2018 for recycling commodities resulted in a decrease in revenue of \$248 million and \$273 million, respectively. As we have increased the size of our recycling operations, we have also increased our exposure to commodity price fluctuations. Additionally, future regulation, tariffs or initiatives may result in further reduced demand or increased operating costs, which would cause the profitability of our recycling operations to decline. The potential benefits of significantly increased recycling and keeping organic waste out of the landfill are enormous. According to EPA, 87 million tons of recycled or composted waste provided an annual benefit of more than 168 million metric tons of carbon dioxide equivalent emissions reduced, comparable to the annual greenhouse gas emissions from more than 33 million passenger vehicles. WM's recycling activities result in a wide variety of greenhouse gas reductions that otherwise very likely would not occur. WM continues to invest in recycling and educate the public on how to Recycle Right.

Initiative category & Initiative type

Low-carbon energy consumption	Biogas
-------------------------------	--------

Estimated annual CO2e savings (metric tonnes CO2e)

176810

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

13973468

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

600000000

Payback period

No payback

Estimated lifetime of the initiative

>30 years

Comment

WM consumes low carbon energy through (1) our landfill gas-to-energy (LFGTE) facilities, where we capture methane from waste decomposition and use it beneficially as an alternative to fossil fuel in our fleet; (2) renewable natural gas from third-party landfills; (3) renewable natural gas from dairy. These initiatives significantly reduce greenhouse gas emissions compared with diesel fuel and directly support WM's goal to emit fewer emissions from our fleet by using renewable natural gas (RNG) in over 90 percent of our vehicles by 2038. One hundred percent of the investment in our LFGTE facilities is reported here, although it also decreases our customers' greenhouse gas emissions, as described in the scope 3 low carbon energy generation initiative.

Initiative category & Initiative type

Low-carbon energy generation	Biogas
------------------------------	--------

Estimated annual CO2e savings (metric tonnes CO2e)

1995614

Scope(s)

Scope 3

Voluntary/Mandatory

Voluntary

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

0

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

0

Payback period

No payback

Estimated lifetime of the initiative

>30 years

Comment

At our landfill gas-to-energy (LFGTE) facilities, we capture methane from waste decomposition and use it beneficially as an alternative to fossil fuel to power homes and provide fuel for industrial uses and commercial vehicles, decreasing WM and our customers' greenhouse gas emissions. Investment for this initiative is captured in the scope 1 low carbon energy consumption initiative; therefore, the investment, monetary savings and payback period reported for this scope 3 initiative is zero.

Initiative category & Initiative type

Transportation	Company fleet vehicle replacement
----------------	-----------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

52105

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

250000000

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

836780000

Payback period

4-10 years

Estimated lifetime of the initiative

16-20 years

Comment

WM's aim is to emit fewer emissions through our operations by transitioning from diesel to alternative fuel vehicles in 90 percent of our entire fleet. Our goal is to use renewable fuel in over 90 percent of our vehicles. Our goal of emitting fewer emissions requires an investment in a Near Zero fleet running on Renewable Natural Gas. We intend for over 90 percent of our fleet purchases to be "NZVs" (Near Zero Vehicles). Estimated annual CO2e savings is based on anticipated emissions savings in 2038 and averaged out over 20 years.

C4.3c

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

Method	Comment
Internal finance mechanisms	Our CEO has set, and has communicated to our Board, aggressive sustainability goals with ambitious emissions reduction benefits. Moreover, there are many emissions reduction activities available to a highly diversified company like WM. Therefore, those opportunities presented to WM from outside or inside the company that have the best potential to deliver high degrees of emission reduction at low cost or to deliver emission reductions combined with a positive return are given priority for implementation. Our goal setting and disclosure of progress on production of renewable energy, recycling and fuel efficiency are important factors in our investment strategy. Our nationwide campaign, Recycle Right, continues to expand each year, leveraging partnerships and community engagement to increase recycling quality and productivity. We will continue to grow our natural gas fleet, and to expand our capacity to produce renewable natural gas from landfill gas and other biogas projects. Our Organics Recycling Group has developed and taken to market technology to help divert foodwaste to a WM designed technology that creates a bioslurry that can be delivered to wastewater treatment facility digestors, substantially expanding the renewable energy produced from their wastewater treatment facilities, producing revenue from increased sale of renewable fuel. WM has contracts in Los Angeles, CA, Boston, MA, Elizabeth, NJ and NY, NY.

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

Low carbon products or services that enable a third party to avoid GHG emissions: 1) WM's Carbon Blocker Fly Ash treatment system, installed directly at coal fired power plants, converts fly ash with increased carbon levels into a cement replacement in concrete, and is considered as recycling by U.S. EPA. 2) WM's portfolio includes 34 facilities that produce compost and mulch products, used to improve soil structure and quality, providing valuable nutrients for farmers, landscapers and home gardeners. Replacing fossil fuel-based fertilizer with organic matter avoids greenhouse gas emissions a. from anaerobic decomposition of organic material in a landfill and b. associated with fertilizer. 3) WM has 103 recycling facilities. Indirect emissions are avoided from the use of recycled content material in manufacturing.

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 (U.S. EPA Waste Reduction Model (WARM))

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

7

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

Emissions avoided from WM's low-carbon products were 30,062,624 MTCO_{2e} in 2019.

Level of aggregation

Product

Description of product/Group of products

WM engaged in landfill gas beneficial use projects at 124 of our landfills in 2019. For 97 of these projects, the processed gas is used to fuel electricity generators. The electricity is then sold to public utilities, municipal utilities or power cooperatives. For 15 of these projects, the landfill gas is processed to pipeline-quality natural gas and then sold to natural gas suppliers. For 12 of these projects, the gas is used at the landfill or delivered by pipeline to industrial customers as a direct substitute for fossil fuels in industrial processes.

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

Low-carbon product

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

Other, please specify

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

1

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

Revenue from this low-carbon product was less than 1% in 2019.

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 2009

Base year end

December 31 2009

Base year emissions (metric tons CO2e)

20505750

Comment

Scope 2 (location-based)

Base year start

January 1 2009

Base year end

December 31 2009

Base year emissions (metric tons CO2e)

137207

Comment

Scope 2 (market-based)

Base year start

January 1 2009

Base year end

December 31 2009

Base year emissions (metric tons CO2e)

137207

Comment

The location-based result has been used as a proxy since a market-based figure cannot be calculated.

C5.2

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

IPCC Guidelines for National Greenhouse Gas Inventories, 2006

The Climate Registry: General Reporting Protocol

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

The Greenhouse Gas Protocol: Scope 2 Guidance

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)**

15624632

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

Per The GHG Protocol's Corporate Accounting and Reporting Standard and best practice environmental reporting, direct emissions of biogenic carbon are not included in this number but reported separately in C6.7a.

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 have no operations where we are able to access electricity supplier emission factors or residual emissions factors and are unable to report a Scope 2, market-based figure

Comment

Because there is no confirmed residual mix for the US, our calculations default to the location-based emission factors, and thus the same quantity as the Scope 2 location-based calculation. EPA is working on a residual mix and Green-e calculates a residual mix, but it was not recommended because it is not a reliable account for the entire scope of US renewable energy.

C6.3

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

Reporting year

Scope 2, location-based

238341

Scope 2, market-based (if applicable)

<Not Applicable>

Start date

<Not Applicable>

End date

<Not Applicable>

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?

No

C6.5

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

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1610356

Emissions calculation methodology

Actual spend on consumable goods and services provided by WM Supply Chain team; GHG Protocol Scope 3 Evaluator tool

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

0

Please explain

Emissions in this category have increased due to changes in data collection methodology which include improving accuracy by collecting spend data from the Supply Chain team rather than annual 10K reporting.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1338238

Emissions calculation methodology

Actual spend on capital goods and services provided by WM Supply Chain team; GHG Protocol Scope 3 Evaluator tool

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

0

Please explain

Emissions in this category have decreased due to changes in data collection methodology which include improving accuracy by collecting spend data from the Supply Chain team rather than annual 10K reporting.

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>

Please explain

This was removed from our 2019 GHG Inventory it is because these emissions are already included in our Scope 1 and Scope 2 calculations. After revisiting the GHG Protocol Scope 3 Guidance and evaluating the calculation methodology, we determined we were inaccurately reporting avoided (negative) emissions from Renewable Landfill Gas being sold to produce energy.

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>

Please explain

This was removed from our 2019 GHG Inventory because these emissions are already included in our Scope 3 Purchased Goods & Services.

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>

Please explain

Since we are an environmental solutions provider, waste generated through our operations are managed by WM. Therefore, emissions generated from these services are Scope 1 and Scope 2 and reported in those sections. There is a very small number of WM employees who work as service consultants in non-WM facilities; Scope 3 emissions from their activities are reported by those non-WM facilities.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

20671.85

Emissions calculation methodology

World Resources Institute (2015). GHG protocol tool for mobile combustions. Version 2.6.

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

100

Please explain

WM's business travel data include air and vehicle miles, which totalled 20,671.85 MtCO₂e. WM's GHG emissions from air business travel increased in 2019 from 2018. Emissions from air travel were 6,456.53 metric tonnes CO₂e compared to 5,887.67 metric tonnes CO₂e in 2018. Emissions from vehicle travel were 14,215.32 MtCO₂e, a slight increase from the 13,805.48 MtCO₂e in 2018.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

221199.59

Emissions calculation methodology

World Resources Institute (2015). GHG protocol tool for mobile combustions. Version 2.6.

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

0

Please explain

In 2019, WM employee commuting resulted in 221,199.59 MtCO₂e. The calculation is based on the accounting for the total employee count of 44,900. This is an increase from 2018 when employee commuting resulting in 215,287.80 MtCO₂e, based on the total employee count of 43,700. WM utilized the WRI Transport tool to calculate the emissions associated with 2019 employee travel estimated at 561,025,500 miles.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

285.35

Emissions calculation methodology

CARBON FOOTPRINT Country Specific Electricity Grid GHG Emissions Factors
https://www.carbonfootprint.com/docs/2019_06_emissions_factors_sources_for_2019_electricity.pdf

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

100

Please explain

Electricity usage gathered from Real Estate Dept. for leased sites in India.

Downstream 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>

Please explain

This was removed from our 2019 GHG Inventory because these emissions are already included in our Scope 3 Purchased Goods & Services.

Processing 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>

Please explain

WM does not process any sold, intermediate products.

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>

Please explain

WM does not produce or sell products used by customers. Unlike other companies where products are produced and/or sold, WM conducts its business by offering hauling, recycling and consulting services to consumers.

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>

Please explain

WM does not produce or sell products used by customers. Unlike other companies where products are produced and/or sold, WM conducts its business by offering hauling, recycling and consulting services to consumers. End of life treatment is done for companies who are availing our services.

Downstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1715.87

Emissions calculation methodology

EIA; eGRID2018; NIR 2019 for Canada

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

0

Please explain

Total 2019 energy usage is estimated to be 3,917,106.90 kWh. WM's GHG from Downstream Leased Assets total 1,715.87 MtCO2e in 2019, which is a decrease from 2,408.73 MtCO2e for 2018.

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>

Please explain

WM does not have franchised operations.

Investments

Evaluation status

Relevant, calculated

Metric tonnes CO2e

19198.02

Emissions calculation methodology

Average-data method for calculating emissions from equity investments.

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

0

Please explain

In 2019, WM identified 14 equity investments that fell within the established boundaries (>1% and <50% equity share). Of those, 11 were determine to have revenue in 2019 which factored into the scope 3 emissions from investments. Investments with >50% equity share are accounted for in Scope 1 emissions and investments with <1% equity share are considered negligible.

Other (upstream)

Evaluation status

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>

Please explain

Other (downstream)

Evaluation status

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>

Please explain

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

Yes

C6.7a

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

	CO2 emissions from biogenic carbon (metric tons CO2)	Comment
Row 1	12432517	Biogenic emissions from landfills (12,261,524.16) and renewable natural gas used in our fleet (170,993.00).

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

0.001026397

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

15862973

Metric denominator

unit total revenue

Metric denominator: Unit total

15455000000

Scope 2 figure used

Location-based

% change from previous year

7.33

Direction of change

Decreased

Reason for change

GHG emissions per dollar of total revenue decreased between 2018 and 2019 because GHG emissions (numerator) had a 2.01% decrease while revenue had a 3.50% increase. WM also implemented emission reduction activities: i) In line with WM's low-carbon energy initiative around biogas (see C4.3b), WM decreased conventional fuel consumption (diesel, LNG, CNG) from 146,776,770.3 gallons in 2018 to 133,716,280.4 gallons in 2019. Subsequently, consumption of renewable natural gas (generated at WM landfills and purchased from non-WM landfills and dairy farms) increased between 2018 and 2019 from 14,632,753 gallons to 35,935,067 gallons respectively; ii) In line with WM's low-carbon energy initiatives, we are beginning to procure renewable electricity. In 2019 WM purchased 1,362 MWh of renewable energy; iii) Landfills emissions decreased for a few reasons: a) WM regularly evaluates the owner/ operator status of the landfills we manage which resulted in 2 landfills being removed the WM footprint and reallocated to the correct facility owners; b) during the 2019 inventory, historic emissions from 1 WM landfill were identified to contain an error which was corrected; c) variations in landfill gas generation and capture account for the remaining portion and can be related to change in type of cover (daily, intermediate and final) and surface area of each type of cover at sites with gas collection and capture systems. More final cover surface area will increase collection efficiency and decrease methane emissions. In some cases, fluctuation is due to installation or expansion of gas systems; iv.) Facility utilities increased because sites were added to our portfolio as well as re-classification to better categorize facilities, and we saw an overall increase in heat demand due to increase heating degree days.

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
N2O	15605	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	13977979	IPCC Fourth Assessment Report (AR4 - 100 year)
CO2	1582973	IPCC Fourth Assessment Report (AR4 - 100 year)
HFCs	48074	IPCC Fourth Assessment Report (AR4 - 100 year)

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	14862355.91
Canada	762275.79

C7.3

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

By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Corporate Office	3096
Inactive or Closed Sites	1110420
WM of Arkansas Tennessee Alabama Kentucky	872752
WM of Florida	693839
WM of Four Corners	981486
WM of Greater Mid Atlantic	192279
WM of Gulf Coast	1081780
WM of Illinois Missouri Valley	1094584
WM of Michigan Ohio Indiana	1633821
WM of New England	732272
WM of Northern California	533483
WM of Pacific Northwest British Columbia	406639
WM of South Atlantic	561318
WM of Southern California	626388
WM of Texas Oklahoma	2295375
WM of Wisconsin Minnesota	796989
WM of Western Pennsylvania Maryland West Virginia Virginia	1552922
WM SBS	216
WM of Eastern Canada	332711
WM of Western Canada	80299
WM Tracker	103
Energy and Environmental Services	724
WM Renewable Energy	41134

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 for in Scope 2 market-based approach (MWh)
United States of America	234697	0	567593	1362
Canada	3644	0	36090	0

C7.6

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

By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Corporate Office	4409	
Inactive or Closed Sites	4081	
WM of Arkansas Tennessee Alabama Kentucky	7929	
WM of Florida	16512	
WM of Four Corners	13131	
WM of Greater Mid Atlantic	20295	
WM of Gulf Coast	13283	
WM of Illinois Missouri Valley	21822	
WM of Michigan Ohio Indiana	24915	
WM of New England	6624	
WM of Northern California	4199	
WM of Pacific Northwest British Columbia	8594	
WM of South Atlantic	6781	
WM of Southern California	7443	
WM of Texas Oklahoma	15485	
WM of Wisconsin Minnesota	21151	
WM of Western Pennsylvania Maryland West Virginia Virginia	19809	
WM SBS	341	
WM of Eastern Canada	211	
WM of Western Canada	3391	
WM Tracker	483	
Energy and Environmental Services	378	0
WM Renewable Energy	17071	

C7.9

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

Decreased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	18440.5	Decreased	77	WM has invested heavily in converting our conventional diesel fleet to lower emissions and renewable sources, primarily Renewable Natural Gas (RNG) from landfills and dairy farms. These are part of the emissions reported in C6.7a since they are considered biogenic as they are the result of combustion of biofuel. WM's gross RNG consumption increased from 14,632,753 gallons in 2018 to 35,935,067 gallons in 2019, resulting in 62,946.00 MtCO2e and 170,992.71 MtCO2e respectively. However, for every diesel truck we replace with natural gas, we reduce our use of diesel fuel and resulting greenhouse gas emissions (the equivalent of a 15 percent emissions reduction per truck). If this volume of fuel was diesel instead of RNG, the equivalent emissions would be 86,885.21 MtCO2e in 2018 and 213,372.42 MtCO2e in 2019. The result of our conversion from diesel vehicles to RNG reduced our emissions 23,939.21 MtCO2e in 2018 and 42,379.71 MtCO2e in 2019. $(42,379.71 \text{ MtCO2e} - 23,939.21 \text{ MtCO2e}) / 23,939.21 \text{ MtCO2e} = 77.0\%$
Other emissions reduction activities	113547.5	Decreased	8.6	As WM converts more of their fleet to RNG, we are able to reduce the volumes of diesel, LNG and CNG that we use. Consumption of diesel, LNG and CNG decreased from 146,776,770.3 gallons in 2018 to 133,716,280.4 gallons in 2019. In 2019, WM's gross on-road fleet emissions decreased nearly 9% from 1,312,718.39 MtCO2e in 2018 to 1,199,170.89 MtCO2e. $(1,312,718.39 \text{ MtCO2e} - 1,199,170.89 \text{ MtCO2e}) / 1,312,718.39 \text{ MtCO2e} = 8.6\%$
Divestment		<Not Applicable >		
Acquisitions		<Not Applicable >		
Mergers		<Not Applicable >		
Change in output	563470.14	Decreased	3.8	WM's emissions associated with landfills and fuel (not accounted for in renewable energy and emissions reduction activities) vary YOY based on organic business expansion or contraction, and changes in economic performance. WM's gross landfill emission for 2019 are 13,965,548.75 MtCO2e. This is a reduction of 570,722.69 MtCO2e, or approximately 4%, from 2018 emissions of 14,536,271.44 MtCO2e. Landfills emissions changed for a few reasons including i) WM regularly evaluates the owner/ operator status of the landfills we manage which resulted in 2 landfills being removed from the WM footprint and reallocated to the correct facility owners (45,167 MtCO2e of difference); ii) during the 2019 inventory, historic emissions from 1 WM landfill were identified to contain an error which was corrected (196,561.25 MtCO2e of difference); iii) upgrades to the landfill gas collection system at 1 WM landfill (308,438.50 MtCO2e); iv) variations in landfill gas generation and capture account for the remaining portion and are related to updates to landfill gas capture systems, change in type of cover (daily, intermediate and final) and surface area of each type of cover at sites with gas collection and capture systems. More final cover surface area will increase collection efficiency and decrease methane emissions. In some cases, fluctuation is due to installation or expansion of gas systems (20,555.94 MtCO2e of difference). WM's fuel emissions, including motor gasoline, jet fuel, methanol and off-road diesel (which are not accounted for in renewable energy and emissions reduction activities) are 279,727.84 MtCO2e in 2019. This is an increase of 7,252.55 MtCO2e from 2018 emissions of 272,475.3 MtCO2e. Total consumption of motor gasoline, jet fuel, methanol and off-road diesel increased from 26,576,339 gallons in 2018 to 28,042,316 gallons in 2019. $(14,808,746.73 \text{ MtCO2e} - 14,245,276.59 \text{ MtCO2e}) / 14,808,746.73 \text{ MtCO2e} = 3.8\%$
Change in methodology		<Not Applicable >		
Change in boundary		<Not Applicable >		
Change in physical operating conditions	21754.89	Increased	6.2	WM's total stationary (facility) energy use resulted in 370,478.33 MtCO2e in 2019. This was approximately a 6% increase from 2018 emissions of 348,723.44 MtCO2e. Total energy usage includes purchase electricity and heating fuels, including propane, natural gas, used oil, kerosene, acetylene and distillate fuel oil No. 2. Purchased electricity increased between 2018 and 2019 from 583,801,658.00 kWh to 603,682,363.00 kWh, however, resulting emissions decreased from 246,091.22 MtCO2e to 238,341.10 MtCO2e. Propane usage increased from 1,862,459.00 gallons in 2018 to 2,342,240.00 gallons in 2019. Natural Gas increased from 1,349,840.18 MMBtu in 2018 to 1,786,937.77 MMBtu in 2019. Used oil decreased from 758,593.71 gallons in 2018 to 751,577.81 gallons in 2019. Kerosene increased from 312,440.00 gallons in 2018 to 399,391.11 gallons in 2019. Acetylene increased from 824,792 scf in 2018 to 843,417.00 scf in 2019. Distillate fuel oil No 2 is estimated and therefore remained the same at 78,663.00 gallons for both 2018 and 2019. Upon investigation, WM discovered a 5% increase in heating degree days between 2018 and 2019 which closely aligns with the increase in energy use. Data obtained from American Gas Association; Weekly and Monthly Heating Degree Day Data: https://www.aga.org/research/data/heating-degree-day-data/ (370,478.33 MtCO2e - 348,723.44 MtCO2e) / 348,723.44 = 6.2%
Unidentified		<Not Applicable >		
Other		<Not Applicable >		

C7.9b

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

Location-based

C8. Energy

C8.1

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

More than 5% but less than or equal to 10%

C8.2

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

	Indicate whether your organization undertook this energy-related activity in the reporting year
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 (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	Please select	1208877	6651407	7860283
Consumption of purchased or acquired electricity	<Not Applicable>	1326	602321	603682
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>	1210238	7253728	8463966

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	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

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

Fuels (excluding feedstocks)

Diesel

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

2992071.8

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

10.18

Unit

kg CO2 per gallon

Emissions factor source

2020 SmartWay Truck Carrier Partner Tool: Truck Tool Technical Documentation, U.S. Version 2.0.19 (Data Year 2019), EPA-420-B-20-002, 9 January 2020; Footnote 5 (ii) Fuel economy calculations in 40 C.F.R 600.113 available at http://edocket.access.gpo.gov/cfr_2004/julqtr/pdf/40cfr600.113-93.pdf

Comment

On-road diesel

Fuels (excluding feedstocks)

Diesel

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

982548.2

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

10.18

Unit

kg CO2 per gallon

Emissions factor source

2020 SmartWay Truck Carrier Partner Tool: Truck Tool Technical Documentation, U.S. Version 2.0.19 (Data Year 2019), EPA-420-B-20-002, 9 January 2020; Footnote 5 (ii) Fuel economy calculations in 40 C.F.R 600.113 available at http://edocket.access.gpo.gov/cfr_2004/julqtr/pdf/40cfr600.113-93.pdf

Comment

Off-road diesel

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

39780.4

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

8.887

Unit

kg CO2 per gallon

Emissions factor source

2020 SmartWay Truck Carrier Partner Tool: Truck Tool Technical Documentation, U.S. Version 2.0.19 (Data Year 2019), EPA-420-B-20-002, January 2020; Footnote 5 (i) - Final Rule on Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards (75 FR 25324, May 7, 2010). The gasoline factor used in this rule was sourced from the California Air Resources Board and is based on measurement of carbon from a gasoline test fuel (indolene).

Comment**Fuels (excluding feedstocks)**

Jet Kerosene

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

7671.1

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

72.22

Unit

kg CO2 per million Btu

Emissions factor source

https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

3181.4

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

73.96

Unit

kg CO2 per million Btu

Emissions factor source

The Climate Registry Simplified Estimation Method; IPCC 2006 Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Natural Gas

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

523699.79

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

56100

Unit

metric tons CO2 per GJ

Emissions factor source

World Resources Institute and World Business Council on Sustainable Development, The Greenhouse Gas (GHG) Protocol
https://ghgprotocol.org/sites/default/files/Emission_Factors_from_Cross_Sector_Tools_March_2017.xlsx

Comment

The EF is listed as 56,100 kg / TJ, which converts to 56,100 metric tons / GJ

Fuels (excluding feedstocks)

Compressed Natural Gas (CNG)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

1573127

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

7.03

Unit

kg CO2 per gallon

Emissions factor source

2020 SmartWay Truck Carrier Partner Tool: Truck Tool Technical Documentation, U.S. Version 2.0.19 (Data Year 2019), EPA-420-B-20-002, January 2020; Footnote 5 (v)
- Calculations of Lifecycle Greenhouse Gas Emissions for the 2005 Gasoline and Diesel Baselines in the Notice of Availability of Expert Peer Review Record supporting the proposed revisions to the Renewable Fuel Standard Program (74 FR 41359) available in Docket EPA-HQ-OAR-2005-0161-0925.1 (Spreadsheet "Emission Factors").

Comment**Fuels (excluding feedstocks)**

Liquefied Natural Gas (LNG)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

124132.3

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

4.394

Unit

kg CO2 per gallon

Emissions factor source

2020 SmartWay Truck Carrier Partner Tool: Truck Tool Technical Documentation, U.S. Version 2.0.19 (Data Year 2019), EPA-420-B-20-002, January 2020; Footnote 5 (vi)
- Assuming 74,720 Btu/gal lower heating value (<http://www.afdc.energy.gov/afdc/fuels/properties.html>), and 0.059 g/Btu (from CNG calculation, source v).

Comment**Fuels (excluding feedstocks)**

Landfill Gas

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

1112859.7

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

52.07

Unit

kg CO2 per million Btu

Emissions factor source

https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf; Table C-1 to Subpart C of 40 CFR Part 98: Default CO2 Emission Factors and High Heat Values for Various Types of Fuel

Comment

1,044,303.9 from renewable CNG and 68,555.8 from renewable LNG.

Fuels (excluding feedstocks)

Acetylene

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

370.3

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

0.2425

Unit

lb CO2e per 1000 cubic ft3

Emissions factor source

<https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf>

Comment

The actual EF is 0.11 kg CO2 / scf but CDP does not offer that Unit option. 0.11 kg = 0.2425 lbs so the emissions factor is 0.2425 lbs CO2 / scf.

Fuels (excluding feedstocks)

Propane Liquid

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

62466.3

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

61.46

Unit

lb CO2 per million Btu

Emissions factor source

https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

Comment

Fuels (excluding feedstocks)

Other, please specify (Methanol)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

914.4

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

4.1

Unit

kg CO2 per gallon

Emissions factor source

<https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf>

Comment

Fuels (excluding feedstocks)

Biodiesel

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

319836.5

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

9.46

Unit

lb CO2 per gallon

Emissions factor source

https://afdc.energy.gov/fuels/fuel_comparison_chart.pdf

Comment

WM uses various blends of biodiesel (B2-B95). The emission factor presented is for B100 but each blend was specifically calculated as a combination of B100 (94.60) and diesel (10.18 kg CO2/ gallon).

Fuels (excluding feedstocks)

Kerosene

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

15801.7

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

75.2

Unit

kg CO2 per million Btu

Emissions factor source

https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf; Table C-1 to Subpart C of 40 CFR Part 98: Default CO2 Emission Factors and High Heat Values for Various Types of Fuel

Comment

Fuels (excluding feedstocks)

Other, please specify (Used oil)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

30396.7

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

74

Unit

kg CO2 per million Btu

Emissions factor source

https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf; Table C-1 to Subpart C of 40 CFR Part 98: Default CO2 Emission Factors and High Heat Values for Various Types of Fuel

Comment

Fuels (excluding feedstocks)

Biogas

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

71425.8

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

<Not Applicable>

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

52.07

Unit

kg CO2 per million Btu

Emissions factor source

https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf; Table C-1 to Subpart C of 40 CFR Part 98: Default CO2 Emission Factors and High Heat Values for Various Types of Fuel

Comment

Gas collected and processed from dairy farms.

C8.2d

(C8.2d) 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	3571140	0	3571140	0
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C9. Additional metrics

C9.1

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

Description

Waste

Metric value

4138.01

Metric numerator

Metric Tons of waste generated annually

Metric denominator (intensity metric only)

% change from previous year

2.62

Direction of change

Increased

Please explain

The total amount of waste generated at our facilities is calculated using the number of full-time employees at each facility type and a facility-specific waste factor. This number fluctuates slightly each year, primarily due to changes in our employee headcount and their associated work location. In 2019, our employee headcount rose 3%, resulting in an overall waste generation increase of 2.62%

Description

Waste

Metric value

3038.67

Metric numerator

Metric tons landfilled

Metric denominator (intensity metric only)

% change from previous year

2.52

Direction of change

Increased

Please explain

The amount of landfill-bound waste that is generated from our internal operations at our facilities is calculated using the number of full-time employees at each facility type and a facility-specific waste factor. This number fluctuates slightly each year, primarily due to changes in our employee headcount and their associated work location. In 2019, our employee headcount rose 3%, resulting in an overall increase in waste to landfill of 2.52%

Description

Waste

Metric value

1099.34

Metric numerator

Metric tons recycled

Metric denominator (intensity metric only)

% change from previous year

2.9

Direction of change

Increased

Please explain

The amount of recyclable materials that is generated from our internal operations at our facilities is calculated using the number of full-time employees at each facility type and a facility-specific waste factor. This number fluctuates slightly each year, primarily due to changes in our employee headcount and their associated work location. In 2019, our employee headcount rose 3%, resulting in an overall recycling increase of 2.9%

Description

Waste

Metric value

0

Metric numerator

tons incinerated

Metric denominator (intensity metric only)

% change from previous year

0

Direction of change

No change

Please explain

The amount of internally generated waste that is sent to an incinerator is considered de minimis.

Description

Waste

Metric value

208.32

Metric numerator

pounds of total waste generated annually

Metric denominator (intensity metric only)

per employee

% change from previous year

0.38

Direction of change

Decreased

Please explain

In 2019, our total waste generated rose by 2.62%, however our employee headcount rose 3%. Since the employee headcount rose at a higher rate than our amount of waste generated, on a per employee basis, our average weight of total waste generated decreased .38%.

C10. Verification

C10.1

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

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

WM GHG Emissions Verification Assurance Letter (RY2019)_08-20-2020.pdf

Page/ section reference

Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

WM GHG Emissions Verification Assurance Letter (RY2019)_08-20-2020.pdf

Page/ section reference

Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Business travel

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

WM GHG Emissions Verification Assurance Letter (RY2019)_08-20-2020.pdf

Page/section reference

Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Employee commuting

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

WM GHG Emissions Verification Assurance Letter (RY2019)_08-20-2020.pdf

Page/section reference

Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Upstream leased assets

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

WM GHG Emissions Verification Assurance Letter (RY2019)_08-20-2020.pdf

Page/section reference

Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Downstream leased assets

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

WM GHG Emissions Verification Assurance Letter (RY2019)_08-20-2020.pdf

Page/section reference

Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Purchased goods and services

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

WM GHG Emissions Verification Assurance Letter (RY2019)_08-20-2020.pdf

Page/section reference

Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Capital goods

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

WM GHG Emissions Verification Assurance Letter (RY2019)_08-20-2020.pdf

Page/section reference

Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Investments

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

WM GHG Emissions Verification Assurance Letter (RY2019)_08-20-2020.pdf

Page/section reference

Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

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?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C11. Carbon pricing	Other, please specify	Verification of the West Edmonton Landfill in accordance with the requirements of the Carbon Competitiveness Incentive Regulation, conducted to a reasonable level of assurance, in accordance with ISO 14064-3 and with AEP's Technical Guidance for Greenhouse Gas Verification at Reasonable Level Assurance, Version 1.0 (AEP, 2013) and the Facility Verification Report Template.	The Alberta Carbon Competitiveness Incentive Regulation (CCIR) Program is a mandatory, carbon intensity based GHG reduction program in which WM's West Edmonton Landfill is currently engaged. WM elected to approach compliance aggressively, with the overall strategy of reducing emissions as much as possible. Instead of paying an emissions fee or buying offsets annually, WM installed a landfill gas collection and control system to reduce GHG emissions from the site. This approach has and continues to generate the benefit of excess, saleable allowances (EPCs) because the operation of the landfill gas collection system exceeds the requirements of the associated rule, and EPCs generated are verified and serialized under the Alberta CCIR Program during the reporting period. Verified emissions are scope 1 and verification is completed annually. More on our reporting to CCIR can be found in CDP sections 11.1b, 11.1d, and 11.2a. West Edmonton Landfill 2019 CCIR Compliance Report 2019.pdf ALRF 2018 CARB GHG Report.pdf
C12. Engagement	Emissions reduction activities	Golf Environmental Organization - "GEO Certified" Sustainable Golf Tournament Certification	The 2019 Waste Management Phoenix Open was "GEO Certified®" for the third time – the highest international award for sustainability in golf, awarded by Scotland-based Golf Environment Organization (GEO) Foundation. To become "GEO Certified" the Waste Management Phoenix Open must complete a custom-built program for golf tournaments, including: document and evidence submission, a third-party verification carried out by the Council for Responsible Sport (the official verification body for GEO Certified Tournaments in North America), a thorough review by GEO, and agree to a range of Continual Improvement Points. The 2019 WMPO sustainability program details are available in the annual sustainability report. 2019 WMPO - GEO Certified Tournament Report.pdf
C12. Engagement	Emissions reduction activities	UL Environment - Environmental Claims Validation - Zero Waste to Landfill Operations	For the sixth straight year, UL provided a third-party verification of the Waste Management Phoenix Open's waste diversion. UL evaluated the procurement, on-course operations and the material diversion chain to verify the tournament's efforts, awarding the 2019 WMPO "100% landfill diversion rate with 9% incineration with energy recovery." The Waste Management Phoenix Open maintained its status as the largest verified zero waste event in the world. 2019 WMPO - UL Environmental Claim Validation Summary.pdf

West
Edmonton
Landfill
2019 CCIR
Compliance
Report
2019.pdf
ALRF 2018
CARB
GHG
Report.pdf

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.

Other ETS, please specify (Alberta Carbon Competitiveness Incentive Regulation (CCIR). Alberta CCIR replaced Alberta SGER on January 1, 2018.)

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

Other ETS, please specify

% of Scope 1 emissions covered by the ETS

100

% of Scope 2 emissions covered by the ETS

100

Period start date

January 1 2019

Period end date

December 31 2019

Allowances allocated

36696

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

12627.36

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

2019 allowances yet to be serialized and allocated by the regulatory agency. Calculated and third party verified 36,696. 547.50 MWh of electricity was imported, all was consumed on site. The facility is 100% Waste Management of Canada Corporation.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

The Alberta CCIR Program is a mandatory, carbon intensity based GHG reduction program in which WM's West Edmonton Landfill is currently engaged. WM elected to approach compliance aggressively, with the overall strategy of reducing emissions as much as possible. Instead of paying an emissions fee or buying offsets annually, WM installed a landfill gas collection and control system to reduce GHG emissions from the site. This approach has and continues to generate the benefit of excess, saleable allowances (EPCs) because the operation of the landfill gas collection system exceeds the requirements of the associated rule. As for the carbon tax, the natural gas and propane fuel are used for comfort heating and flare start-up; we continue to evaluate opportunities to employ energy efficiency practices to reduce usage.

C11.2

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

Yes

C11.2a

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

Credit origination or credit purchase

Credit origination

Project type

Landfill gas

Project identification

West Edmonton Landfill (Alberta) LFG Recovery and Destruction. EPCs generated, verified, and serialized under the Alberta Carbon Competitiveness Incentive Regulation (CCIR) Program during the reporting period.

Verified to which standard

Other, please specify (Alberta Carbon Competitiveness Incentive Regulation (CCIR) Program)

Number of credits (metric tonnes CO2e)

31840

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

31840

Credits cancelled

Not relevant

Purpose, e.g. compliance

Compliance

31,840 is from CY2018; CY2019 has not yet been verified but we anticipate 36,696. Purpose is Compliance, with additional voluntary reductions.

Credit origination or credit purchase

Credit origination

Project type

Landfill gas

Project identification

WM originally developed, third party verified, CAR certified and registered 549,968 metric tons CO2e credits (Vintage 2008-2012) at Mahoning with CAR. We sold 98,487 metric tons CO2e Mahoning Credits to third party for retirement/compliance purposes in November 2018. We have 10,000 metric tons CO2e Mahoning offsets remaining in our CAR account. Some credits have been sold to third parties so ultimate use of the offsets is unknown other than retirement. WM retains some credits for internal retirement or third party sale.

Verified to which standard

CAR (The Climate Action Reserve)

Number of credits (metric tonnes CO2e)

98487

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

0

Credits cancelled

Not relevant

Purpose, e.g. compliance

Voluntary Offsetting

Originally, these were Voluntary offsets.

Credit origination or credit purchase

Credit origination

Project type

Landfill gas

Project identification

WM originally developed, third party verified, CAR certified and registered 82,562 metric tons CO2e credits (Vintage 2010-2012) at Northwestern with CAR. We sold 68,790 metric tons CO2e Northwestern Credits to third party for retirement/compliance purposes in November 2018. We have zero Northwestern offsets remaining in our CAR account. Some credits have been sold to third parties so ultimate use of the offsets is unknown. WM retains some credits for internal retirement or third party sale.

Verified to which standard

CAR (The Climate Action Reserve)

Number of credits (metric tonnes CO2e)

82562

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

0

Credits cancelled

Not relevant

Purpose, e.g. compliance

Voluntary Offsetting

Originally, these were Voluntary offsets.

(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
- Drive low-carbon investment
- Stress test investments
- Identify and seize low-carbon opportunities

GHG Scope

- Scope 1
- Scope 2
- Scope 3

Application

We use our internal price on carbon to assess exposure to risk, to inform our responses to inquiries about climate change strategy and greenhouse gas reduction, to protect assets and investments against regulatory risk, to demonstrate management of risk to shareholders and to discover new market, revenue, and investment opportunities. In addition, we seek to use it as a transition tool to drive investment in energy efficiency initiatives and low-carbon products and services.

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

25

Variance of price(s) used

WM's internal price on carbon is differentiated and evolutionary. It varies by region and department from \$5-25 per MTCO_{2e} and develops over time to incorporate changes related to landfill regulations, renewable energy policy, impacts on the recycling industry, and mandates that may impact our customers' waste management decisions.

Type of internal carbon price

Shadow price

Impact & implication

WM's objectives for using an internal price on carbon are to assess the potential impact of related regulations, identify low-carbon opportunities and investments, and stay apprised of stakeholder expectations. Impacts and implications are: (1) Capital expenditure approval to develop a landfill gas to energy project on a WM landfill in Quebec province, subject to Canada's Federal carbon tax legislation; (2) new WM-initiated study to evaluate emerging measurement technologies for determining fugitive landfill methane emissions. Landfills currently must rely on models and other factors to estimate methane emissions. Studies comparing these emission estimates from models to measurements have shown that the existing models can overstate emissions by up to 30 times. Identifying improved methane measurement systems and technologies is key to meeting emission reduction goals; (3) insight into state regulations in OR, WA and CA. In previous years, WM has embarked upon a project to better understand the relationship between GHG emissions and economics across the spectrum of services in our industry. Using U.S. EPA Facts and Figures, we pulled out tons available for diversion for each scenario and then applied U.S. EPA's Waste Reduction Model (WARM) to create an estimate of the associated GHG emissions reduction. Then, we examined the cost associated with each scenario, based on our national cost averages for that scenario. Future iterations included the cost of carbon in the analysis, the overlay of which reveals insight into projects contemplated under existing or potential future state carbon pricing programs. These analyses have and will continue to impact our business decisions. For example, our analysis yields tangible results in shaping our strategic plan for recycling, creating a broader contract negotiation strategy (such as charging for contamination and pricing by carbon value), allocating capital to material recovery facility (MRF) technology to improve recovery rates, and evaluating emerging measurement technologies for determining fugitive landfill methane emissions. These changes are essential to achieving our goals, and we are already seeing results in terms of reducing contamination and GHG reductions as a consequence. Alternative markets also allowed WM to hedge the impacts of the trade wars, thereby supporting financial resilience.

C12. Engagement

C12.1

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

- Yes, our suppliers
- Yes, our customers
- Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Engagement & incentivization (changing supplier behavior)

Details of engagement

Climate change performance is featured in supplier awards scheme

% of suppliers by number

100

% total procurement spend (direct and indirect)

% of supplier-related Scope 3 emissions as reported in C6.5

100

Rationale for the coverage of your engagement

All contracts to suppliers are required to satisfy our ESG requirements. Compliance with ESG factors is a threshold for consideration and must be fully satisfied for eligibility for further consideration of other factors. Such other factors weighted and scored are cost, safety, on time delivery, diversity status, payment terms. These are all part of our scorecard process and will vary by project. Our supply chain management strategy identifies the top priorities as the best combination of: (1) Quality – Supply Chain ensures the service or equipment provided meet our criteria and standards. The evaluation of the deliverable is a team effort between Supply Chain and the Operations. We ensure that any new sustainable products and services meet our current quality levels. (2) Sustainability – We work with suppliers who can help us deliver sustainable products and services, and we engage with suppliers on their sustainability programs and their impact on the environment. We have included sustainability language in all contracts to stress its importance to WM. (3) Delivery – Completing the supply chain loop and ensuring the service and/or material is delivered on time at the agreed to price. (4) Cost – Supply Chain's fundamental responsibility is to provide value to the Company by working with over 44k suppliers to deliver high quality services and equipment. We work closely on the costing of sustainable products and services to maintain our current price point. (5) Service technology – Verify suppliers can efficiently and effectively satisfy our needs. (6) Risk Reduction – We have established a process to be used to identify key risk factors and how we mitigate those factors. We evaluate suppliers on the preceding five factors through a process of analyzing key factors of our suppliers' operations and mitigating any gaps. In addition to those key corporate factors, we also focus on (7) Safety – We have a safety first culture and work closely with the operations team to verify and monitor that our suppliers are performing to the levels of our agreements. (8) Environmental Assessments – As we work with suppliers who can help us deliver sustainable projects, we also engage with suppliers on their sustainable programs and their impact on the environment. We have begun including sustainability language in all contracts to stress its importance to WM.

Impact of engagement, including measures of success

Waste Management has begun including specific sustainability contract language describing the importance of sustainability to Waste Management. In addition to communicating our sustainability goals, we plan to update all of our pre-existing contracts to include sustainability language by 2025. The contract is included below: "Waste Management has positioned itself as the leader in environmental services, developing strategies and implementing actions to reduce our overall impact on the environment. We encourage our suppliers to develop and participate in sustainability programs and engage their supply chain networks to be aware of our joint impact on the environment. We will support supplier's efforts to cut waste, use recycled materials and maximize the use of their resources to help us meet our sustainability goals."

Comment**Type of engagement**

Innovation & collaboration (changing markets)

Details of engagement

Run a campaign to encourage innovation to reduce climate impacts on products and services

% of suppliers by number

17

% total procurement spend (direct and indirect)

4

% of supplier-related Scope 3 emissions as reported in C6.5

5

Rationale for the coverage of your engagement

As the Supply Chain team interacts with suppliers to provide the services our internal customers need, we engage with suppliers on ESG opportunities, specifically carbon footprint reduction opportunities. All ESG factors articulated in our Procurement Policy are considered essential balancing criteria and must be considered in supply selection. There is no formal weighting template. Compliance with the regulator ESG standard is a mandatory threshold, with carbon footprint reduction initiatives considered along with sustainability, cost, risk and other factors. The Waste Management Supply Chain team receives training on the Procurement Policy and Procedures, when the procedures updated and when new members join the team.

Impact of engagement, including measures of success

WM Supply Chain team has established a focused effort on adding sustainability projects into our project management portfolio and set a target to increase sustainability spend by 10% each year through 2038. To be considered a sustainability project, the initiative must have a proven Environmental or Social benefit, such as material reduction, use of recycled content materials, reduce GHG emissions, etc. For 2019, our verified spend on sustainability-based projects was \$263,893,811. With the new tools, including the Sustainable Supplier Partnership Playbook and requirements for each supply chain person to include sustainability targets in their yearly goals, we are confident this number will increase in the future.

Comment**Type of engagement**

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

17

% total procurement spend (direct and indirect)

10

% of supplier-related Scope 3 emissions as reported in C6.5

24

Rationale for the coverage of your engagement

WM's top suppliers are asked to complete a questionnaire annually regarding their climate changes and sustainability engagements.

Impact of engagement, including measures of success

Annual questionnaires allow us to identify potential partnerships for Sustainability Projects. The information collected in the annual questionnaire will be made available to the WM Supply Chain team via the Project Management portfolio. Supply Chain Managers can review their supplier responses and help initiate conversations which support the initiatives around innovation and collaboration. Additionally, the questionnaire provides insight regarding potential risk exposure by identifying shortcomings with supplier sustainability programs. WM uses this information and aligns with existing corrective action plans.

Comment

Type of engagement

Engagement & incentivization (changing supplier behavior)

Details of engagement

Run an engagement campaign to educate suppliers about climate change

% of suppliers by number

20

% total procurement spend (direct and indirect)

40

% of supplier-related Scope 3 emissions as reported in C6.5

31

Rationale for the coverage of your engagement

WM is a member of a number of coalitions that specifically focus on disclosing and reducing GHG emissions by means of recycling— the National Waste and Recycling Association, the Solid Waste Association of North America, The Recycling Partnership, AMERIPEN, the Association of Lighting and Mercury Recyclers, the Association of Plastics Recyclers, the Coalition for American Electronics Recycling, the Food Industry Environmental Council, the Institute of Scrap Recycling Industries, the Sustainable Materials Management Coalition, and the Sustainable Packaging Coalition, among others. WM is further partnered with numerous Environmental, Social and Governance (ESG) organizations including Supplier Partnerships for the Environment, EREF, GreenBiz, Council for Responsible Sport, among other. Approximately 20% of total suppliers (and nearly 50% of WM's top suppliers) engage on recycling, climate change initiatives and ESG issues via these and other coalitions and working groups. We have also worked as part of US EPA's America Recycles Day multi-year, multi-stakeholder effort dedicated improving recycling in the U.S. A list of all national, state and local partnerships is available on WM's ESG Resources Hub: <https://sustainability.wm.com/esg-hub/governance/stakeholder-engagement>.

Impact of engagement, including measures of success

One impact of this engagement effort includes improving the sustainability of our fleet, which requires collaboration by means of such memberships as the National Clean Fleets Partnership. This partnership, which includes both direct and indirect suppliers, operates more than 1 million commercial vehicles nationwide, and is committed to finding ways to improve the fuel efficiency of U.S. trucks. The success of this specific program has been measured in the environmental impact of the initiatives undertaken including averting nearly 369,000 tons of GHGs and conserving more than 152 million gasoline gallon equivalents of traditional fuel in 2015 nationwide. Further impacts of this engagement includes building supplier partnerships to help preserve the environment. In 2018, we asked suppliers to join us in biodiversity efforts by signing a commitment to undergo one pollinator project during the year under the Suppliers Partnership for the Environment's biodiversity work group project. Partners this year in the Supplier Partnership for the Environment — along with Waste Management — included ERA Environmental Management Solutions, Ford Motor Company, General Motors, Heritage Interactive Services, Lear Corporation, Mobile Fluid Recovery, MPS Group, Tetra Tech, and Toyota. See 2018 SR pp 149 (<https://sustainability.wm.com/downloads/report.php>). Waste Management believes that active engagement in business groups and broad based stakeholder groups is one of the best ways to continually challenge ourselves and our suppliers to do better. We strive to expand our supplier relationships via recycling, climate change and ESG focused coalitions and working groups. We disclose our federal, state and local partnerships in our sustainability reporting. See 2018 SR pp. 198-209 (<https://sustainability.wm.com/downloads/report.php>).

Comment

Please note that because of the breadth of our engagement on the topic of GHG emissions reduction and the number of suppliers participating in each association in any given year, these estimates are necessarily approximate.

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

90

% of customer - related Scope 3 emissions as reported in C6.5

0

Portfolio coverage (total or outstanding)

<Not Applicable>

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

WM has developed a nationwide campaign, "Recycle Right", to educate customers and the general public on proper recycling practices to maximize diversion and value. Recycle Right is a national research-based education and outreach program built on community-based social marketing strategies aimed at changing consumer behavior. See <http://recycleoftenrecycleright.com/>. Nearly all of our service contracts include these educational components for recycling and waste diversion. Given the various lines of business we operate (Residential, Commercial) we estimate that our educational campaigns reach approximately 90% of our total customers, however through continued growth in resources and educational outlets we aim to reach 100% of our customer base.

Impact of engagement, including measures of success

Foundational education and communication efforts focus on helping consumers recycle right and improve the quality of their recycling materials. We have seen significant impact from this campaign including reduced recycling contamination rates in communities where the Recycle Right educational materials have been utilized to target consumer recycling behavior. In best practices areas with long term commitments by cities to public education, we are seeing recycling contamination rates at 10% versus the national average of 24%. The additional 14% is equivalent to 500,000 tons, and at \$125/ton that is a possible benefit of \$62M. The success of this program was measured in 2017 as a full point reduction in contamination levels for a savings of \$4.375M. Additionally, we measure traffic to the Recycle Right website and the reach of the Recycle Right campaign via social media and local recycling campaigns. There is new focus on growing the reach of these platforms and developing further metrics to track growth in traffic and customer retention rates.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Waste Management has been the title sponsor of Phoenix Open (WMPO) since 2010 which is owned and operated by The Thunderbirds. From the very beginning of the sponsorship, WM made a conscious decision to embed sustainability into the tournament despite having limited operational control. Key to success is engaging the value chain partners, including The Thunderbirds, the PGA Tour, tournament vendors and the local community, to support the program. The WMPO is not only aligned with environmental sustainability, but has a large focus on community, through public awareness and education, charitable giving, safety and overall experience; and economics, through the tournament's impact on the local economy.

In 2010, at the very first WMPO, the goal was simply to make the event zero waste, despite the more than 600,000 attendees over the course of the week. Since achieving that goal in 2012, the program evolved to include goals of carbon neutrality and water restoration. The success of these engagements is measured through year over year tracking against our goals and share these achievements in our sustainability report which highlights the tournaments impact on resources such as energy, water and waste we generate.

Achieving our ambitious goals does require engaging every level of the tournament value chain, from pre-event construction teams to on course food and beverage vendors. WM engages with every WMPO vendor and stakeholder months before they come on course via virtual meetings and e-mail correspondence. Once on course in the weeks or months leading up to the event, a WM representative checks in with every partner, from the beverage distributors to the broadcast team televising the event and every food service vendor. WM's Sustainability Service team also provides in-person sustainability training to thousands of staff and volunteers in the days leading up to and through the event.

Specifically, in 2019, we tracked all event emissions, not only from WM operations and travel, but from all tournament stakeholders including golf carts, shuttle buses, lights, cooking, refrigeration, and travel (employees, players, volunteers, vendor staff and deliveries). Emissions totalled 732 MtCO2e and breakdown as follows:

- Vendor travel: 29.4%
- Volunteer travel: 22.2%
- Player travel: 9.7%
- Event management travel: 6.7%
- WM employee travel: 1.9%
- Electricity: 0%
- Operations: 30.1%
- CNG: 8.5%
- Portable toilet service – 1.7 MtCO2e
- Waste hauling service – 17 MtCO2e
- Gasoline: 12%
- Sponsor cars – 16 MtCO2e
- Golf carts – 11 MtCO2e
- Biodiesel: 29%
- Shuttle buses – 7.4 MtCO2e
- Generators/ light towers – 44 MtCO2e
- Refrigerated trailers – 12 MtCOe
- Propane: 27%
- Heat/cooking – 59 MtCO2e
- Diesel: 23.5%
- Shuttle buses – 24 MtCO2e
- Waste/ portable toilet service – 27 MtCO2e
- Golf carts – 0.7 MtCO2e

In total, WM offset 740 MtCO2e in 2019 through Envirofit International's clean cook-stove program with important economic, social and environmental impacts, supporting ten of the UN Sustainable Development Goals. Additionally, we continue working to reduce operational emissions by purchasing 100% renewable electricity from Arizona Public Service, powering waste compactors through solar panels, and using biodiesel in generators and over one-third of attendee shuttle buses. We leverage these results to encourage stakeholders to further innovate and push sustainability at the WMPO, thereby cementing the nickname – The Greenest Show on Grass.

For more information on WMPO material, water, energy and greenhouse gas impacts, please see the 2019 WMPO Sustainability Report (<https://www.wm.com/thinkgreen/wmpo-2019/pdf/WMPO-Sustainability-Report.pdf>).

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
- Other

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
Clean energy generation	Support	We continue to seek Congressional and regulatory support for tax incentives for renewable energy production based upon energy value and GHG reductions. Active coordination with other companies and trade associations to advocate before Congress and federal agencies on incentivizing the production of renewable energy, fuels and fueling infrastructure (e.g., wind, solar, biomass, low-carbon fuels).	Include in tax and/or energy legislation incentives for renewable energy and low-carbon fuel options.
Clean energy generation	Support	State renewable energy incentives are essential means to address climate change by encouraging renewable, low carbon substitutes. Active coordination with other companies and trade associations focused on incentivizing the production of renewable energy (e.g., wind, solar, biomass); direct lobbying of US Congress and advocacy before federal agencies.	State renewable energy incentives are essential means to address climate change by encouraging renewable, low carbon substitutes. Active coordination with other companies and trade associations to lobby state legislatures on incentivizing the production of renewable energy (e.g., wind, solar, biomass) and transportation fuels, refueling and renewable fuel vehicles. Each state should provide renewable energy incentives as consistent with state environmental priorities and finances.
Mandatory carbon reporting	Support	Support EPA in using best available data and protocols to establish accurate GHG inventories for industry sectors. Actively coordinating with the public and private landfill sector, landfill gas-to-energy project and equipment owners, academic and industry researchers, and US EPA. WM has been working with EPA since 2012 on improving landfill methane emissions measurements processes, including emission reductions from landfill cover and landfill gas collection. EPA's latest reporting methodology, finalized in 2016, reflects enhancements for precise, site-specific methods that WM suggested as part of its advocacy with the agency. WM assisted EPA in enhancing the accuracy of its waste sector emissions in the 2017 and 2018 nationwide US GHG Inventory. With academic and industry researchers, WM continues to assist EPA in accurately characterizing waste disposed in landfills and the associated levels of methane generation.	Site-specific data are more precise than sector-wide default assumptions. Successful advocacy to maintain existing inventory reporting was undertaken in 2017-2018. Provided expert review and advice on EPA's draft U.S. Inventory in 2017 and 2018 as requested by the Agency.
Other, please specify (Clean transportation fuel)	Support	WM has directly lobbied the U.S. Congress, and has worked closely with senior Administration officials, in support of incentivizing the production of renewable natural gas as cellulosic biofuel under various federal, regional and state programs. WM has also provided technical support and data to EPA, OMB, and the White House for implementation of the Renewable Fuel Standard program. WM has developed four renewable fuels projects that produce cellulosic biofuel from landfill gas and is used in our collection fleet. We contract with other landfill owners and dairy farms to purchase additional renewable fuel to use in our vehicles. Use of renewable natural gas results in 90% reduction of CO2 emissions as compared to use of diesel fuel it replaces.	EPA should continue to implement the Renewable Fuel Standard program consistent with Congressional intent: to incentivize the production and use of cellulosic biofuels and other renewable alternatives to many fossil-based transportation fuels
Other, please specify (Biogenic CO2 Emission)	Support	Other: Regulatory treatment of biogenic CO2 Emissions from waste-derived fuels under the federal Clean Air Act: Beginning in 2011, WM has worked with U.S. EPA, the municipal and private waste sector, and academia to develop a framework for accounting and treating biogenic emissions of CO2 from collection and combustion of landfill gas and combustion of fuels derived from biogenic components of MSW. WM commented on EPA's draft Biogenic Accounting Framework and on EPA's Science Advisory Board (SAB) recommendations; we further commented on treatment of biogenic CO2 under various Clean Air Act regulations associated with GHG emissions reductions.	U.S. EPA should finalize its Biogenic Accounting Framework for combustion of landfill gas and waste-derived fuels to recognize the carbon neutrality of those CO2 emissions as recommended by EPA in its draft framework and as recommended by EPA's SAB in its review of various iterations of the framework. EPA regulations should reflect the scientific determinations made by the Agency and its SAB.
Other, please specify (Phase 2 heavy-Duty Truck GHG Rule)	Support	Other: Phase 2 heavy-Duty Truck GHG Rule -- WM engaged with EPA and DOT providing technical information on our fleet and its operations and providing recommendations on ways to promote continued conversion of vehicles to renewable natural gas.	Although this rule is on hold, WM has supported it. If finalized, it would increase fuel economy standards and reduce vehicle emissions standards WM supports implementation of the heavy-duty truck standards as compatible with our transition to a natural gas fleet operating on Renewable Natural Gas.

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

Solid Waste Management Association of North America (SWANA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Supports renewable energy development, supports accurate accounting of GHG emissions from the solid waste sector, supports recycling education efforts.

How have you influenced, or are you attempting to influence their position?

Yes, as members of the SWANA Board we advocate for SWANA involvement in supporting renewable energy and fuel standards that support low-carbon energy development like our landfill gas to energy facilities. In 2019, we continued to encourage SWANA to participate in advocacy to improve the accuracy of GHG emissions accounting under U.S. EPA rules and for Congress to support the EPA resources to maintain the GHG inventory and the GHG assessment tools on which the public and private waste sector, states and local governments and NGOs depend. We share common stakeholders and have worked to align recycling education messaging for municipal customers for the past several years.

Trade association

Environmental Industries Association (EIA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Supports renewable energy deployment, precision in GHG accounting

How have you influenced, or are you attempting to influence their position?

Yes, as Board members we participate in direct lobbying in Congress for extension of the renewable energy production tax credits for our landfill gas to energy facilities, and for continuing the Renewable Fuels Standard program. The association also works with WM and EPA to enhance GHG accounting.

Trade association

Board, American Biogas Council (ABC)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Supports renewable energy deployment

How have you influenced, or are you attempting to influence their position?

Yes, as Board members we advocate before Congress and federal agencies for policy and regulations that encourage development of landfill gas to energy and fuels projects and anaerobic digesters. In December 2019, for example, we worked with ABC to submit comments on a proposed rule that has the potential to disincentivize landfill gas-to-electricity projects in certain U.S. jurisdictions.

Trade association

Board, Energy Security Leadership Council

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Supports precision in GHG accounting

How have you influenced, or are you attempting to influence their position?

Yes, as Board members, we lobby Congress to enhance domestic security by encouraging through tax incentives use of domestic natural gas and lobby the Administration to improve mileage performance by heavy-duty trucks, reducing GHGs associated with climate change concerns.

Trade association

Board, National Association of Manufacturers (NAM)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Supports fossil fuel and renewable energy development equally

How have you influenced, or are you attempting to influence their position?

Yes, as Board members, we press to assure NAM advocacy includes support for renewable energy tax incentives, including those for our landfill gas to energy facilities. We have seen progress in their support for renewable energy in an "all of the above" strategy.

Trade association

Renewable Natural Gas (RNG) Coalition

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Supports renewable natural gas for electricity and transportation fuel

How have you influenced, or are you attempting to influence their position?

Yes, as part of our Board membership we advocate in support of EPA's Renewable Fuel Standard Program and for federal and state incentives to produce and use renewable transportation fuel and renewable electricity. For example, we worked closely with the RNG Coalition throughout 2019 to engage in dialogue with EPA and the Executive Office of the President to help ensure the stability of the market for renewable natural gas in 2020 and in years thereafter.

Trade association

Natural Gas Vehicles of America (NGVAmerica) Coalition

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Supports renewable natural gas for transportation fuel.

How have you influenced, or are you attempting to influence their position?

Yes, as part of our membership we advocate for federal and state incentives to promote growth in use of natural gas and renewable natural gas fueled vehicles, and incentives to promote growth of fueling infrastructure for natural gas vehicles. For example, we collaborated with NGVAmerica in November 2019 to submit comments on the framework of the proposed Transportation & Climate Initiative program—a regional cap-and-invest program to drive down carbon emissions in the transportation sector.

Trade association

Board, American Institute for Packaging and the Environment (Ameripen)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Supports

How have you influenced, or are you attempting to influence their position?

Yes, as a Board member of Ameripen, we are working with state regulators to promote concepts of GHG lifecycle analysis in decision making and development of materials management goals.

Trade association

National Waste & Recycling Association

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Supports renewable energy development and the accurate accounting of GHG emissions from the solid waste sector.

How have you influenced, or are you attempting to influence their position?

WM has worked closely with NWRA on advocacy efforts involving the federal Renewable Fuel Standard, which incentivizes the production of renewable natural gas from landfills as a cellulosic biofuel for use in our fleet and other vehicles, and outreach to EPA to improve the accuracy of GHG emissions accounting from our sector. For example, WM worked closely with NWRA in November 2019 to submit comments on EPA's annual Inventory of U.S. Greenhouse Gas Emissions and Sinks, encouraging the agency to revisit certain outdated assumptions used in modelling landfill GHG emissions.

C12.3d

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

Yes

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

WM has been an active leader in U.S. EPA's America Recycles Day (ARD) efforts, supporting the concepts of Sustainable Materials Management and the importance of driving demand for recyclables as critical to recycling efforts in the U.S. WM is a participant on the steering committee, working on EPA's third annual ARD event, including development of measurement systems for the US recycling system, and creation of market demand for recyclables.

U.S. EPA has established a Sustainable Materials Management framework that works to reduce climate change impacts by reducing waste, increasing the volume and environmental benefits of recycling, and increasing the use of waste diversion technologies that, under life cycle evaluation, provide environmental benefits. WM sponsored three terms of the Sustainable Materials Management Coalition, a stakeholder group including regulators, representatives of local and state officials, environmentalists, community advocates, academia and business and industry, convened to make recommendations on sustainable materials management, life cycle thinking and improving the performance and understanding of recycling. See <https://www.michaeldbaker.com/portfolio-items/guidance-on-taking-a-life-cycle-perspective-to-sustainability/>. WM uses this information to work with companies and state agencies to encourage a shift to Sustainable Management policies for their goal setting. WM has supported these efforts in CA, IA, MD and WA and with numerous corporations.

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?

WM has a multi-disciplinary team with members from the Legal, Government Affairs, Communications, Environmental Management, Operations, and Sustainability Services departments, which monitors emerging sustainability and greenhouse gas (GHG) legislation, regulatory programs, and other events and provides feedback internally to our Senior Leadership Team, our Board of Directors, and our business units, as well as externally to legislators and regulators, on policy elements that may impact the company and the environmental services industry. The same cross-functional team, which spans the United States and Canada, ensures that engagements and activities that may influence policy, directly or indirectly, are properly monitored and vetted for consistency with the company's overall climate change strategies throughout North America, particularly with regard to reducing fleet emissions, enhancing recycling, and deploying renewable energy infrastructure. An internal Public Policy Group oversees federal and state legislative and regulatory responses to enhance the consistency of WM advocacy across multiple forums. This group reports to the EVP and Chief Legal Officer. Individual responsibility for policy oversight for issues with climate change implications (e.g., clean air regulations, natural gas vehicle incentives, recycling policy) is identified on the WM intranet site to enhance consistency and coordination.

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

WM 10K 2019.pdf

Page/Section reference

In particular, Item 1A Risk Factors pg. 15

Content elements

Governance

Strategy

Risks & opportunities

Other metrics

Other, please specify (Risks and impacts of climate change)

Comment

WM 2019 10k also available online: <http://investors.wm.com/node/23841/html>

Publication

In voluntary sustainability report

Status

Underway – previous year attached

Attach the document

WM_2018_SR.pdf

Page/Section reference

WM 2018 Sustainability Report, pp 7-12, 22-68, 77-89, Governance140-145, 152-154, 157, 160-177.

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

Comment

WM has launched an online sustainability website which hosts the most up-to-date information available: <https://sustainability.wm.com/> The following pages specifically present WM's response to climate change and GHG emissions performance for the reporting year: Corporate Governance: <https://sustainability.wm.com/esg-hub/governance/corporate-governance> Environmental Policy https://sustainability.wm.com/downloads/WM_Environmental_Policy.pdf Environmental Management: <https://sustainability.wm.com/esg-hub/environmental/environmental-management> Carbon Methodology: <https://sustainability.wm.com/esg-hub/environmental/carbon-methodology> Greenhouse Gas Inventory Verification Assurance Letter: https://sustainability.wm.com/downloads/WM_2020_Verification_Assurance_Letter.pdf WM's 2020 Sustainability Report will be available online in September 2020: <https://sustainability.wm.com/downloads/report.php>

Publication

In voluntary sustainability report

Status

Complete

Attach the document

Page/Section reference

WM SASB index is available online <https://sustainability.wm.com/sasb/>

Content elements

Emissions figures

Emission targets

Other metrics

Comment

Updated SASB Index is available online: <https://sustainability.wm.com/sasb/>

C15. 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.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	President and CEO	Chief Executive Officer (CEO)

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

Waste Management is a waste service provider. As such, we can allocate a significant portion of our GHG emissions to the waste materials we handle.

In order to complete the Supply Chain questionnaire, we utilize the U.S. Environmental Protection Agency's Waste Reduction Model (WARM) to calculate the emissions created by the waste generated from specific customers. We use WARM to calculate GHG emissions for baseline and alternative waste management practices. Those practices include source reduction, recycling, combustion, composting, and landfilling. WARM calculates emissions in metric tons of carbon dioxide equivalent (MTCO2e) and metric tons of carbon equivalent (MTCE) across a wide range of material types commonly found in municipal solid waste (MSW).

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	15455000000

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

No

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

Requesting member

AT&T Inc.

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

28826.12

Uncertainty (±%)

25

Major sources of emissions

Waste generated by customer as a result of their operations.

Verified

No

Allocation method

Other, please specify (EPA WARM model based on customer specific tonnage reports)

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

WM does not provide waste hauling services specific to customer's location but instead provides transportation as part of general customer routing, which changes based upon a changing customer base and local logistical variables. Thus, quantifying emissions from our hauling transportation to service an individual customer is not possible at this time. However, we can estimate total emissions from waste disposal and avoided emissions as a result of diversion processes using the EPA WARM model and customer-specific tonnage. We collect annual waste stream tonnage reports from facilities across the country for this calculation. In addition, please note that many of our

larger customers generate diverse, complicated waste streams (universal waste, medical waste, fuel waste, etc.) that are difficult to include in this calculation.

Requesting member

Target Corporation

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO₂e

79872.93

Uncertainty (±%)

25

Major sources of emissions

Waste generated by customer as a result of their operations.

Verified

No

Allocation method

Other, please specify (EPA WARM model based on customer specific tonnage reports)

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

WM does not provide waste hauling services specific to customer's location but instead provides transportation as part of general customer routing, which changes based upon a changing customer base and local logistical variables. Thus, quantifying emissions from our hauling transportation to service an individual customer is not possible at this time. However, we can estimate total emissions from waste disposal and avoided emissions as a result of diversion processes using the EPA WARM model and customer-specific tonnage. We collect annual waste stream tonnage reports from facilities across the country for this calculation. In addition, please note that many of our larger customers generate diverse, complicated waste streams (universal waste, medical waste, fuel waste, etc.) that are difficult to include in this calculation.

Requesting member

Caesars Entertainment

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO₂e

6686.73

Uncertainty (±%)

25

Major sources of emissions

Waste generated by customer as a result of their operations.

Verified

No

Allocation method

Other, please specify (EPA WARM model based on customer specific tonnage reports)

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

WM does not provide waste hauling services specific to customer's location but instead provides transportation as part of general customer routing, which changes based upon a changing customer base and local logistical variables. Thus, quantifying emissions from our hauling transportation to service an individual customer is not possible at this time. However, we can estimate total emissions from waste disposal and avoided emissions as a result of diversion processes using the EPA WARM model and customer-specific tonnage. We collect annual waste stream tonnage reports from facilities across the country for this calculation. In addition, please note that many of our larger customers generate diverse, complicated waste streams (universal waste, medical waste, fuel waste, etc.) that are difficult to include in this calculation.

Requesting member

Fiat Chrysler Automobiles NV

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO₂e

4303.92

Uncertainty (±%)

25

Major sources of emissions

Waste generated by customer as a result of their operations.

Verified

No

Allocation method

Other, please specify (EPA WARM model based on customer specific tonnage reports)

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

WM does not provide waste hauling services specific to customer's location but instead provides transportation as part of general customer routing, which changes based upon a changing customer base and local logistical variables. Thus, quantifying emissions from our hauling transportation to service an individual customer is not possible at this time. However, we can estimate total emissions from waste disposal and avoided emissions as a result of diversion processes using the EPA WARM model and customer-specific tonnage. We collect annual waste stream tonnage reports from facilities across the country for this calculation. In addition, please note that many of our larger customers generate diverse, complicated waste streams (universal waste, medical waste, fuel waste, etc.) that are difficult to include in this calculation.

Requesting member

Walmart, Inc.

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

43913.21

Uncertainty (±%)

25

Major sources of emissions

Waste generated by customer as a result of their operations.

Verified

No

Allocation method

Other, please specify (EPA WARM model based on customer specific tonnage reports)

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

WM does not provide waste hauling services specific to customer's location but instead provides transportation as part of general customer routing, which changes based upon a changing customer base and local logistical variables. Thus, quantifying emissions from our hauling transportation to service an individual customer is not possible at this time. However, we can estimate total emissions from waste disposal and avoided emissions as a result of diversion processes using the EPA WARM model and customer-specific tonnage. We collect annual waste stream tonnage reports from facilities across the country for this calculation. In addition, please note that many of our larger customers generate diverse, complicated waste streams (universal waste, medical waste, fuel waste, etc.) that are difficult to include in this calculation.

Requesting member

Wells Fargo & Company

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

4333.43

Uncertainty (±%)

25

Major sources of emissions

Waste generated by customer as a result of their operations.

Verified

No

Allocation method

Other, please specify (EPA WARM model based on customer specific tonnage reports)

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

WM does not provide waste hauling services specific to customer's location but instead provides transportation as part of general customer routing, which changes based upon a changing customer base and local logistical variables. Thus, quantifying emissions from our hauling transportation to service an individual customer is not possible at this time. However, we can estimate total emissions from waste disposal and avoided emissions as a result of diversion processes using the EPA WARM model and customer-specific tonnage. We collect annual waste stream tonnage reports from facilities across the country for this calculation. In addition, please note that many of our larger customers generate diverse, complicated waste streams (universal waste, medical waste, fuel waste, etc.) that are difficult to include in this calculation.

Requesting member

California Department of General Services (DGS)

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

657.94

Uncertainty (±%)

25

Major sources of emissions

Waste generated by customer as a result of their operations.

Verified

No

Allocation method

Other, please specify (EPA WARM model based on customer specific tonnage reports)

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

WM does not provide waste hauling services specific to customer's location but instead provides transportation as part of general customer routing, which changes based upon a changing customer base and local logistical variables. Thus, quantifying emissions from our hauling transportation to service an individual customer is not possible at this time. However, we can estimate total emissions from waste disposal and avoided emissions as a result of diversion processes using the EPA WARM model and customer-specific tonnage. We collect annual waste stream tonnage reports from facilities across the country for this calculation. In addition, please note that many of our larger customers generate diverse, complicated waste streams (universal waste, medical waste, fuel waste, etc.) that are difficult to include in this calculation.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

US EPA's Waste Reduction Model (<https://www.epa.gov/warm>).

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges
Diversity of product lines makes accurately accounting for each product/product line cost ineffective	WM's services are particularly ill suited to emissions allocation among different customers. Materials collection routes are designed to minimize fuel use and the resulting emissions, not to segregate the materials of different customers. For the same reason, our materials processing, conversion, recycling and disposal processes are not "batch", but rather continuous processes, precluding segregation of material loads by a customer at our facilities without compromising efficiency and increasing emissions. Even if individual customers maintained records of the amount and type of materials they supplied to WM at particular locations, the full value of WM's services would not likely be captured, as some materials originally slated for a disposal technology are redirected by WM, after acceptance, to a recycling or conversion technology if they are suitable for such use. WM focuses on customer satisfaction and on deriving as much value as possible from the materials supplied to us by our customers. We believe that emissions accounting procedures should reflect the benefit of our services and focus on specific product lines will develop in accordance with customer demand.
Managing the different emission factors of diverse and numerous geographies makes calculating total footprint difficult	WM is a supplier of services to our customers including waste management, environmental management, logistics and security services. WM is also a supplier of products, producing renewable energy in the form of electricity provided to the grid or the provision of renewable landfill gas and other renewable fuels directly to our customers. In regard to waste management services, WM focuses on providing services that recover value from customers' residual materials in the form of energy or material reuse, both of which reduce GHG emissions on a life-cycle basis. Some of WM's services/products are GHG emitters, while others are GHG sinks. Particularly, in regard to those activities that are GHG sinks, protocols to calculate and apportion the GHG benefits to all parties involved in life-cycle of that activity are not yet available. In addition, the services and product package provided to each WM customer is unique, and frequently complex, especially for customers for whom WM serves multiple facilities and/or for whom WM provides multiple services/products. The number of variables associated with calculating the GHG emissions from WM's services for a particular site or company is so great, each calculation is itself a labor-intensive, comprehensive carbon footprint in its own right. Even if individual customers maintained records of the amount and type of materials they supplied to WM at particular locations, the full value of WM's services would not likely be captured, as some materials originally slated for a disposal technology are redirected by WM, after acceptance, to a recycling or conversion technology if they are suitable for such use. When customers have a need for carbon footprint services, WM works with the customer to devise unique, detail- and cost-appropriate, solutions. While this customer-specific approach appears to work today on a case-to-case basis, we continuously engage with our customers to develop different approaches to efficiently manage emissions in diverse geographies with varying emissions factors.

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

WM is currently using the WARM model to calculate the GHG emissions reductions achieved by recycling according to the commodities recycled.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

Requesting member

AT&T Inc.

Group type of project

Relationship sustainability assessment

Type of project

Aligning goals to feed into customers targets and ambitions

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

0-1 year

Estimated lifetime CO2e savings

59283.1

Estimated payback

Other, please specify (Payback varies based on specific program, facility location, and fluctuations in recycling commodity prices.)

Details of proposal

WM has worked with companies to evaluate waste materials to determine generation including through the organizations supply chain. This analysis has allowed WM to provide insight and recommendations on a Supply Chain Management program that would reduce overall waste generation, optimize available diversion programs and in turn allow for further optimization of transportation efforts and reduction of associate emissions. Further, WM has rolled out innovative waste collection and monitoring solutions to companies willing to explore and develop a more efficient waste management system. The solutions proved effective and enabled the customers to reduce their GHG emissions and improve their financial capacity for being efficient in the way they manage their waste stream. We invite our customers to engage WM's consulting services to work with them to develop innovative solutions to meet GHG emissions reduction goals and improve overall operating standards.

Requesting member

Target Corporation

Group type of project

Relationship sustainability assessment

Type of project

Assessing products or services life cycle footprint to identify efficiencies

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

0-1 year

Estimated lifetime CO2e savings

164237.01

Estimated payback

Other, please specify (Payback varies based on specific program, facility location, and fluctuations in recycling commodity prices.)

Details of proposal

WM has worked with companies to evaluate waste materials to determine generation including through the organizations supply chain. This analysis has allowed WM to provide insight and recommendations on a Supply Chain Management program that would reduce overall waste generation, optimize available diversion programs and in turn allow for further optimization of transportation efforts and reduction of associate emissions. Further, WM has rolled out innovative waste collection and monitoring solutions to companies willing to explore and develop a more efficient waste management system. The solutions proved effective and enabled the customers to reduce their GHG emissions and improve their financial capacity for being efficient in the way they manage their waste stream. We invite our customers to engage WM's consulting services to work with them to develop innovative solutions to meet GHG emissions reduction goals and improve overall operating standards.

Requesting member

Caesars Entertainment

Group type of project

Relationship sustainability assessment

Type of project

Assessing products or services life cycle footprint to identify efficiencies

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

0-1 year

Estimated lifetime CO2e savings

16538.53

Estimated payback

Other, please specify (Payback varies based on specific program, facility location, and fluctuations in recycling commodity prices.)

Details of proposal

WM has worked with companies to evaluate waste materials to determine generation including through the organizations supply chain. This analysis has allowed WM to provide insight and recommendations on a Supply Chain Management program that would reduce overall waste generation, optimize available diversion programs and in turn allow for further optimization of transportation efforts and reduction of associate emissions. Further, WM has rolled out innovative waste collection and monitoring solutions to companies willing to explore and develop a more efficient waste management system. The solutions proved effective and enabled the customers to reduce their GHG emissions and improve their financial capacity for being efficient in the way they manage their waste stream. We invite our customers to engage WM's consulting

services to work with them to develop innovative solutions to meet GHG emissions reduction goals and improve overall operating standards.

Requesting member

Fiat Chrysler Automobiles NV

Group type of project

Relationship sustainability assessment

Type of project

Assessing products or services life cycle footprint to identify efficiencies

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

0-1 year

Estimated lifetime CO2e savings

62886.98

Estimated payback

Other, please specify (Payback varies based on specific program, facility location, and fluctuations in recycling commodity prices.)

Details of proposal

WM has worked with companies to evaluate waste materials to determine generation including through the organizations supply chain. This analysis has allowed WM to provide insight and recommendations on a Supply Chain Management program that would reduce overall waste generation, optimize available diversion programs and in turn allow for further optimization of transportation efforts and reduction of associate emissions. Further, WM has rolled out innovative waste collection and monitoring solutions to companies willing to explore and develop a more efficient waste management system. The solutions proved effective and enabled the customers to reduce their GHG emissions and improve their financial capacity for being efficient in the way they manage their waste stream. We invite our customers to engage WM's consulting services to work with them to develop innovative solutions to meet GHG emissions reduction goals and improve overall operating standards.

Requesting member

Walmart, Inc.

Group type of project

Relationship sustainability assessment

Type of project

Assessing products or services life cycle footprint to identify efficiencies

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

0-1 year

Estimated lifetime CO2e savings

3323700.49

Estimated payback

Other, please specify (Payback varies based on specific program, facility location, and fluctuations in recycling commodity prices.)

Details of proposal

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Requesting member

Wells Fargo & Company

Group type of project

Relationship sustainability assessment

Type of project

Assessing products or services life cycle footprint to identify efficiencies

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

0-1 year

Estimated lifetime CO2e savings

7594.37

Estimated payback

Other, please specify (Payback varies based on specific program, facility location, and fluctuations in recycling commodity prices.)

Details of proposal

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Requesting member

California Department of General Services (DGS)

Group type of project

Relationship sustainability assessment

Type of project

Assessing products or services life cycle footprint to identify efficiencies

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

0-1 year

Estimated lifetime CO2e savings

1017.29

Estimated payback

Other, please specify (Payback varies based on specific program, facility location, and fluctuations in recycling commodity prices.)

Details of proposal

WM has worked with companies to evaluate waste materials to determine generation including through the organizations supply chain. This analysis has allowed WM to provide insight and recommendations on a Supply Chain Management program that would reduce overall waste generation, optimize available diversion programs and in turn allow for further optimization of transportation efforts and reduction of associate emissions. Further, WM has rolled out innovative waste collection and monitoring solutions to companies willing to explore and develop a more efficient waste management system. The solutions proved effective and enabled the customers to reduce their GHG emissions and improve their financial capacity for being efficient in the way they manage their waste stream. We invite our customers to engage WM's consulting services to work with them to develop innovative solutions to meet GHG emissions reduction goals and improve overall operating standards.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

Yes

SC2.2a

(SC2.2a) Specify the requesting member(s) that have driven organizational-level emissions reduction initiatives, and provide information on the initiatives.**Requesting member**

AT&T Inc.

Initiative ID

2018-ID3

Group type of project

Relationship sustainability assessment

Type of project

Aligning goals to feed into customers targets and ambitions

Description of the reduction initiative

In 2019, WM diverted 14,137.76 tons of AT&T's waste from landfill to recycling thereby reducing lifecycle GHG emissions by 43,127.82 MTCO2e. This diversion was achieved by working closely with AT&T to increase the number of stores participating in comprehensive recycling programs. WM Sustainability Services has also assisted in zero waste initiatives at AT&T's HQ in Dallas. With the introduction of the additional waste and recycling initiatives, WM applied right-sizing methodology, Load Max initiatives, Service Delivery Optimization and Regulatory Recycling reviews to appropriate WM serviced AT&T locations, optimizing the collection and transportation of all waste streams. These efforts eliminate paper route sheets for drivers, improve safety, improved vehicular preventive maintenance programs and augment the CO2 emissions reductions realized with our conversion to a natural gas fleet.

Emissions reduction for the reporting year in metric tons of CO2e

43127.82

Did you identify this opportunity as part of the CDP supply chain Action Exchange?

No

Would you be happy for CDP supply chain members to highlight this work in their external communication?

Yes

Requesting member

Caesars Entertainment

Initiative ID

2018-ID3

Group type of project

Relationship sustainability assessment

Type of project

Aligning goals to feed into customers targets and ambitions

Description of the reduction initiative

In 2019, WM diverted 949.27 tons of Caesars' waste from landfill to recycling thereby reducing lifecycle GHG emissions by 2,789.09 MTCO2e. WM can provide on or off-

site waste audits aimed at identifying specific opportunities to improve waste diversion efforts. Additionally, WM offers tracker services for various materials including light bulbs and ballast which ensure proper material handling and diversion. To further these initiatives, we invite Caesars to engage WM's consulting services to work with them to develop innovative solutions to meet GHG emissions reduction goals and improve Caesars' bottom line.

Emissions reduction for the reporting year in metric tons of CO2e

2789.09

Did you identify this opportunity as part of the CDP supply chain Action Exchange?

No

Would you be happy for CDP supply chain members to highlight this work in their external communication?

Yes

Requesting member

California Department of General Services (DGS)

Initiative ID

2018-ID3

Group type of project

Relationship sustainability assessment

Type of project

Aligning goals to feed into customers targets and ambitions

Description of the reduction initiative

In 2019, WM diverted 417.65 tons of California DGS's waste from landfill to recycling thereby reducing lifecycle GHG emissions by 35.06 MTCO2e. This diversion was achieved by working closely with California DGS to improve comprehensive recycling programs. WM continues to work closely with Wells Fargo to grow these initiatives and provide the most sustainable solutions and latest technology options. To further these initiatives, we invite Ca DGS to engage WM's consulting services to work with them to develop innovative solutions to meet GHG emissions reduction goals and improve Ca DGS's bottom line.

Emissions reduction for the reporting year in metric tons of CO2e

35.06

Did you identify this opportunity as part of the CDP supply chain Action Exchange?

No

Would you be happy for CDP supply chain members to highlight this work in their external communication?

Yes

Requesting member

Fiat Chrysler Automobiles NV

Initiative ID

2018-ID3

Group type of project

Relationship sustainability assessment

Type of project

Aligning goals to feed into customers targets and ambitions

Description of the reduction initiative

In 2019, WM diverted 23,605.49 tons of Fiat Chrysler Automotive's waste from landfill to recycling thereby reducing lifecycle GHG emissions by 69,582.07 MTCO2e. This diversion was achieved by working closely with Fiat to improve tracking and diversion of materials including cardboard, pallets, drums and other materials, through recycling, reduction and reuse. WM applied container right-sizing and hauling optimization strategies to the collection and transportation of all waste streams. WM continues to work closely with Fiat to grow these initiatives and provide the most sustainable solutions and latest technology options.

Emissions reduction for the reporting year in metric tons of CO2e

69582.07

Did you identify this opportunity as part of the CDP supply chain Action Exchange?

No

Would you be happy for CDP supply chain members to highlight this work in their external communication?

Yes

Requesting member

Target Corporation

Initiative ID

2018-ID3

Group type of project

Relationship sustainability assessment

Type of project

Aligning goals to feed into customers targets and ambitions

Description of the reduction initiative

In 2019, WM diverted 32,474.75 tons of Target's waste from landfill to recycling thereby reducing lifecycle GHG emissions by 158,887.65 MTCO2e. Additionally, WM recycled 4,466 tons of used car seats that were brought back to Target during the 2019 car seat trade-in event. WM continues to work closely with Target to grow the comprehensive recycling programs and provide the most sustainable solutions and latest technology options including right-sizing containers, Load Max initiatives, and deploying container sensors as appropriate.

Emissions reduction for the reporting year in metric tons of CO2e

158887.65

Did you identify this opportunity as part of the CDP supply chain Action Exchange?

No

Would you be happy for CDP supply chain members to highlight this work in their external communication?

Yes

Requesting member

Walmart, Inc.

Initiative ID

2018-ID3

Group type of project

Relationship sustainability assessment

Type of project

Aligning goals to feed into customers targets and ambitions

Description of the reduction initiative

In 2019, WM diverted 1,287,635 tons of Walmart's waste from landfill to recycling thereby reducing lifecycle GHG emissions by 4,136,056.86 MTCO₂e. This diversion was achieved by working closely with Walmart to increase the number of facilities participating in comprehensive recycling programs. WM applied haul optimization and deployed container sensors to appropriate WM serviced locations, optimizing the collection and transportation of all waste streams. Additionally, WM has onsite personnel who manage daily waste services and continue to work closely with Walmart to grow these initiatives and provide the most sustainable solutions and latest technology options.

Emissions reduction for the reporting year in metric tons of CO₂e

4136056.86

Did you identify this opportunity as part of the CDP supply chain Action Exchange?

No

Would you be happy for CDP supply chain members to highlight this work in their external communication?

Yes

Requesting member

Wells Fargo & Company

Initiative ID

2018-ID3

Group type of project

Relationship sustainability assessment

Type of project

Aligning goals to feed into customers targets and ambitions

Description of the reduction initiative

In 2019, WM diverted 4,630.34 tons of Wells Fargo & Co's waste from landfill to recycling thereby reducing lifecycle GHG emissions by 13,167.48 MTCO₂e. This diversion was achieved by working closely with Wells Fargo to improve comprehensive recycling programs. WM applied right-sizing programs and deployed container sensors to appropriate WM serviced locations, optimizing the collection and transportation of all waste streams. WM continues to work closely with Wells Fargo to grow these initiatives and provide the most sustainable solutions and latest technology options.

Emissions reduction for the reporting year in metric tons of CO₂e

13167.48

Did you identify this opportunity as part of the CDP supply chain Action Exchange?

No

Would you be happy for CDP supply chain members to highlight this work in their external communication?

Yes

SC3.1

(SC3.1) Do you want to enroll in the 2020-2021 CDP Action Exchange initiative?

No

SC3.2

(SC3.2) Is your company a participating supplier in CDP's 2019-2020 Action Exchange initiative?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain Questions?
I am submitting my response	Investors Customers	Public	Yes, submit Supply Chain Questions now

Please confirm below

I have read and accept the applicable Terms