Welcome to your CDP Climate Change Questionnaire 2021

C0. Introduction

C0.1

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

Unless the context requires otherwise, all references in this CDP response to Republic, the Company, we, us and our refer to Republic Services, Inc. and its consolidated subsidiaries. Republic is one of the largest providers of environmental services in the united states, as measured by revenue As of December 31, 2020, we operated facilities in 41 states, through 345 collection operations, 220 transfer stations, 186 active landfills, 76 recycling processing centers, 6 treatment, recovery and disposal facilities, 9 salt water disposal wells, and 7 deep injection wells. We are engaged in 75 landfill gas-to-energy and renewable energy projects and had post-closure responsibility for 128 closed landfills. In 2020, our total Scope 1, 2 and 3 emissions were 16,646,060 metric tonnes of CO2e. Of that amount, landfill emissions contributed 72%, our fleet contributed 6% and Scope 3 emissions were 19%. Our Scope 1 and 2 emissions, which include landfill methane emissions, vehicle and equipment emissions, and building electricity emissions, all contribute to climate change. That is why we have adopted an aggressive target for reducing these operational GHG emissions, approved by the Science Based Targets initiative (SBTi). Our goal is to reduce absolute Scope 1 and 2 greenhouse gas emissions 35% by 2030 (2017 baseline year), which aligns with the United Nations “Climate Action” Sustainable Development Goal, 13.2 — reduce greenhouse gas emissions. Our Scope 3 emissions also have an impact on climate change however, despite this they are not a part of our SBTi goal since these are not a under our operational control. We are tracking and monitoring the impact of these emissions have despite not being a part of our SBTi goals.

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
Reporting year	January 1, 2020	December 31, 2020	No

C0.3

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

Puerto Rico
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
Board-level committee	The Sustainability and Corporate Responsibility Committee (the "Committee") has responsibility for climate-related issues. From the Committee Charter: “The Committee is appointed by the Board of Directors (the “Board”) to assist the Board in fulfilling its oversight responsibility and to act in an advisory capacity to the Company’s management with respect to significant issues, strategic goals, objectives, policies and practices that pertain to (i) Republic’s sustainability performance; (ii) Republic’s corporate responsibilities that are of significance to the Company and its role as a socially responsible organization; and (iii) enterprise and other risk, including cyber security, climate change, safety, environmental and reputational risks and opportunities, facing the Company and the practices by which these are managed and mitigated.” The Committee reports to the full Board of

	Directors with respect to these matters. The Committee's responsibilities include making decisions with respect to oversight of the Company's sustainability program, including climate-related goals and activities, such as recycling and landfill gas to energy projects and oversight of the Company's Enterprise Risk Management program, which includes risks and opportunities that are climate related. One of the Board's decision-making responsibilities that impact the Company's climate-related activities is the approval of our annual budget, which allocates funding for the Company's sustainability agenda and climate-related activities. This includes activities such as landfill gas to energy projects, fleet electrification, and other GHG inventory reduction activities.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – 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	Given the importance of corporate sustainability to our stakeholders, Republic created a dedicated Sustainability and Corporate Responsibility Committee of the Board in 2015. Our Board is actively involved in risk oversight and we believe that Republic's environmental and sustainability initiatives require a dedicated committee due to the unique nature of these risks, which includes the time frame in which some of these risks will play out, the difficulty in quantifying the impact of these risks, the interconnected aspects of these risks and the challenges associated with managing uncertainty. The Sustainability and Corporate Responsibility Committee held four meetings and met regularly in executive sessions during 2020. The annual Committee calendar starts in the first quarter, meeting to review management of and progress on environmental topics, including climate related issues. In the second quarter, the results of the Enterprise Risk Management process are reviewed by the Committee. This review includes assessment, prioritization and management of risks and opportunities throughout the business, including climate-related issues. Business continuity and crisis preparedness are also discussed in this meeting, which

	targets for addressing climate-related issues	includes severe weather, fires and other physical impacts of climate change. At the end of the second quarter, the Committee participates in the annual sustainability reporting activities. In the third quarter, the Committee considers management and progress on social topics, such as recycling education. The calendar then culminates in the fourth quarter with the sustainability strategy and review of sustainability reporting and progress against sustainability goals, which tie together and are in response to the previous three discussions/meetings. The sustainability strategy includes our approved Science Based Target initiative Scope 1 and 2 greenhouse gas reduction goal. These topics are presented by the Chief Development Officer's team because this role has ultimate responsibility for the sustainability program. This review supports and feeds the broader Company strategy. Projected initiative benefits are incorporated into budgets and pro formas that underpin Management's long-term compensation performance metrics, which are reviewed by the entire Board during the same time frame.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Other C-Suite Officer, please specify EVP, Chief Development Officer	Both assessing and managing climate-related risks and opportunities	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).

The Executive Vice President, Chief Development Officer (EVP/CDO) has responsibility for Republic's sustainability programs, which include climate related issues. The EVP/CDO is on the executive leadership team, along with the COO, CCO, CFO, CAO, CMO and CLO (names and full titles can be found at: https://investor.republicservices.com/corporate-governance/management), reporting to the CEO. In addition, the EVP/CDO reports to and

supports the Sustainability & Corporate Responsibility Committee of the Board of Directors on sustainability topics on a quarterly basis.
Sustainability and climate-related issues are assigned to the EVP/CDO because this role has responsibility for the sustainability organization, has a seat on the Enterprise Risk Management Council, as well as, the ability and broader charter to manage unique and/or emerging opportunities and innovation. The EVP/CDO has a team reporting to him that is responsible for the sustainability program, including:
· annual enterprise-wide greenhouse gas inventory
· annual sustainability reporting including the GRI report, SASB report, TCFD Report, etc.
· annual survey responses including DJSI, CDP, and various ESG ratings surveys
· climate change risk and opportunity assessment
· stakeholder engagement and materiality assessment
· membership on the enterprise risk management team.
In addition, this team implements corporate sustainability initiatives, including the corporate-wide recycling program and organics diversion program. It also provides cross-functional support to others in the organization who manage assets impacted by, or deliver services related to, climate change. These functions include Operations, Engineering, Fleet Management, Supply Chain/Procurement, National Accounts, Communications, Public Policy, Investor Relations, and others. The EVP/CDO is also responsible for government affairs, growth initiatives, mergers and acquisitions, innovation and technology development.
The sustainability team, under the guidance of the EVP/CDO, identifies and monitors climate related issues through an internal/external stakeholder engagement process conducted every 2-3 years, and the following annual activities that occur throughout the year:
·Scope 1, 2 and 3 (business travel, subcontractor and third-party hauling) greenhouse gas (GHG) inventory (which is verified by an external body)
· Scope 3 Environmentally extended input-output (EEIO) GHG risk assessment;
· STEEP/megatrends analysis
· Various climate-related vulnerability assessments, including physical and transition risks
· Attendance at industry conferences, training and webinars to stay current on climate science
· Benchmarking to peers, sustainability leaders, and various sustainability ranking surveys/questionnaires
· Independent members of our Board and members of our management team engaged with shareholders representing approximately 52% of our investment base in 2020.
These tools provide data and insights as to potential climate related issues. The baseline was formed in 2014 during the development of the current sustainability program. The top climate related issues identified at that time, as shown in our materiality matrix, were landfill GHG emissions (risk), fleet GHG emissions (risk), and the ability of recycling to reduce our customer's GHG footprint (opportunity). Following the 2018 update of our materiality assessment, in 2019 we launched our Science Based Target initiative approved greenhouse gas reduction goal aimed at keeping global warming well-below 2 degrees C. Impacts due to severe weather are also managed, without a public goal at this time. Climate related issues are monitored each year using the above tools to scan for updates, goal context, and emerging risks and opportunities.

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	

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 inventivized	Comment
Corporate executive team	Monetary reward	Emissions reduction project Energy reduction project Efficiency project	Achievement of the senior executives' (CEO and named executive officers (NEOs)) financial metrics (ROIC, CFVC, RTSR) and associated incentives are based upon underlying three-year plans and associated budgets, which incorporate the benefits from our strategic initiatives and sustainability efforts (including various projects related to climate change and other factors). In addition, the annual Management Incentive Plan (MIP), provides incentives for meeting certain targets and metrics related to climate change and other factors. Examples of the projects and metrics directly linked to management of climate change emissions or impacts include landfill gas collection efficiency and beneficial reuse projects, recycling efficiency, conversion to clean fuel trucks and use of renewable natural gas. Closely managing these projects and metrics has a direct impact on our earnings per share, free cash flow and therefore, incentives.
Management group	Monetary reward	Emissions reduction project Energy reduction project Efficiency project	The Area management teams are rewarded in part for achieving targets and goals defined in our annual Management Incentive Plan (MIP), which provides incentives for meeting metrics related to climate change and other factors. Examples of the metrics directly linked to management of climate change issues or impacts include landfill gas collection efficiency and beneficial reuse projects as well as recycling efficiency. Closely managing these metrics has a direct impact on the Area management teams' ability to receive their full incentive. The Division Managers are rewarded in part for implementing actions that improve the effectiveness of

			recycling, fleet, and landfill operations (which reduce fugitive methane emissions - greenhouse gasses). These actions support the three-year plans and budgets described above.

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	5	This aligns with broader operational, financial and strategic planning timeframes.
Medium-term	5	10	This timeframe aligns with capital decisions for fleet assets, which have roughly a 10-year lifetime.
Long-term	10	40	This timeframe aligns with larger infrastructure capital decisions. For example, recycling facilities are 20-30 year assets and we plan for and monitor landfill airspace for 40+ years (as much as 100 years for some sites).

C2.1b

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

Criteria used to determine what constitutes substantive financial and strategic business impacts were developed by our enterprise risk management (ERM) team with the guidance and approval of the Board and executive management. These criteria are applicable to climate risks and other corporate wide risks. The quantifiable indicators of substantive financial impact include lost operating income, which may include a loss of revenue or increase in costs above certain dollar amounts. Quantifiable indicators of substantive strategic impact may include substantial fines or suspension of operations due to legal, regulatory or compliance matters; operational challenges that result in major impacts on customer experience in multiple regions or major disruption to routine products/services; or brand/reputational impacts which result in significant national media coverage/extended image problem. Any of these impacts alone or in combination may elevate a topic to the level of being considered substantive.

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

Our Enterprise Risk Management (ERM) process is designed to identify, assess, prioritize, assign risk owners, respond to and monitor risks and opportunities across the business. It is a formalized framework that is embedded into and fed by our current processes, which creates greater insight and durability.

The ERM register is populated with risks and opportunities that have been identified by the following business functions and processes:
• Budget reviews
• Business impact analysis
• Area operating reviews (AORs)
• Quarterly management operating reviews (QMORs)
• Management representation process
• Individual functions
• Management Interviews

The local and operating review processes tend to focus on short term risks, within a 0-5-year timeframe. However, when discussing long-lived assets such as a recycling facilities or landfills, medium and long-term issues may arise. The Corporate planning functions for fleet, recycling facilities, and landfills align with the timeframes discussed above in C2.1a and can range from short-term (0-5 years), to medium term (5-10 years) to long term (10-40 years). These processes are conducted at the broad business level and at the asset level, as applicable. For example, we conducted a vulnerability assessment of our water risk at the company-wide level. Based on the results, we were

then able to drill down into areas of concern to assess individual assets and their unique risk profiles.

At the local or asset level, local business leaders assess current and potential assets, competitive threats, strengths and weaknesses, risks and opportunities, growth plans, market dynamics and pricing, regulatory and legislative changes, and other key local market factors. Executive management, representing both Corporate and Field (asset) operations, meets on a quarterly basis, or more often, and discusses market trends and drivers, the business climate, innovation, risks and opportunities, regulatory and legislative changes, and other factors that influence our business strategy.

As shown above, various individual functions provide risks and opportunities to the ERM Team. Sustainability is one of these functions and has a stand-alone process for identifying risks and opportunities related to environmental, social and governance topics. This process is unique in that it recognizes short-term, which aligns with a 5-year outlook; medium term, which overlaps the 5-year outlook and spans 2020-2030; and long term, which runs to 2050 and beyond; risks and seeks to quantify non-financial risks to help the ERM Team and the broader business understand sustainability risks in the context of the business strategy. Once the risks are identified, they are fed into the ERM risk register to enable quantifying and prioritizing these risks using the same methods/criteria as other business risks.

Risks identified through both the business processes and the sustainability function include those that are directly linked to climate change, such as fuel and electricity consumption, our recycling business, emissions from our fleet, emissions from our landfills and impacts of adverse weather.

Aggregated risks and opportunities are then assessed and prioritized based on their impact to the strategy/organization by the ERM Team, which consists of the following functional representatives:
• Engineering & Environmental Compliance
• Sustainability
• Internal Audit
• Operations Support
• Finance Support
• Safety
• Information Security
• Human Resources
• Business Development
• Legal

The ERM team uses an online evaluation system and periodic meetings to conduct ongoing risk assessment. Assessment includes ranking of the likelihood that a risk will occur and ranking of the impact on the operating segment should the risk occur. Evaluation categories for both impact and likelihood are described and quantified to ensure that each team member is using the same criteria and meaning for the various

categories (normalization of responses). Risk impact categories include negligible, minor, moderate, major and catastrophic. Within these categories, risks are evaluated for quantitative (financial and legal/regulatory/compliance) impact and/or qualitative (operational and brand/reputation) impact. In this way, both financial and strategic impacts and opportunities are assessed. Risk likelihood options include very low, low, moderate, high and very high. The likelihood and impact scores are then aggregated and the risks are plotted into the risk matrix. The risk matrix is then evaluated by the ERM team, reported to our ERM Council, comprised of executive officers, and further reported to the Sustainability Committee of our Board in the annual ERM update.

As an example of how this process was applied to a physical risk, adverse weather is a risk that appears frequently in our risk register. This risk is identified in both the routine business processes and the sustainability processes. The business sees the impact of storms and associated flooding in the day-to-day operations, as well as, in the planning of infrastructure that may span 10, 20 or more years. Republic has operations in multiple states that are affected by hurricanes. Once adverse weather appears in the risk register, it is provided to the ERM team via the online system as one of many potential risks or opportunities to be evaluated. The individual members of the ERM team assess the impacts of adverse weather for impact and likelihood. In this case, the impact of a storm can range from an average of $334k to a high of $1.7M per month or per facility in operating income impact. The impacts from adverse weather have the potential to last several months and or to affect several facilities. Therefore, adverse weather would be considered to have the potential for substantive impact.

As an example of how this process was applied to a transition risk, consider customer demand for recycling. Republic has been tracking this trend since 2012, which first arose in our local markets through the prevalence of customer request for proposals (RFPs) for recycling services and infrastructure. Republic develops projections into the long term, beyond 2030, to estimate the severity of impact and associated degree of response to this trend, which is being driven by our customers' desire to decrease materials usage and climate change impact of landfills. This topic continues to enter the ERM process as both a risk and an opportunity. The individual members of the ERM team assess recycling using the online system, considering the annual revenue contribution and annual cost of managing recycling given the current market situation. Recycling continues to offer substantive upside opportunity to Republic and emerges from the ERM process as an on-going strategic initiative.

Data for these evaluations comes from actual operating data or scenario construction combined with operating data estimates, where actual operating data is not available.

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	Our facilities and operations are subject to a variety of federal, state and local requirements that regulate, among other things, the environment, public health, safety, zoning and land use. Operating and other permits, licenses and other approvals generally are required for landfills and transfer stations, recycling facilities, certain solid waste collection vehicles, fuel storage tanks and other equipment and facilities that we own or operate. These permits are subject to denial, revocation, modification, and renewal in certain circumstances. These laws and regulations provide governmental authorities with strict powers of enforcement, which include the ability to revoke or decline to renew any of our operating permits, obtain injunctions, or impose fines or penalties in the event of violations, including criminal penalties. Examples of specific regulations considered in our climate-related risk assessment are the EPA and the NHTSA regulations applicable to heavy-duty vehicles limiting greenhouse gas emissions and increasing fuel economy standards, as well as, the renewable fuel standards that the EPA sets annually, which affect the type of fuel our motor vehicle fleet uses.
Emerging regulation	Relevant, always included	Efforts to curtail the emission of greenhouse gases and to ameliorate the effects of climate change continue to progress. Our landfill operations emit anthropogenic methane, identified as a greenhouse gas, and our vehicle fleet emits, among other things, carbon dioxide, which also is a greenhouse gas. While passage of comprehensive, federal climate change legislation appears unlikely in the near term, we expect any such legislation, if enacted, to impose costs on our operations, which could be material. With regard to greenhouse gas emissions from our landfills, on July 14, 2016, the EPA issued amendments to its regulations that require large landfills that commenced construction, reconstruction or modification on or after July 17, 2014 to capture additional landfill gas to reduce emissions of methane and certain non-methane gases, which are recognized as greenhouse gases. In a separate action finalized that same day, the EPA issued updates to its 1996 Emission Guidelines to reduce emissions of landfill gas from existing active landfills. Both actions are part of the Obama Administration's Climate Action Plan - Strategy to Reduce Methane Emissions. The Trump Administration proposed to reconsider these rules, but its action has been subject to litigation, which is still pending. The Biden Administration has announced that climate change is one of its top priorities. If these regulations, or an amended version of them eventually goes into effect, they may require our landfills to deploy more stringent emission controls and monitoring systems, with resulting capital or operating costs. The application of these or other greenhouse gas regulations to our landfills could have a

		material adverse effect on our landfill operations and on our consolidated financial condition, results of operations and cash flows.
Technology	Relevant, always included	Our strategy includes an increasing dependence on technology in our operations; if any of our key technology fails, our business could be adversely affected. Our operations are increasingly dependent on technology. Our information technology systems are critical to our ability to drive profitable growth through differentiation, continue the implementation of standardized processes and deliver a consistent customer experience. One of the five pillars of our strategy is to grow through enabling our customers to do business with us through more channels and with better access to information and, accordingly, we have made substantial investment in our e-commerce platform. Problems with the operation of the information or communication technology systems we use could adversely affect, or temporarily disable, all or a portion of our operations. Inabilities and delays in implementing new systems can also affect our ability to realize projected or expected revenue or cost savings. In addition, emerging technologies that are used to recycle and process waste, as an alternative to disposal of waste in landfills, represent risks, as well as opportunities, to our current business model. The relevance and associated risks of waste diversion technologies are discussed in the "market" topic below. As a part of our climate-related risk assessments, for example, Republic evaluates and assesses the risk of multiple Waste to Energy (WtE) technologies each year, including anaerobic digestion, landfill gas to energy, gasification, mechanical and chemical recycling of plastics, etc.
Legal	Relevant, always included	Republic's ability to comply with existing and future legal and regulatory requirements is included in the scope of our climate-related risk assessments. For example, this includes limitations or bans on disposal of certain types of wastes, like California's AB1826, which requires businesses to recycle their organic waste, or on the transportation of waste, which could limit our ability to conduct or grow our business, increase our costs to operate or require additional capital expenditures; and risks associated with pending and future legal proceedings, including litigation, audits or investigations brought by or before any governmental body.
Market	Relevant, always included	Most of the states in which we operate landfills require counties and municipalities to formulate comprehensive plans to reduce the volume of solid waste deposited in landfills through waste planning, composting, recycling or other programs. Some state and local governments mandate waste reduction at the source and prohibit the disposal of certain types of wastes, such as yard waste, at landfills. Further, many of our customers voluntarily are diverting waste to alternatives to landfill disposal, such as recycling and composting, while also working to reduce the amount of waste they generate. Many

		of the largest companies in the U.S. are setting zero-waste goals in which they strive to send no waste to landfills. Although such actions help to protect our environment and reduce the impact of waste on climate change, they have reduced, and will in the future reduce, the volume of waste going to landfills and may affect the prices that we can charge for landfill disposal. Accordingly, we include these types of risks into our climate-related risk assessments. We cannot make assurances that we will be able to operate our landfills at their current volumes or charge current prices for landfill disposal services due to possible decreases in demand for such services. If we cannot expand our service offerings and grow lines of business to service waste streams that do not go to landfills and to provide services for customers that wish to reduce waste entirely, this could have a negative effect on our consolidated financial condition, results of operations and cash flows. Further, even if we can develop such service offerings and lines of business, disposal alternatives nonetheless could have a negative effect on our consolidated financial condition, results of operations and cash flows. Finally, fluctuations in prices for recycled commodities that we sell to customers may adversely affect our consolidated financial condition, results of operations and cash flows.
Reputation	Relevant, always included	Permits often take years to obtain as a result of numerous hearings and compliance requirements with regard to zoning, environmental and other regulations. These permits are also often subject to resistance from citizen or other groups and other political pressures. Local communities and citizen groups, adjacent landowners, governmental agencies and others may oppose the issuance of a permit or approval we may need, allege violations of the permits under which we currently operate or laws or regulations to which we are subject, or seek to impose liability on us for environmental damage. These risks related to our reputation which may limit our ability to do business are included in our climate-related risk assessments. Responding to these challenges has at times increased our costs and extended the time associated with establishing new landfills and transfer stations and expanding existing landfills. In addition, failure to receive regulatory and zoning approval may prohibit us from establishing new landfills or transfer stations or expanding existing landfills. Our failure to obtain the required permits to operate our landfills and transfer stations could have a material adverse effect on our consolidated financial condition, results of operations and cash flows. As an example of our actions in the event of opposition to our obtaining a permit, improved technical information as a project progresses, or changes in the anticipated economics associated with a project, we may decide to reduce the scope of, or abandon a project, which could result in an asset impairment. Our reputation and follow-through at other sites and in other communities provides a reference point to constituents of these challenging projects.

Acute physical	Relevant, always included	Our collection and landfill operations could be adversely impacted by extended periods of inclement weather, or by increased severity of weather and climate extremes resulting from climate change, some of which we may already be experiencing. In addition to sea level rise, this temperature increase is expected to result in more severe droughts, floods, and other extreme weather events. Any of these factors could increase the volume of waste collected under our existing contracts (without corresponding compensation), interfere with collection, transfer station and landfill operations, delay the development of landfill capacity or reduce the volume of waste generated by our customers. In addition, adverse weather conditions may result in the temporary suspension of our operations, which can significantly affect our operating results in the affected regions during those periods. For example, in 2020 Republic's markets were affected by hurricanes Hanna (Texas) Isaias (Southeast, North Carolina and Northeast region) Laura (Louisiana and Texas) Sally (Alabama and Florida) Zeta (Louisiana and Alabama) and Marco and Delta (Louisiana and Texas); California and Oregon wildfires; and tornados in the midwest (primarily Ohio and Kentucky). Fortunately, due to our storm preparedness plans, we are able to protect employees and assets and typically were operational within 24 hours of each storm/event. Republic incorporates both acute and chronic physical climate-related risks into its climate-related risk assessments by evaluating our portfolio of operations against current and future climate scenarios to understand how it may be impacted by changes to both acute and chronic physical risks.
Chronic physical	Relevant, always included	The above described "acute physical" risks such as inclement or severe weather can become chronic when they occur year over year. The nature of the risks to the business are no different, what is different is the degree to which they occur and our corresponding response. Republic incorporates both acute and chronic physical climate-related risks into its climate-related risk assessments by evaluating our portfolio of operations against current and future climate scenarios to understand how it may be impacted by changes to both acute and chronic physical risks. For example, although hurricanes are listed above as an example of an acute risk, the data show that they may soon transition to a chronic risk. According to the National Hurricane Center, the 2020 Atlantic hurricane season was the most active and fifth consecutive above average and damaging season since 2016. This indicates that businesses in the affected area may soon need to consider hurricanes an annual event and plan accordingly.

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

Mandates on and regulation of existing products and services

Primary potential financial impact

Increased direct costs

Company-specific description

Based on an industry trade publication, we operate the fifth largest vocational fleet in the United States and in 2020 our fuel costs were $271.7 million. While our fuel costs decreased due to a decline in fuel prices and service levels attributable to the COVID-19 pandemic, a substantial rise or drop in fuel costs, including our ability to manage increases in fuel and energy related taxes or regulations, could materially affect our revenue and cost of operations. Increases in the cost of fuel or petrochemicals would increase our operating expenses, and we cannot assure you that we would be able to recover such cost increases from our customers. We depend on fuel purchased in the open market to operate our collection and transfer trucks and other equipment used for collection, transfer and disposal. Fuel prices are unpredictable and fluctuate significantly based on events beyond our control, including geopolitical developments, actions by the Organization of the Petroleum Exporting Countries and other oil and gas producers, changes in refinery operations, supply and demand for oil and gas, war, terrorism and unrest in oil producing countries, adverse weather and regional production patterns. Due to contractual or market factors, we may not be able to offset increased fuel costs resulting from such volatility through fuel recovery fees.

Regulatory monitoring is also taking place to ensure our existing and planned fleet programs and assets comply with current and future fuel and fleet regulations. The renewable fuel standards that the US EPA sets annually affect the type of fuel our motor vehicle fleet uses. Pursuant to the Energy Independence and Security Act of 2007, the

EPA establishes annual renewable fuel volume requirements for four different categories of renewable fuels (renewable fuel, advanced biofuel, cellulosic biofuel, and biomass-based diesel). These volume requirements set standards for the proportion of refiners' or importers' total fuel volume that must contain renewable fuels (as designated by regulation). The total volume metrics for each year vary based upon a number of factors (e.g., the availability of such fuels), and it is difficult to predict the ultimate quantity that the EPA will eventually mandate for future years. These regulations are one of many factors that may affect the cost of the fuel we use.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

25,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Our fuel costs were $271.7 million in 2020, or 2.7% of revenue. A substantial rise or drop in fuel costs, including our ability to manage increases in fuel and energy related taxes or regulations, could materially affect our revenue and cost of operations. For example, assuming average annual diesel consumption levels of 130M gallons, a twenty-cent per gallon change in the price of diesel fuel changes our fuel costs by approximately $25 million on an annual basis. By implementing a fuel recovery fee, we could recover this cost, which would increase our revenue by $25 million. The potential financial impact is based on the full twenty-cent per gallon diesel fuel price change.

Cost of response to risk

2,000,000

Description of response and explanation of cost calculation

Fuel costs represent a significant operating expense. When economically practical, we may enter new fuel hedges, renew contracts, or engage in other strategies to mitigate market risk. As of December 31, 2020, we had no fuel hedges in place. While we charge fuel recovery fees to a majority of our customers, we are unable to charge such fees to all customers.

We have long been a leader in alternative fuel vehicles, beginning with natural gas vehicles until electric vehicles are commercially viable. Natural gas vehicles produce far fewer carbon emissions than their diesel counterparts and with the use of renewable natural gas (RNG) these vehicles are even more environmentally responsible. We have used RNG to fuel 100% of the natural gas vehicles in our collection fleet since the start of 2020. The process of transitioning to an electric fleet, with RNG as a bridge fuel, further insulates us from fossil fuel price volatility.

We partner with Clean Energy Fuels to help manage our 38 compressed natural gas (CNG) stations and to supply RNG. In 2019, we initiated three expansion projects to further our commitment to use renewable natural gas as a bridge fuel to lower fleet emissions. With one of the largest vocational fleets in the country, using innovative technology to reduce emissions is vital. Today, approximately 21% of our fleet operates on natural gas. In 2020, we added 159 CNG trucks, bringing the number of vehicles running on alternative fuels to more than 3,300. Using CNG vehicles provides us a competitive advantage in communities with strict clean emission initiatives that focus on protecting the environment. Although upfront capital costs are higher, using CNG reduces our overall fleet operating costs through lower fuel expenses. As of December 31, 2020, we operated 38 CNG fueling stations. Currently, 100% of our collection vehicles that operate on natural gas are powered by RNG. Of our total fuel usage 21% is renewable.

Cost of response: The cost of management figure is based on the cost to administer fuel recovery fees, the cost of hedges and the cost of converting to CNG. For 2020, the net operating cost impact was negative given the positive operating return on converting to CNG combined with the CNG tax credits. Incremental capital cost for a representative 10-year project of 100 vehicles requiring 1 fueling station is roughly $2M (this project has a positive ROI).

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

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Increased direct costs

Company-specific description

Our operations could be adversely impacted by extended periods of inclement weather, or by increased severity of weather resulting from climate change, some of which we likely are already experiencing. Of our 318 landfills, 313 are in regions that currently experience the following natural disasters more than once per year: hurricanes (97 landfills), floods (229), earthquakes (2), and tornados (47). Recent studies suggest that global warming is occurring faster than previously projected, with the US EPA projecting a 3° to 12° Fahrenheit temperature increase in the United States by the end of the century. In addition to sea level rise, this temperature increase is expected to result in more severe droughts, floods, and other extreme weather events. Any of these factors could increase the volume of waste collected under our existing contracts (without corresponding compensation), interfere with collection, transfer station and landfill operations, delay the development of landfill capacity or reduce the volume of waste generated by our customers. In addition, adverse weather conditions may result in the temporary suspension of our operations, which can significantly affect our operating results in the affected regions during those periods. Notably, while weather events such as hurricanes may increase the amount of material that is sent to our landfills, they could negatively impact the quality of recycling materials, making those materials unsalvageable and therefore decreasing profitability.

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)

Potential financial impact figure – minimum (currency)

221,053

Potential financial impact figure – maximum (currency)

1,152,000

Explanation of financial impact figure

The minimum financial impact figure was calculated by taking an average of tons of commodities sold per month across various facilities in 2020 (2.1 million tons/year across 76 facilities averages more than 2,300 tons/month at one facility) multiplied by the average sale of materials (SOM) value for 2020 ($96/ton used for this analysis). This results in an average loss for one month of downtime at an average sized facility ($221,053) caused by a weather event at an average size facility. The financial impact would be greater from multiple months of downtime at average size facilities or closures

at larger facilities, which can produce 12,000 tons per month. The financial loss from a one month closure of one of these larger facilities is $1,152,000. As a historic example, Allied Waste, now part of Republic, had to shut down a large recycling facility in New Orleans for 1 month after Hurricane Katrina, which resulted in close to $1M in lost revenue.

Cost of response to risk

100,000

Description of response and explanation of cost calculation

Management action case study: Republic actively and annually reviews physical risks to its business as part of an annual risk management assessment process. As we identify and prioritize critical risks to our physical assets, we implement the changes or management programs, where necessary, to mitigate the impacts. We have put in place and continue to update an Emergency Preparedness and Disaster Recovery Plan for Field Staff and perform local level training on an on-going basis. The Area President (AP), or designee, owns this plan and its implementation for their respective region. The Plan not only prepares Republic for impact to our assets and operations, but it also ensures business continuity shortly after severe weather events, by providing field staff with guidance in preparing for an emergency or recovery from a natural disaster. Republic starts planning as soon as we learn of an impending storm. For example, in 2019, Hurricane Dorian was bearing down on the Southeast, where Republic has collection, recycling and landfill operations. The business continuity teams prepared for protection of our people and their families, our assets and our customers. We discuss and arrange shelter locations and ensure that all employees are safe and secure before the storm strikes. We also move trucks and equipment to high ground, secure recycling facilities and place landfills into safe mode. Finally, we provide recommendations to our customers for how to prepare their carts and containers to withstand the storm and to prevent them from becoming a hazard during the storm. These actions help to minimize impact to our people and assets during the storm and ensure we can be back up and running as soon as possible after the storm passes. This plan was initially developed following the 2005 Hurricanes Katrina and Rita recovery efforts and was most recently deployed in 2020. Republic also maintains property insurance to protect against catastrophic losses of property and assets.

Cost of response: For 2020, costs to manage this risk continue to be incorporated into our business-as-usual activities, but do include insurance premiums, program management costs associated with developing and maintaining the Emergency Preparedness and Disaster Recovery Plan for Field Staff, training that is done each year to make sure the local coordinator is up to speed, and cost to maintain back-up generators. In total, this cost is roughly $100,000 incremental to the business.

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Market

Changing customer behavior

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

We purchase or collect and process recyclable materials such as paper, cardboard, plastics, aluminum and other metals for sale to third parties. In 2020 we handled 5.6 million tons of recycled material, utilizing 76 recycling processing centers, and accounting for 3% of our total revenue. Our results of operations may be affected by changing prices or market requirements for recyclable materials. The resale and purchase prices of, and market demand for, recyclable materials are volatile due to changes in economic conditions, governmental regulation, and numerous other factors beyond our control. For instance, in 2017 the Chinese government imposed strict limits on the import of recyclable materials. These limitations significantly decreased the global demand for recyclable materials and resulted in lower commodity prices. In the American context, consumer handling and sorting of recyclables is limited in magnitude and quality. Lower quality and poorly sorted recyclables incur increased handling costs and reduced commodity value. Our performance may be affected by changing prices or market requirements for recyclable materials. The resale and purchase prices of, and market demand for, recyclable materials are volatile due to changes in economic conditions, lack of market/social drivers and numerous other factors beyond our control.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

12,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

At 2020 volumes and mix of materials, we believe a $10 per ton change in the price of recycled commodities has the potential to change both annual revenue and operating income by approximately $12 million. We calculate this using several factors that impact our operating costs and revenues. We then compare the difference in costs and revenues resulting from the associated adjustments in the price of our commodities sold. Using this methodology, a decrease in $10 per ton of recycled commodities results in a loss of $12 million. Accordingly, a substantial rise or drop in recycled commodity prices could materially affect our revenue and cost of operations. The potential financial impact includes factors beyond volume and material mix, including municipal billing cycles and other factors that impact billed rates. In 2020, recycled commodities increased revenue by 0.3% primarily due to increased commodity prices. In short, consumer demand for products made from recycled inputs drives up commodity prices and consumer ability to recycle correctly drives down recycling processing costs.

Cost of response to risk

0

Description of response and explanation of cost calculation

Management action case study: In order to drive increased demand for and the value of recycling, we actively provide education in numerous communities to help consumers and businesses understand the value of recycling and the importance of proper separation of recyclables to minimize contamination. Republic's Recycling Simplified consumer education campaign won the 2019 Best Recycling Public Education Program Award from the National Waste & Recycling Association, which recognizes innovators and leaders in the industry who have made substantial contributions to American recycling through partnerships, public education and innovations in recycling facilities. Winners were selected by a panel of judges who are professionals in the waste and recycling industry as well as from other technology and education organizations. After the 2018 launch of the Recycling Simplified initiative and a supporting national public relations campaign, we executed a $2 million multichannel marketing campaign in 2019 in six cities to further help reduce contamination rates by focusing on what and how to recycle correctly. The local campaigns employed radio ads, billboards and social media to reach residents. In two of the markets, pre- and post-campaign audits were conducted on residential recycling routes, which found that contamination rates had decreased significantly in both communities. In addition, we are working with our customers to move to a more sustainable economic model that includes a fee for the services we provide and a more equitable commodity risk sharing arrangement. This action will reduce our risk exposure in the future.

Cost of response: The cost of management of this risk includes our community training programs and materials, and recycling contract management program. However, implementation of the training program and the contract management program result in positive benefits through cleaner recycling streams, and therefore greater revenue, that outweigh all the management costs. Therefore, this cost was negative (zero entered in

the field above, as a negative number is not allowed) given the positive operating return for the year ended December 31, 2020.

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

Many municipalities and residents are concerned about greenhouse gas and air emissions from large heavy-duty truck fleets, especially diesel-powered. Some have passed regulations and/or ordinances to mitigate these impacts, for example our customer, the City of Los Angeles. Republic has responded to this concern by converting 21% of our fleet to natural gas sourced as renewable natural gas (RNG). The use of RNG lowers our operational costs in two ways. First, the net price is lower than diesel fuel because of tax or renewable energy credits. Second, the use of CNG and RNG, further insulate us from price increases and fluctuations associated with diesel fuel, which is often subject to regulatory taxes and tariffs. The renewable fuel standards that the US EPA sets annually affect the type of fuel our motor vehicle fleet uses. Pursuant to the Energy Independence and Security Act of 2007, the US EPA establishes annual renewable fuel volume requirements for four different categories of renewable fuels (renewable fuel, advanced biofuel, cellulosic biofuel, and biomass-based diesel). These volume requirements set standards for the proportion of refiners'

or importers' total fuel volume that must contain renewable fuels (as designated by regulation). The total volume metrics for each year vary based upon a number of factors (e.g., the availability of such fuels), and it is difficult to predict the ultimate quantity that the US EPA will eventually mandate for future years. These regulations are one of many factors that may affect the cost of the fuel we use in operations.

In addition to reduced operational costs and reduced environmental emissions as positive impacts, switching to a lower emission fuel also provides us with a competitive advantage that can translate into additional contract wins.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

As an example, the annual monetary savings and investment required for a representative 10-year project of 100 vehicles, requiring 1 fueling station, CNG at $2.43/DGE, diesel at $2.48/gal and other deployment related variables include: Total investment to manage this opportunity was roughly $2.0M with savings over a ten-year period of $2M. Using DOE values from the Clean Cities Alternative Fuel Price Report and accounting for spread of operations and area of use, we found the initial investment we will break even at the end of 10-years.

Cost to realize opportunity

2,000,000

Strategy to realize opportunity and explanation of cost calculation

Management action case study: Using renewable natural gas (RNG) vehicles provides us a competitive advantage in communities with strict clean emission initiatives that focus on protecting the environment. This is a two-step process which included introduction of CNG vehicles and fueling stations, which we began over 10 years ago, followed by the growing use of RNG, which began in 2016. With 21% of our fleet

comprised of CNG vehicles, running on RNG, we are looking to the next step of alternative vehicle conversion. We have begun pilot testing of electric vehicles, and over the next several years we expect to replace the remainder of our diesel vehicles with electric vehicles as part of our ordinary annual fleet replacement process. In the meantime, decisions for our CNG fueling stations and fleet are based in part on municipal contracts that favor companies that can meet the strictest air emissions requirements or companies that are leading sustainability brands. These communities are prevalent on the West coast, East coast and some parts of the Midwest. Republic is able to win these contracts by demonstrating our commitment to RNG as a clean fuel.

Cost calculation: Costs of converting to CNG vehicles includes an increase in upfront costs per truck compared to the cost of a diesel truck plus the cost of installing CNG fueling stations at our hauling facilities. However, the net impact of conversion to CNG in 2020 was neutral due to the fuel cost savings. The annual monetary savings and investment required for a representative 10-year project of 100 vehicles, requiring 1 fueling station, CNG at $2.43/DGE, diesel at $2.48/gal and other deployment related variables include: Total capital investment to realize this opportunity was $2M with operational savings of $2M.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resilience

Primary climate-related opportunity driver

Other, please specify

Adverse weather preparedness

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Republic provides waste management services in 41 states across the U.S. and Puerto Rico (divested in 2020), 39 of which have seen an increase in severe weather events over the last decade. While these events can cause service disruption during the actual storms, the clean-up efforts required after an event typically result in an increase in demand for our services due to storm damage to buildings, infrastructure, trees and other natural areas that require pick up and transportation to our recycling facilities and landfills.

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)

Potential financial impact figure – minimum (currency)

1,000,000

Potential financial impact figure – maximum (currency)

10,000,000

Explanation of financial impact figure

Our operations can be favorably affected by severe weather, which could increase the volume of waste in situations where we are able to charge for our additional services or provide services when our competitors are not able to operate due to storm damage to their assets or operations. Republic estimates revenue from these events to range from $1-10 million, based on the amount of incremental material created by the storm and Republic market share in the affected areas. As an example, the Solid Waste Association of North America estimated that Hurricane Michael in 2018 resulted in 13 million tons of storm debris in two counties. Assuming 75% of storm debris is taken to landfills at an average FEMA landfill rate of $10/ton, this would result in $97.5M of incremental revenue opportunity. If Republic was awarded just a 10% share of this business, we would receive $9.75M in storm related revenue. This revenue can be offset or exceeded by costs for overtime, extra hauling distances, etc. caused by the amount of debris over and above typical daily collection needs of the community.

Cost to realize opportunity

100,000

Strategy to realize opportunity and explanation of cost calculation

Management action case study: Our Emergency Preparedness and Disaster Recovery Plan for Field Staff not only prepares Republic for impact to our assets and operations, but it also ensures the delivery of services to our customers shortly after severe weather events. The plan provides our field staff with guidance in preparing for an emergency or recovery from a natural disaster. Republic starts planning as soon as we learn of an impending storm. For example, in 2019, Hurricane Dorian was bearing down on the Southeast, where Republic has collection, recycling and landfill operations. The business continuity teams planned in advance for protection of our people and their families, our assets and our customers. These actions help to minimize impact to our

people and assets during the storm and ensure we can be back up and running as soon as possible after the storm passes.

Republic begins operations as soon as local emergency management officials give the go ahead. We begin by ensuring that all employees are accounted for and assess damage to their personal property. We also ensure they and their families have meals, clothing and other daily necessities. Our teams then resume collection of solid waste and recycling as soon as roads are clear and we provide storm debris removal where contracted by FEMA. Our early preparation generally enables us to be one of the first service providers back on the streets, which positions us well to win storm debris removal contracts and to pick up business where our competitors are not able to resume operations as quickly. The Plan was initially developed following the 2005 Hurricanes Katrina and Rita recovery efforts and continues to be evaluated and implemented on an annual basis, as needed.

Cost calculation: Costs to manage this opportunity are incorporated into our business-as-usual planned spending activities, but do include program management costs associated with developing and maintaining the Plan document, training that is done each year to make sure the local coordinator is up to speed, and cost to maintain generators. In total, this cost is roughly $100,000 incremental to the business. There can be costs associated with the revenue opportunity due to costs for overtime, extra hauling distances, etc. caused by the amount of debris over and above typical daily collection needs of the community. These costs are not factored into the above cost to realize opportunity as they are highly variable and unpredictable.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Republic sees a broad societal trend toward landfill diversion, driven in part by concerns over climate change. Landfills are a known source of GHG emissions and a significant portion of Republic’s footprint. We are actively looking for ways to reduce materials in

our landfills that generate methane upon decomposition, like fiber, food, and yard waste. Recycling not only removes fiber from landfills, but it returns recycled materials to industries that have large carbon footprints associated with their mining and/or production, such as aluminum, plastic, and metals. As such we have invested $38M into upgrading our recycling facilities to more efficiently handle and capture materials. As of December 31, 2020, we operate 76 recycling facilities and have publicly committed to increase our recovery of key materials by 40% on a combined basis by 2030.

Time horizon

Short-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)

297,100,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Our 2020 recycling processing and commodity sales were $297.1M, or approximately 3% of our revenue. We have an opportunity to retain and/or gain business by providing alternative methods of managing waste, such as recycling. Our processed recycled commodity volume for 2020 was 2.1 million tons sold with an additional 2.2 million tons collected by us and delivered to third parties. We are committed to increasing market demand for recycling and recycled commodities.

Cost to realize opportunity

38,000,000

Strategy to realize opportunity and explanation of cost calculation

Management action case study: As population increases, we expect waste generation to increase, however, the growth in waste generation is transitioning to alternative options beyond landfills, such as recycling. Our strategy to capture this opportunity is to invest in recycling processing centers and expand our recycling capabilities.

For example, historically, the cardboard received at recycling facilities consisted of larger shipping cartons from commercial customers. With the rise in online shopping, our facilities have seen an influx of smaller boxes — referred to as the “Amazon Effect.”

We are addressing this shift by installing new machinery that better captures smaller cardboard shipping boxes. We also continue to increase our use of optical sorters to scan and separate paper or plastics in milliseconds. These optical units use near-infrared technology, like that used in night vision, along with digital cameras to identify recyclable materials and sort them quickly and more accurately than a manual process. In Seattle, the addition of two optical sorters has already resulted in more high-quality paper recovered while ensuring the capture of other high-value materials such as aluminum. At the end of 2020 we operated 76 recycling processing centers. We will continue to look for opportunities to expand our recycling capabilities in markets where customers are demanding these services and demonstrating a willingness to pay, and we can earn an appropriate return on our investment. We were able to turn this opportunity into a profitable new line of business, with a business model different from our core collection business, as a part of our sustainability strategy, while responding to our stakeholders' concerns about landfill emissions.

Cost calculation: We invested approximately $38 million of capital in 2020 to expand, refurbish, build and acquire assets in our recycling business.

Comment

We invested approximately $167 million in 2017 related to the acquisition of ReCommunity, which operated 26 recycling centers in 14 states and was the largest independent recycling operator in the country. This acquisition greatly enhanced the capability and capacity of our recycling offering to customers.

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) Is your organization's low-carbon transition plan a scheduled resolution item at Annual General Meetings (AGMs)?

	Is your low-carbon transition plan a scheduled resolution item at AGMs?	Comment
Row 1	Yes	Republic Services is frequently in discussion for opportunities to reach a low-carbon transition plan. It is our intention to publish a plan which builds off our SBTi and include the plan as a scheduled resolution item at our AGM.

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
IEA 450 RCP 8.5	i) Republic conducts ongoing assessments of water risks to identify the watersheds and corresponding Republic sites that may be located in regions with a measurable level of water risk. We consider square footage as normalized indicators to evaluate each facility's impact, relative to its size and location and then evaluate the strategic importance of prioritized sites following a filtering process. Assumptions and estimates were used to fill gaps for missing data on square footage to create portfolio wide intensities. This method was selected because it allows for a comprehensive yet efficient assessment of key water risks across our portfolio of sites with a higher reliance on access to water. ii) Republic's water risk assessment identifies the regions and specific sites which may have water risk today and in the future. We used a business-as-usual stress and demand scenario in 2030, thus our time horizon used WRI's BAU and Future scenario's which align with IEA450 and RCP8.5 from current to 2030. These assumptions are relevant with our corporate strategy and length of asset ownership for landfills. iii) The analysis includes our total list of owned and operated sites by type (landfills, transfer stations, hauling stations, Treatment Recovery Disposals, Saltwater Disposals and Material Recovery Facilities) excluding offices and considers key factors identified by the WRI Aqueduct tool to identify and characterize our operations across potential water-stressed regions. Offices are currently excluded from this analysis because these sites are relatively small users of water and we lack the ability to collect actual water consumption and/or water discharge data. i) Results - Based on the assessment undertaken to date, we have not directly changed our business strategy in relation to flood risk caused by climate change. ii and iii) One of the inputs into our analysis initially considered whether the risk of flood occurrence could have a substantive impact at any of our landfill sites, and if so, how would the business respond to both existing sites and future sites where flood risk occurrence may be higher based on WRI Aqueduct data. As an example, while Republic did determine that 19% of our landfills (by square footage) are located in watersheds with an extremely high level of flood occurrence, we confirmed the management and safety plans for these sites and

	determined that the actual impacts of floods on these sites are manageable, and thus would not substantively impact our business operations, community or employee health, and/ or growth strategy. Through this analysis, we are creating an open dialogue with our operations teams which has started to and will continue to inform our strategic growth strategy for operational excellence, safety, compliance and efficiency performance across all of our sites – in this case prioritized based on water risk.

C3.3

(C3.3) 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	Recycling (C2.4a, Opp 3): Risks and opportunities related to the shifting market demand for waste solutions that result in fewer greenhouse gas emissions have influenced our municipal, commercial, and residential service offerings. Case study of substantive decisions - Republic created a strategic initiative in 2012 to provide recycling collection and processing services in targeted markets in response to climate concerns of our customers. We partner with customers to develop new contractual arrangements that are dynamic and mutually beneficial, and incentivize improved recycling behaviors, bringing simplification to customers and the general public alike on what and how to recycle. Each year during our annual budgeting process we determine where to invest capital to expand, modernize or establish our recycling capabilities based on market demand as indicated through our annual Market Planning and Development Process. We are committed to recycling for the long term and continue to invest in technology that increases efficiencies and maximizes the recovery of higher quality recyclables. We recognize our facilities must continually evolve to address consumer trends, as well as changing package designs and unprecedented levels of contamination. In 2020, Republic invested $38 million in technology and equipment upgrades at our recycling facilities including a full retrofit at our Minneapolis location. These investments enable us to provide an industry leading recycling service to our customers.

		Recycling is not a service that is mandated across all markets, however, in 2020, the percent of customers receiving recycling services by service type was as follows: Residential 75% Small container 31% Large container 22% Our 2020 revenue from recycling was $297.1M. This improves diversion to landfills and reduces the associated emissions. Time horizon – this opportunity spans short, medium and long-term as we are experiencing demand for recycling today and these facilities have a ten to forty year lifetime.
Supply chain and/or value chain	Yes	Lower emission fuel/energy sources (C2.4a, Opp 1): Risks and opportunities related to the market demand for lower emission fuel sources and the desire to insulate our business from potential regulations on fossil fuel have influenced our supply chain strategy with our key truck/engine suppliers. Case study of substantive decisions - Leveraging lower emission fuel sources requires working with major truck/engine suppliers and developing relationships with new fuel and fueling station suppliers. As the operator of one of the largest fleets in the country, these efforts are strategic to our supply chain department. Republic has worked with key suppliers over the past five years to develop and deploy new clean fuel engines (CNG), as well as, the development and installation of CNG fueling stations. Our previous investments in CNG trucks and fueling stations have made the use of RNG seamless. Over the past three years, we have worked with suppliers to create and purchase RNG as a drop-in fuel replacement for CNG. Using trucks powered by RNG helped us meet our previous emissions goal, established in 2014, earlier than expected. Currently 100% of our collection vehicles that operate on natural gas, 21% of our total fleet, are powered by RNG. We are taking a leadership position in electric technology innovation for our fleet. This is a critical step toward reducing our environmental impact through lower fleet emissions and will also improve our total cost of ownership while providing competitive advantages in certain communities. We are partnering with multiple manufacturers to pilot electric-powered trucks. Our partnership with Mack Trucks entered a pilot phase in October 2020 with a fully

		electric Mack LR collection truck running routes in Hickory, NC. In addition, we are working with electric battery manufacturer, Romeo Power, to pilot a retrofit test program in which our diesel vehicles will be converted to electric. We will apply what we learn from these programs to future electrification initiatives. Time horizon – this opportunity spans short to medium-term as we are rolling out RNG-ready trucks today. As our diesel vehicles reach the end of their 10-12-year lifetime, we will begin replacing them with electric vehicles over the next 5-10 years.
Investment in R&D	No	Republic does not incur material R&D expenses, apart from those outlined previously in this report
Operations	Yes	Diesel Fuel Costs (C2.3a, Risk 1): Potential and realized increases to fossil fuel costs due to regulations and taxes aimed at reducing greenhouse gas emissions related to fossil fuels have led Republic to develop a strategic program to seek alternative sources of fuel to mitigate climate change impacts for our customers and our business. Case study of substantive decisions – Our recycling and waste collection trucks are complex, high-performance machines designed to be safe, comfortable and efficient. As we retire and replace older trucks, we are able to take advantage of advancements in alternative fuels in addition to safety technology and other modern efficiencies. Trucks running on alternative fuels and RNG emit lower emissions and are less carbon intensive, which is why we continue to transition our fleet toward natural gas. Our alternative fuel programs are typically executed by Corporate and rolled out to the operations teams strategically based on the age of the vehicles in each local business unit and local demand for lower emissions collection vehicles. Powering our fleet with renewable natural gas is one way we are lowering our emissions. We partner with Clean Energy Fuels to help us manage our 38 natural gas fueling stations and to deliver RNG to those stations. In 2019, we initiated three expansion projects to further our commitment to use renewable natural gas as a bridging fuel to lower fleet emissions. With one of the largest vocational fleets in the country, using innovative technology to reduce emissions is vital. In 2020, we added 159 new CNG trucks, bringing the number of vehicles running on alternative fuels to more than 3,300. For a

		representative project at a single operating site, this can result in cost savings of $4.4M over a 10-year period. As of December 31, 2020, 21% of our fleet operated on renewable natural gas. Time horizon – this opportunity spans short to medium-term as we are purchasing RNG as a bridge fuel today and our initiative will span 5-10 more years as we continue to use RNG bridging the gap to the eventual transition to electric vehicles.

C3.4

(C3.4) 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	Revenues Direct costs Indirect costs Capital expenditures Capital allocation	Most of the states in which we operate landfills require counties and municipalities to formulate comprehensive plans to reduce the volume of solid waste deposited in landfills through waste planning, composting, recycling or other programs. In addition, many of the largest companies in the U.S. are setting zero-waste goals in which they strive to send no waste to landfills. Although such actions help to protect our environment and reduce the impact of waste on climate change, they have reduced, and will in the future reduce, the volume of waste going to landfills and may affect the prices that we can charge for landfill disposal. We identified a risk that we would not be able to operate our landfills at their current volumes or charge current prices for landfill disposal services due to possible decreases in demand for such services. We call this trend the “evolving ton” and have been tracking and managing it for many years. Our response in 2012 was to launch a strategic initiative to develop traditional recycling in select and prioritized markets to capitalize on this trend. This initiative primarily impacts revenue planning, because we have developed a new revenue stream, and capital planning to develop the recycling infrastructure. Republic strategically built out this infrastructure and capability over the past 9 years. As of December 31, 2020, we had 76 recycling facilities across the US. We continue to invest in this initiative. Revenue: In 2020, recycling processing and commodity sales were $297.1M, on a top line revenue of $10,153M. It should be noted that revenue from recycling collection is not broken out separately in many of our contracts or our financial statements. As consumer demand for

		recycling services has increased, we have met that demand by integrating recycling components to each of our collection service offerings. Today, recycling processing and sale of commodities revenue represents roughly 3% of total company revenue. Recycling revenue helps to offset potential losses of revenue in our landfill business and is expected to grow over time. Capital expenditures and allocation: During our annual strategic planning process, we identify requirements for continued efficient capital allocation and organic growth opportunities for capital expenditures. The proportion of each is factored into our annual financial planning process to ensure that the business meets its cash flow and growth objectives. Capital allocations for our recycling strategic initiative change each year based on market dynamics. As of December 31, 2020, we operated 76 recycling processing centers and invested $38M in 2020 on recycle processing center expansions, refurbishments, construction and acquisitions. We are committed to recycling for the long term and continue to invest in technology that increases efficiencies and maximizes the recovery of higher quality recyclables. We recognize our facilities must continually evolve to address consumer trends, as well as changing package designs and unprecedented levels of contamination. For example, historically, the cardboard received at recycling facilities consisted of larger shipping cartons from commercial customers. With the rise in online shopping, our facilities have seen an influx of smaller boxes — referred to as the “Amazon Effect.” We are addressing this shift by installing new machinery that better captures smaller cardboard shipping boxes. We also continue to increase our use of optical sorters to scan and separate paper or plastics in milliseconds. These optical units use near-infrared technology, like that used in night vision, along with digital cameras to identify recyclable materials and sort them quickly and more accurately than a manual process. The addition of two optical sorters has already resulted in more high-quality paper recovered while ensuring the capture of other high-value materials such as aluminum. Time horizon of influence – this opportunity spans short, medium and long-term as we are experiencing demand for recycling today and these facilities have a ten to forty year lifetime.

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

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

2018

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2017

Covered emissions in base year (metric tons CO2e)

13,773,367

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

100

Target year

2030

Targeted reduction from base year (%)

35

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

8,952,688.55

Covered emissions in reporting year (metric tons CO2e)

13,453,373

% of target achieved [auto-calculated]

6.637945329

Target status in reporting year

Underway

Is this a science-based target?

Yes, and this target has been approved by the Science-Based Targets initiative

Target ambition

Well-below 2°C aligned

Please explain (including target coverage)

We have adopted an aggressive target for reducing our operational GHG emissions, approved by the Science Based Targets initiative (SBTi).

Goal: Reduce absolute total Scope 1 and 2 greenhouse gas emissions 35% by 2030.

Scope 1 emissions include emissions from landfills and fleet that are owned, leased, or operated by Republic. From the baseline year of 2017 to 2020, Republic achieved an 15.59% reduction in Scope 1 fleet emissions and an 16.75% reduction in total Scope 2 emissions (See 2020 GRI topic 305-1, and topic 305-5, respectively). Our Scope 1 landfill emissions decreased by 0.43% (See 2019 GRI topic 305-1). This results in a total Scope 1 and Scope 2 decrease of 1.34% over 2017, resulting in 1.6% of target achieved. We do not believe the landfill portion of the Scope 1 emissions is reflective of our performance. Landfill emissions are calculated using U.S. 40 CFR Part 98 Subpart HH, a method developed by the EPA and industry to characterize the contribution of landfills in relationship to the overall greenhouse gas footprint in the U.S. This method remains the current method for reporting landfill emissions to the EPA. However, these calculations are not well suited to tracking progress or reductions at individual landfills.

As an example, Republic completed a landfill gas system expansion at Blue Ridge Landfill in 2019. This resulted in an increase of collected landfill gas by more than 13%, as measured by our gas collection system, which indicates a significant reduction in fugitive emissions. However, Republic utilized federally mandated reporting requirements, a projection model that illustrates an increase in the calculated GHG emissions from this site. Republic increased biogas collection by 1.48% across all landfills in 2020.

We continue using the federally mandated methodology to reflect our landfill emissions until we develop the means for more accurate and continuous measurement, which we have committed to investigate in support of our science-based GHG emissions target.

C4.2

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

Target(s) to increase low-carbon energy consumption or production

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number
Low 1

Year target was set
2018

Target coverage
Company-wide

Target type: absolute or intensity
Absolute

Target type: energy carrier
Other, please specify
Biogas

Target type: activity
Production

Target type: energy source
Renewable energy source(s) only

Metric (target numerator if reporting an intensity target)
Percentage

Target denominator (intensity targets only)

Base year
2017

Figure or percentage in base year
73.6

Target year
2030

Figure or percentage in target year
110.4

Figure or percentage in reporting year
72.3

% of target achieved [auto-calculated]

-3.5326086957

Target status in reporting year

Underway

Is this target part of an emissions target?

Yes. Increasing beneficial reuse of biogas collected at landfills results in lower greenhouse gas emissions from flares at landfill. These emissions contribute to the Scope 1 landfill emissions that are part of the SBT described above.

Is this target part of an overarching initiative?

Science-based targets initiative

Please explain (including target coverage)

Overarching initiative:
We have adopted an aggressive target for reducing our operational GHG emissions, approved by the Science Based Targets initiative (SBTi) and aligned with the UN "Climate Action" SDG 13.2 - reduce greenhouse gas emissions.

Goal: Reduce absolute total Scope 1 and 2 greenhouse gas emissions 35% by 2030.

Scope 1 emissions include emissions from landfills and fleet that are owned, leased, or operated by Republic.

Supporting goal:
Our operating strategy for managing landfill gas emissions is to maximize the amount of gas collected at each landfill. By safely collecting the maximum amount, we minimize any gas escaping as fugitive emissions. The collected landfill gas is either utilized for beneficial reuse as renewable energy or combusted in a flare. When we divert biogas to beneficial reuse, we reduce the amount of greenhouse gasses emitted through the flaring of biogas. We have a separate goal to increase biogas sent to beneficial reuse by 50% by 2030 (from a 2017 baseline), as we endeavor to make our landfills regenerative. For more information about our beneficial biogas reuse goal, our progress and related initiatives, please refer to our 2020 Sustainability Report, available at www.republicservices.com/sustainability. In addition, when we divert biogas to beneficial reuse projects that convert that gas into renewable natural gas for transportation, we are supplying a renewable fuel to the pipeline that enables us to use low carbon fuel for our fleet. This activity also supports our SBT as it lowers our Scope 1 fleet emissions significantly.

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	4	0
To be implemented*	1	30,100
Implementation commenced*	1	34,726
Implemented*	3	444,271
Not to be implemented	2	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 consumption

Biogas

Estimated annual CO2e savings (metric tonnes CO2e)

269,474

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

670,100

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

2,000,000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

Republic has a number of initiatives in progress to reduce the amount, as well as, the carbon intensity of fuel that we use, and therefore, our GHG emissions from our fleet. Since 2016, Republic has been purchasing renewable natural gas (RNG) to replace its usage of diesel for use in our collection vehicles. This has resulted in a decrease in the total DGE's of diesel purchased and consumed by our fleet and yields a corresponding GHG emissions reduction. We expect to continue to increase the consumption of RNG as an alternative fuel. The savings for these projects fluctuates with the RIN price and the volume of RNG fuel used each year. The savings provided are an estimate of the lower end of the range.

Initiative category & Initiative type

Fugitive emissions reductions

Other, please specify

Other, please specify (Initiatives to offer recycling to our customers enable us to divert materials away from landfills that would otherwise generate fugitive methane emissions while decomposing in landfills.)

Estimated annual CO2e savings (metric tonnes CO2e)

154,620.23

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

297,100,000

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

38,000,000

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

Annual monetary savings is revenue generated from 76 recycling facilities in 2020. Investment varies by year, amount shown reflects 2020 capital investment.

Initiative category & Initiative type

Low-carbon energy generation

Biogas

Estimated annual CO2e savings (metric tonnes CO2e)

20,177

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

5,000,376

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

16,783,800

Payback period

1-3 years

Estimated lifetime of the initiative

21-30 years

Comment

Republic Services owns and operates 3 facilities that convert landfill gas to RNG which is used for the generation of electricity; this energy is sent to the grid to be utilized by consumers.

C4.3c

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

Method	Comment
Compliance with regulatory requirements/standards	Our facilities and operations are subject to a variety of federal, state and local requirements that regulate, among other things, the environment, public health, safety, zoning and land use. These laws and regulations provide governmental authorities with strict powers of enforcement, which include the ability to revoke or decline to renew any of our operating permits, obtain injunctions, or impose fines or penalties in the event of violations, including criminal penalties. The U.S. Environmental Protection Agency (EPA) and various other federal, state and local authorities administer these regulations. We strive to conduct our operations in compliance with applicable laws, regulations and permits.
Financial optimization calculations	In some cases, as indicated in the answers to question 4.3b above, we exceed regulatory requirements/standards and/or undertake projects to drive environmental improvements that are not contemplated by regulatory agencies. Investments in these projects are driven by a

	positive return on investment that often includes other factors, such as impact on our brand or license to operate.

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

Product

Description of product/Group of products

Republic has been investing in compressed natural gas (CNG) collection vehicles for a number of years. In 2020, 21% of our collection fleet operated on natural gas. CNG fuel has a lower carbon footprint as compared to diesel fuel. In addition, Republic has been ramping up its use of renewable natural gas (RNG), a drop-in replacement for CNG, that has the lowest carbon intensity of any commercially available fuel today, according to the California Air Resources Board (CARB). Today, our use of RNG is at nearly 100% of our alternative fleet vehicles as we use RNG as a bridge fuel towards electric vehicles. Use of these trucks to provide collection services to our customers can be classified as a low-carbon service offering because their use results in lower emissions for Republic as we deliver our service.

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

Climate Bonds Taxonomy

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

16

Comment

Alternative fuel vehicles meet the criteria today for a low-carbon service under the Climate Bonds Taxonomy. The percent of revenue was calculated by summing the revenue earned from collection, taking 21% of that number (equivalent to the % of our collection fleet operating on natural gas) and dividing that number by our total 2020 revenue (2020 10-K page 34 and 5 respectively). Percent = (7616.2 x .21) / 10153.6.

Level of aggregation

Group of products

Description of product/Group of products

Republic offers a number of products and services today that enable our customers to avoid their emissions. These products include landfill gas for renewable energy; recycling of residential and commercial commodities, food waste and green waste; universal recycling (batteries, light bulbs, etc); and electronic recycling (mobile devices, televisions, etc).

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

Avoided emissions

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

Climate Bonds Taxonomy

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

3

Comment

We have estimated the full lifecycle emissions impacts from our sold products, mainly recycled commodities (2.78M tons sold in 2020, including 2.36M recycled material and 420k tons of compost). Total lifecycle emissions impact results in 6.9M MTCO2e of avoided emissions. These avoided emissions can be claimed by various customers across the value chain. The % of revenue is calculated by dividing the revenue from recycling by the total company revenue for 2020. See 2020 10-K page 36. Republic has been investing in recycling and landfill gas to energy projects over the last several years and at the end of 2017 exceeded both public goals that were established for these initiatives. Two additional, aggressive goals help our customers avoid their emissions.

Circular Economy: Increase recovery of key materials by 40% on a combined basis by 2030 (from a 2017 baseline)
The circular economy reduces the need for raw materials, which reduces their associated environmental and social burden. We are invigorating our circular economy practices to provide products and services that help reduce the demand our customers and society place on our planet. We increased the recovery and resale of targeted commodities to over 4.6 million tons in 2020.

Renewable Energy: Increase beneficial reuse of biogas by 50% by 2030 (from a 2017 baseline)
When food waste, yard debris and other organic materials are disposed of in a landfill, they generate biogas through a naturally occurring biological process. Our modern landfills already capture a large portion of this gas to prevent fugitive emissions. This goal represents our increased effort to use more of this biogas for beneficial purposes, such as renewable energy and fuel. In 2020, we achieved a 1.48 percent year-over-year

increase in the beneficial reuse of landfill biogas.

Whether it is through reuse, recovery, refurbishment, or recycling – we are actively contributing to a circular economy. We believe our innovative business practices and deep understanding of scalable circular economy solutions will help us accomplish these very ambitious goals related to Materials Management, and help our customers avoid emissions.

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, 2013

Base year end

December 31, 2013

Base year emissions (metric tons CO2e)

16,029,764

Comment

This base year is the first year that Republic began calculating and reporting a greenhouse gas inventory. It is not the same base year as our current SBT GHG reduction goal. Our base year emissions are restated when we make adjustments due to methodology or boundary changes.

Scope 2 (location-based)

Base year start

January 1, 2013

Base year end

December 31, 2013

Base year emissions (metric tons CO2e)

301,000

Comment

This base year is the first year that Republic began calculating and reporting a greenhouse gas inventory. It is not the same base year as our current SBT GHG reduction goal. Our base year emissions are restated when we make adjustments due to methodology or boundary changes.

Scope 2 (market-based)

Base year start
January 1, 2013

Base year end
December 31, 2013

Base year emissions (metric tons CO2e)
294,741

Comment
This base year is the first year that Republic began calculating and reporting a greenhouse gas inventory. It is not the same base year as our current SBT GHG reduction goal. Our base year emissions are restated when we make adjustments due to methodology or boundary changes.

C5.2

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

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

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)
13,214,960

Comment

C6.2

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

Row 1

Scope 2, location-based
We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

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

Reporting year

Scope 2, location-based

237,148

Scope 2, market-based (if applicable)

238,413

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

1,797,689

Emissions calculation methodology

Republic uses Environmentally Extended Economic Input Output (EEIO) analysis based on its annual supplier and procurement spend data. The spend data was mapped to corresponding industry sectors and is then multiplied by cradle-to-gate emission factors for the activity to provide estimated carbon emissions associated with the extraction, production and transport of purchased goods and services acquired or purchased by Republic in the reported year. Supplier spend activity that was already included in

Scope 1 or 2 (such as electricity purchases from leased buildings) and other Scope 3 categories (such as upstream transportation and distribution) that could be further defined to a GHGP Scope 3 category or could be supplemented with actual data were removed from the Purchased Goods & Services category to prevent double counting. This may represent an under- or over-reporting of emissions in certain supplier categories and specific suppliers based on available spend data due to the nature of cost and accrual accounting. The emission factors used are taken from Carnegie Mellon's Economic Input-Output Life Cycle Assessment tool, US 2007 Benchmark Model. Spend data is also adjusted to account for inflation since the Carnegie Mellon tool was released. We anticipate improving the methodology and availability of data in the future which will impact our year-on-year reporting and trends over time.

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

0

Please explain

Outside of direct data collection from suppliers on their proportional emissions associated with delivery of purchased goods and services procured by Republic, the use of EEIO emissions factors offers an efficient and directional methodology to estimate the impacts associated with our spend in this category.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

494,760

Emissions calculation methodology

Republic uses Environmentally Extended Economic Input Output (EEIO) analysis based on its annual supplier and procurement spend data. The spend data was mapped to corresponding industry sectors and is then multiplied by cradle-to-gate emission factors for the activity to provide estimated carbon emissions associated with the extraction, production and transportation of capital goods acquired or purchased by Republic in the reported year. We have elected to use this methodology over using a single generic emissions factor (EF) for 'all' capital goods as reported, to enable better visibility into specific capital good categories by spend and carbon impact. Supplier spend activity that was already included in Scope 1 or 2 (such as electricity purchases from leased buildings) and other Scope 3 categories (such as upstream transportation and distribution) that could be further defined to a GHGP Scope 3 category or could be supplemented with actual data were removed from the Capital Goods category to prevent double counting. This may represent an under- or over-reporting of emissions in certain supplier categories and specific suppliers based on available spend data due to the nature of cost and accrual accounting. We anticipate improving the methodology and availability of data in the future which will impact our year-on-year reporting and trends over time.

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

0

Please explain

Outside of direct data collection from suppliers on their proportional emissions associated with delivery of capital goods procured by Republic, the use of EEIO emissions factors offers an efficient and directional methodology to estimate the impacts associated with our spend in this category.

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

Evaluation status

Relevant, calculated

Metric tonnes CO2e

382,994

Emissions calculation methodology

Emissions were calculated for fuel-and-energy-related activities (not included in Scope 1 or 2) by totaling activity data for each Scope 1 fuel type and Scope 2 electricity consumption by country. These totals were multiplied by their relevant specific emission factors from UK Defra / DECC 2019 Conversion Factors for Company Reporting; except in the case of electricity Transmission and Distribution Loss emission factors, for which emission factors from UK Defra/DECC 2017 Conversion Factors for Company Reporting were used, as UK Defra/DECC ceased publishing these in 2018. (Next year Republic will move to using the IEA emission factors for electricity Transmission and Distribution Loss, as recommended by Defra/DECC.

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

100

Please explain

Fuel and electricity data is supplied directly from utility companies.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

383,335

Emissions calculation methodology

Republic maintains detailed cost data for third-party hauler and subcontract collection services that it uses to support its collection services. An assessment of spend on fuel as a percent of total spend on third-party hauling has been made and is used to determine the quantity of fuel consumed by the third-party fleets using the 2019 DOE

national average for Ultra Low Sulfur Diesel (ULSD). These total gallons of third-party fuel used are then used for these upstream transportation and distribution emission calculations. Fuel used by subcontract collection vehicles is also calculated. The fuel spend estimate is similarly converted to gallons of diesel using the 2019 DOE national average for ULSD, which is then used to calculate GHG emissions. U.S. EPA Climate Leaders: Emission Factors for Greenhouse Gas Inventories, 2019 were used to calculate the emissions. Republic also uses Environmentally Extended Economic Input Output (EEIO) analysis based on its annual supplier and procurement spend data for rail expenses. The spend data was mapped to corresponding industry sectors and is then multiplied by cradle-to-gate emission factors for the activity to provide estimated carbon emissions associated with the extraction, production and transportation of upstream transportation and distribution acquired or purchased by Republic in the reported year. Supplier spend activity that was already included in Scope 1 or 2 (such as electricity purchases from leased buildings) that could be further defined to a GHGP Scope 3 category or could be supplemented with actual data was removed from the Upstream Transportation and Distribution category to prevent double counting. This may represent an under- or over-reporting of emissions in certain supplier categories and specific suppliers based on available spend data due to the nature of cost and accrual accounting. We anticipate improving the methodology and availability of data in the future which will impact our year-on-year reporting and trends over time.

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

100

Please explain

Republic maintains detailed cost data for third-party hauler and subcontract collection services that it uses to support its collection services.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

117,916

Emissions calculation methodology

Republic uses Environmentally Extended Economic Input Output (EEIO) analysis based on its annual supplier and procurement spend data. The spend data was mapped to corresponding industry sectors and was then multiplied by cradle-to-gate emission factors for the activity to provide an estimate of carbon emissions associated with the extraction, production and transportation of leachate waste generated in operations by Republic in the reported year. Supplier spend activity that was already included in Scope 1 or 2 (such as electricity purchases from leased buildings) and other Scope 3 categories (such as upstream transportation and distribution) that could be further defined to a GHGP Scope 3 category or could be supplemented with actual data were removed from the waste generated in operations category to prevent double counting.

This may represent an under- or over-reporting of emissions in certain supplier categories and specific suppliers based on available spend data due to the nature of cost and accrual accounting. We anticipate improving the methodology and availability of data in the future which will impact our year-on-year reporting and trends over time.

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

0

Please explain

Outside of direct data collection from suppliers on their proportional emissions associated with management of leachate waste generated by our landfill operations, the use of EEIO emissions factors offers an efficient and directional methodology to estimate the impacts associated with our spend in this category. The emissions totals for this category currently only estimate the emissions from the management of leachate waste, and do not include mixed solid waste from Republic's office and/or day-to-day operations.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

3,923

Emissions calculation methodology

Annual data for air travel, rail travel, and rental car travel is provided by Republic's travel agency. Air travel data is broken out by each flight leg and the distances, which is used to calculate total short, medium and long-haul miles (Short flights (<300 mi), Med. flights (300-2300 mi), Long flights (>2300 mi). Republic's travel agency in 2020 was able to provide miles by cabin class. UK DEFRA 2019 emissions factors with radiative forcing are used to calculate the air travel GHG emissions, based on distance threshold and cabin class. Rail travel data was provided in terms of distance traveled. U.S. EPA Climate Leaders: Emission Factors for Greenhouse Gas Inventories, 2019 were used to calculate the emissions from the rail travel mileage. The rental car report in 2020 provided fuel volumes. U.S. EPA Climate Leaders: Emission Factors for Greenhouse Gas Inventories, 2020 were used to calculate the emissions from the rental car gasoline.

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

100

Please explain

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

9,423

Emissions calculation methodology

Republic uses Environmentally Extended Economic Input Output (EEIO) analysis based on its annual supplier and procurement spend data. The spend data was mapped to corresponding industry sectors and then multiplied by cradle-to-gate emission factors for the activity to provide estimated carbon emissions associated with the transportation of its employees for relocation during the reported year. This may represent an under- or over-reporting of emissions in certain supplier categories and specific suppliers based on available spend data due to the nature of cost and accrual accounting. We anticipate improving the methodology and availability of data in the future which will impact our year-over-year reporting and trends over time.

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

0

Please explain

Outside of direct data collection from employees on their proportional emissions associated with employee commuting, the use of EEIO emissions factors offers an efficient and directional methodology to estimate the impacts associated with our spend in this category.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

2,636

Emissions calculation methodology

Republic uses Environmentally Extended Economic Input Output (EEIO) analysis based on its annual supplier and procurement spend data. The spend data was mapped to corresponding industry sectors and is then multiplied by cradle-to-gate emission factors for the activity to provide an estimate of carbon emissions associated with the extraction, production and transportation of upstream leased assets purchased by Republic in the reported year. Supplier spend activity that was already included in Scope 3 categories (such as rental vehicles for business travel) that could be further defined to a GHGP Scope 3 category or could be supplemented with actual data were removed from the upstream leased assets category to prevent double counting. This may represent an under- or over-reporting of emissions in certain supplier categories and specific suppliers based on available spend data due to the nature of cost and accrual accounting. We anticipate improving the methodology and availability of data in the future which will impact our year-over-year reporting and trends over time. The total

emissions for this category also include the electricity emissions associated with overhead electricity at Republic's colocation data centers (colos). The overhead electricity was calculated using the IT equipment electricity and the colo's power usage effectiveness (PUE). The market-based emission factors were used to calculate the emissions.

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

2.75

Please explain

The 2.75% of the emissions calculated using data from suppliers represents the overhead electricity emissions at our colocation data centers. The remaining 97.25% of the upstream leased assets emissions were calculating using spend data.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

Impacts and emissions for any downstream transportation and distribution have been incorporated as appropriate into the Waste Generated in Operations and/or Upstream Transportation & Distribution scope 3 GHG categories. We have no downstream transportation and distribution impacts.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

We are unable to separately estimate scope 3 emissions impacts from downstream processing of commodities we recover, process and sell. Instead, we have estimated the full lifecycle emissions impacts from our sold products, as reported in the "Explanation" column of the "Use of sold products" category.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

10

Emissions calculation methodology

This figure represents a portion of the composted tonnage sold to downstream users, and the corresponding emissions from transporting and turning compost piles but does not include the negative emissions savings associated with the carbon storage resulting from the compost application to soils. We have estimated the full lifecycle emissions

impacts from our sold products, mainly recycled commodities (2.78M tons sold in 2020, including 420k tons of compost). The number reported represents the positive portion of the emissions associated with the use of sold compost. Total lifecycle emissions impacts, however, result in a negative 7.8M MTCO2e (avoided) emissions, which we are not accounting for in our total Scope 3 emissions figure. Lifecycle emissions include upstream mining, processing and transportation of materials that enter the waste stream, transportation, and recovery/processing of commodities/compost by companies like Republic, as well as, downstream processing, transportation, and re-manufacturing where applicable. Emissions from recycled materials and compost sold are calculated using methodologies and emission factors from the U.S. EPA's Waste Reduction Model (WARM), version 15. Recycled materials sold is based on the percent of various commodities as sold by Republic in 2020. GWPs are from the IPCC (2007) Fourth Assessment Report. This model bases its emissions calculations on a life-cycle analysis, including emissions from the long-term decomposition of waste in a landfill and upstream sources/sinks. Further emissions savings are realized through the collection, processing and sale of recycled commodities. Data quality is considered consistent with inputs from our database on sustainability metrics.

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

0

Please explain

We have estimated the full lifecycle emissions impacts from our sold products, mainly recycled commodities (2.78M tons sold in 2020, including 420k tons of compost). The number reported represents the positive portion of the emissions associated with the use of sold compost. Total lifecycle emissions impacts, however, result in a negative 6.9M MTCO2e (avoided) emissions, which we are not accounting for in our total Scope 3 emissions figure. Lifecycle emissions include upstream mining, processing and transportation of materials that enter the waste stream, transportation and recovery/processing of commodities/compost by companies like Republic, as well as, downstream processing, transportation, and re-manufacturing where applicable. Emissions from recycled materials and compost sold are calculated using methodologies and emission factors from the U.S. EPA's Waste Reduction Model (WARM), version 15. Recycled materials sold is based on the percent of various commodities as sold by Republic in 2020. GWPs are from the IPCC (2007) Fourth Assessment Report.

End of life treatment of sold products

Evaluation status

Relevant, not yet calculated

Please explain

As Republic does not purchase its "raw materials" used to create its products sold (i.e. recycled materials and compost) but rather receives these raw material inputs through its primary services of waste management collection, the emissions impacts are not

captured in our Purchased Goods and Services category. They would rather be quantified as a separate upstream activity. Due to the complexity of this upstream value chain, we are not able to estimate the emissions associated with any raw material inputs, however, they are incorporated into our “Use of sold products” lifecycle calculation above, as per the EPA WARM model.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Republic has determined that this Scope 3 category is not relevant to our business. All leased assets are included in the upstream leased assets category.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

Republic does not have any franchises.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

Republic does not have any investments that are relevant to Scope 3 emissions reporting.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

Not relevant.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

Not relevant.

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	7,483,232	Biogenic carbon emissions are relevant to Republic Services and include: 1. CO2 from the combustion of landfill gas via flares 2. CO2 passing through on-site combustion devices 3. Fugitive CO2 generated from the biological decomposition of waste in landfills 4. CO2 as a product of CH4 oxidation in the landfill cap 5. Mobile combustion of biodiesel and biomethane. We also have carbon from municipal solid waste that is permanently biologically sequestered by the landfill, thereby removing it from the carbon cycle. However, this total is currently not shown in our inventory. The five sources of biologically sequestered carbon emissions listed above are reported in aggregate as “Biogenic Emissions” and treated separately from Scope 1 in accordance with the GHG Protocol. The first three sources comprise 92% of Republic Service’s biogenic emissions. Republic Services considers these as a part of our Scope 1 emissions but reports them separately (per GHG Protocol) as they are biogenic in nature or not in the scope of U.S. EPA reporting requirements for landfills. In addition, our biogenic emissions are currently considered to be carbon neutral, as per our approved Science Based Targets Initiative target. Republic Services follows guidance from U.S. EPA on determining emissions of these sources of solid, gaseous, liquid and biomass fuels from: Federal Register (2009) U.S. EPA ; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, 261 pp. Tables C1 and C2 at FR pp. 56409 56410. Revised emission factors for selected fuels: Federal Register (2010) U.S. EPA ; 40 CFR Part 98; Mandatory Reporting of Greenhouse Gases; Final Rule, 17Dec10, 81 pp. Permanently biologically sequestered carbon is not included in the figure reported here but is still relevant. It includes carbon from municipal solid waste (MSW) that is permanently biologically sequestered by the landfill which acts as a sink, and as such, emissions from MSW are avoided. The annual MSW waste input figures reported by Republic have been used to calculate the carbon sequestered using a 2008 U.S. EPA waste characterization study.

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

0.00132

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

13,453,373

Metric denominator

unit total revenue

Metric denominator: Unit total

10,153,600,000

Scope 2 figure used

Market-based

% change from previous year

3.81

Direction of change

Decreased

Reason for change

GHG emissions per dollar of total revenue decreased 3.81% between 2019 and 2020. This was due to a 733,272 MTCO2e decrease in emissions compared to our previous year's total Scope 1+Scope 2 GHG emissions. Despite the decrease we continue to implement emissions reductions activities across our portfolio, including: recycling and diversion from landfills which reduces the amount of fugitive emissions; collection of gas from sites with existing LFGTE projects; conversion of our diesel fleet to CNG; and increased use of renewable natural gas in our fleet. Due to minor methodology changes and/or corrections, the previous year's figure has been recalculated and used in the percent change from previous year calculation.

C7. Emissions breakdowns

C7.1

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

Yes

C7.1a

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

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	1,266,692	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	11,935,307	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	12,960	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	13,211,277
Puerto Rico	3,682

C7.3

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

By activity

C7.3c

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

Activity	Scope 1 emissions (metric tons CO2e)
Landfills	11,929,759
Fleet (vehicles and equipment)	1,239,442
Non-fleet/other	45,759

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	Purchased and consumed electricity, heat,	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2

		(metric tons CO2e)	steam or cooling (MWh)	market-based approach (MWh)
United States of America	235,422	236,686	580,773	642
Puerto Rico	1,720	1,720	4,561	0

C7.6

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

By activity

C7.6c

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

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Electricity	220,930	222,194
Heat	16,219	16,219

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	0	No change	0	Our Switch data center is powered by 100% renewable energy from solar photovoltaic cells. The Switch facility used 665 MWh of solar energy in 2019 and 642 MWh in 2020. Since this arrangement has been in place since 2019, there is no associated change in emissions from 2019 to 2020. This process keeps an additional 298 metric

				tons of CO2e from being produced based on the emission rate from eGRID.
Other emissions reduction activities	94,389	Decreased	8.46	With an increasing percentage of our fleet being converted to CNG and an expanded emphasis on RNG use, Republic was able to reduce our fleet emissions by 8.46% in 2020.This was accomplished by having 100% of our CNG collection fleet operating on RNG.
Divestment				
Acquisitions				
Mergers				
Change in output	576,825	Decreased	4.61	Due to changes in the market, including from COVID-19 impacts, Republic saw a decrease in the amount of material that was disposed in our landfills. The amount of waste we put into our landfills directly impacts the emissions from decomposition.
Change in methodology				
Change in boundary				
Change in physical operating conditions				
Unidentified				
Other				

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?

Market-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	Yes
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)	LHV (lower heating value)	1,108,054	5,122,691	6,230,745
Consumption of purchased or acquired electricity		642	496,422	497,064

Consumption of purchased or acquired heat		0	89,490	89,490
Consumption of self-generated non-fuel renewable energy		0		0
Total energy consumption		1,108,696	5,708,603	6,817,299

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

HHV (higher heating value)

Total fuel MWh consumed by the organization

3,845,061

Emission factor

10.24409

Unit

kg CO2e per gallon

Emissions factor source

US EPA, Emission Factors for Greenhouse Gas Inventories. Last Modified: 4 April 2014

Comment

IPCC Fourth Assessment Report (AR4 - 100 year)

Fuels (excluding feedstocks)

Biodiesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

38,035

Emission factor

0.00648

Unit

kg CO2e per gallon

Emissions factor source

US EPA, Emission Factors for Greenhouse Gas Inventories. Last Modified: 4 April 2014

Comment

IPCC Fourth Assessment Report (AR4 - 100 year)

Fuels (excluding feedstocks)

Biomethane

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

1,070,019

Emission factor

0.00026

Unit

metric tons CO2e per million Btu

Emissions factor source

US EPA, Emission Factors for Greenhouse Gas Inventories. Last Modified: 4 April 2014

Comment

IPCC Fourth Assessment Report (AR4 - 100 year)

Fuels (excluding feedstocks)

Kerosene

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

1.67

Emission factor

10.18409

Unit

kg CO2e per gallon

Emissions factor source

US EPA, Emission Factors for Greenhouse Gas Inventories. Last Modified: 4 April 2014

Comment

IPCC Fourth Assessment Report (AR4 - 100 year)

Fuels (excluding feedstocks)

Propane Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

1,540

Emission factor

0.06196

Unit

metric tons CO2e per million Btu

Emissions factor source

US EPA, Emission Factors for Greenhouse Gas Inventories. Last Modified: 4 April 2014

Comment

IPCC Fourth Assessment Report (AR4 - 100 year)

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

345,337

Emission factor

0.05311

Unit

metric tons CO2e per million Btu

Emissions factor source

US EPA, Emission Factors for Greenhouse Gas Inventories. Last Modified: 4 April 2014

Comment

IPCC Fourth Assessment Report (AR4 - 100 year)

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

67,289

Emission factor

8.81334

Unit

kg CO2e per gallon

Emissions factor source

US EPA, Emission Factors for Greenhouse Gas Inventories. Last Modified: 4 April 2014

Comment

IPCC Fourth Assessment Report (AR4 - 100 year)

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	642	0	642	0
Heat	178,367	178,367	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C8.2e

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

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Solar

Country/area of consumption of low-carbon electricity, heat, steam or cooling

United States of America

MWh consumed accounted for at a zero emission factor

642

Comment

One of Republic's colocation data centers, Switch, uses 100% renewable energy to power its facilities. Republic receives an annual sustainability certificate demonstrating the amount of Solar Renewable Energy Credits that Switch retired on behalf of Republic Services that year. Per Republic's sustainability certificate for 2020, Republic's 2020 renewable energy credits were generated by Nevada solar farms during 2020.

C9. Additional metrics

C9.1

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

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

CY20 Republic Assurance Statement.pdf

Page/ section reference

1-2

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

CY20 Republic Assurance Statement.pdf

Page/ section reference

1-2

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 2 approach

Scope 2 market-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

CY20 Republic Assurance Statement.pdf

Page/ section reference

1-2

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
CY20 Republic Verification Report.pdf

Page/section reference
1-2

Relevant standard
ISO14064-3

Proportion of reported emissions verified (%)
100

Scope 3 category
Scope 3: Upstream transportation and distribution

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
CY20 Republic Assurance Statement.pdf

Page/section reference

1-2

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

99

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
C6. Emissions data	Year on year change in emissions (Scope 1)	ISO 14064-3	We have chosen to verify this additional data point as it is related to the annual verification of our organization-wide Scope 1 and Scope 2 emissions. The emissions are reported in question C6.1 and included in the Year on Year change in Scope 1 and 2 combined in question 7.9a. 1
C6. Emissions data	Year on year change in emissions (Scope 2)	ISO 14064-3	We have chosen to verify this additional data point as it is related to the annual verification of our organization-wide Scope 1 and Scope 2 emissions. The emissions are reported in question C6.1 and included in the Year on Year change in Scope 1 and 2 combined in question 7.9a. 1
C6. Emissions data	Year on year change in emissions (Scope 1 and 2)	ISO 14064-3	We have chosen to verify this additional data point as it is related to the annual verification of our organization-wide Scope 1 and Scope 2 emissions. The emissions are reported in question C6.1 and included in the Year on Year change in Scope 1 and 2 combined in question 7.9a. 1

[1]CY20 Republic Assurance Statement.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)?

No, but we anticipate being regulated in the next three years

C11.1d

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

Our public sustainability goals are designed to address critical global macrotrends and our most relevant sustainability risks and opportunities, including greenhouse gas (GHG) emissions that contribute to climate change. Given our position, regulatory and market developments related to climate change present us with the potential for strategic business opportunities. Offsetting operational GHG emissions is not enough. We are taking a bold position to leverage innovation and lead the industry in combating climate change. Landfill methane emissions, vehicle and equipment emissions, and building electricity all contribute to climate change. These activities all have varying potential for regulation by a carbon pricing system in the near future and are being regulated in some countries already. That is why we have adopted an aggressive target for reducing our operational GHG emissions well below 2°C, aligned with the Science Based Targets initiative (SBTi). Our goal is to reduce absolute Scope 1 and 2 greenhouse gas emissions 35% by 2030, from a 2017 baseline year. This goal supports the United Nations "Climate Action" Sustainable Development Goal, 13.2 – reduce greenhouse gas emissions. We will accomplish this goal through:

1. Landfill innovation
2. Reducing fleet emissions
3. Reducing emissions when we build.

Proactive reduction of greenhouse gas emissions in these three areas reduces our risk from future regulation.

Efforts to curtail the emission of greenhouse gases and to ameliorate the effects of climate change continue to progress. Passage of comprehensive, federal climate change legislation is unlikely in the current political climate. Nonetheless, should comprehensive federal climate change legislation be enacted, we expect it to impose costs on our operations, the materiality of which we cannot predict. We do not anticipate being regulated by an emissions trading scheme in the next three years, however, it is possible that a carbon tax could be enacted at the state or federal level in the next two to three years. Based on current carbon tax or cap-and-trade programs implemented in other countries, these policies typically do not directly levy a carbon tax at landfills. Policies are most often targeted on upstream waste generators. This approach is seen in several U.S. states today as a landfill diversion target that applies a fee to customers (businesses and/or municipalities) that do not meet diversion mandates. We anticipate this type of policy as opposed to a direct landfill carbon tax.

Our operating strategy for managing landfill emissions is to maximize the amount of gas collected at each site. By safely collecting the maximum amount, we minimize gas escaping as fugitive emissions. The collected landfill gas is either utilized for beneficial reuse as renewable energy or combusted in a flare. As of December 31, 2020, Republic was engaged in 75 landfill gas-to-energy projects that convert collected biogas for beneficial reuse. Additionally, consumer demand for recycling services has increased in an effort to divert emissions-generating materials away from the landfill, and we have responded by integrating recycling components into each of our collection service offerings. Our goal is to provide a complete waste stream management solution to our customers in a vertically integrated, environmentally sustainable way.

Reducing emissions for our fleet according to our SBTi-approved goal reduces our risk in a scenario in which governments enact carbon-reduction policies. At current consumption levels, the addition of a $63/ton carbon tax, corresponding to the 2025 SDS scenario, would result in an increase in our fuel expenses, which we would expect to offset through a fuel recovery fee of approximately $72 million. A substantial rise or drop in fuel costs could materially affect our future revenue and cost of operations. One way we are lowering our emissions in the short-term is by using renewable natural gas (RNG) as a bridge fuel. With one of the largest vocational fleets in the country, using innovative technology to reduce emissions is vital. In 2020, we added 159 new natural gas trucks, bringing the number of vehicles running on alternative fuels to more than 3,300. Our natural gas-powered trucks replace older, diesel-powered vehicles; run on RNG; and help decrease emissions and reduce unwanted noise.

For more information about our GHG emissions goal, our progress and related initiatives, please refer to the Climate Leadership section of our 2020 Sustainability Report and our 2020 GRI Report, Standard 305. Please also refer to our TCFD Report. These reports are available at www.republicservices.com/sustainability.

C11.2

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

No

C11.3

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

No, but we anticipate doing so in the next two years

C12. Engagement

C12.1

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

Yes, our suppliers

Yes, our customers

C12.1a

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

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

0.2

% total procurement spend (direct and indirect)

33

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

Rationale for the coverage of your engagement

Our engagement is focused on our SBTi approved goal to reduce GHG emissions from our operations. Our 2018 Sustainability Report announced our SBTi approved goal, with a target of reducing absolute total Scope 1 and 2 GHG emissions by 35% by 2030. The goal includes efforts to reduce landfill emissions, fleet emissions and building emissions. This response is focused on those suppliers that provide products or services that help Republic reduce our operational emissions. The percent of suppliers is an estimate and some suppliers are involved in multiple aspects of this initiative.

Impact of engagement, including measures of success

Our measure of success for these initiatives is achievement of our GHG reduction goal. We must pursue tangible actions to collaborate with suppliers in pursuit of making progress toward the GHG reduction goal. We strive to maximize the collection of gas within the landfill to minimize potential fugitive emissions and maintain landfill health. This part of the engagement includes working with suppliers that can provide landfill gas collection equipment, help us develop landfill gas to energy projects, provide products and services that help us divert materials from landfills that create methane while decomposing and invest in new technologies to improve our landfill emissions controls. As an example, in 2019 we increased the amount of landfill gas recovered from our landfills by 3.12%. One contributor to this progress was an upgrade to a landfill gas to energy project at Blue Ridge Landfill in Texas. Morrow Renewables, which built and operates the landfill gas-to-energy facility at Blue Ridge Landfill, is a recognized leader among renewable natural gas developers. Morrow partners with Republic on three renewable energy projects in Texas. In addition, we work together with a number of suppliers to develop engines, equipment and fuel that improve our fuel efficiency and fleet carbon footprint, thereby reducing the climate impact of our services. Initiatives

include CNG engines, CNG fueling stations, RNG fuel supply and purchase, and electric vehicles. We have been ramping up our use of renewable natural gas (RNG) since 2016, working with project developers and RNG suppliers. In 2020 approximately 21% of our fleet operated on natural gas. Through these activities we were able to reduce our use of diesel fuel in 2020, resulting in a reduction in GHG emissions of close to 65,000 MTCO2e. Finally, our new building construction and retrofits adhere to the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards. This includes using products and services that help us achieve energy reduction, water conservation measures and the use of sustainable materials and design principles that enhance comfort.

Comment

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

74

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

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

As reported in our 2020 SASB response, the percentage of customers receiving recycling services by service type is: residential - 74% small container - 25% large container - 26%. We selected customers who receive recycling services because of the significant impact that recycling has on emission avoidance and recycling education helps us achieve our circular economy goal. We have estimated the full lifecycle emissions impacts from our sold products, mainly recycled commodities (2.36M tons sold in 2020, including 420k tons of compost). The number reported in section C6.5 "use of sold products" represents the positive portion of the emissions associated with the use of sold compost. Total lifecycle emissions impacts, however, result in a negative 6.9M MTCO2e (avoided) emissions, which we are not able to enter into the metric tons CO2e column as it only allows positive numbers. Lifecycle emissions include upstream mining, processing and transportation of materials that enter the waste stream,

transportation and recovery/processing of commodities/compost by companies like Republic, as well as, downstream processing, transportation, and re-manufacturing where applicable. Emissions from recycled materials and compost sold are calculated using methodologies and emission factors from the U.S. EPA's Waste Reduction Model (WARM), version 15. Recycled materials sold is a percent of commodities as sold by Republic in 2020. GWPs are from the IPCC (2007) Fourth Assessment Report. We provide recycling services to a significant portion of our municipal customers. We offer recycling education to these customers as well as residential, industrial and commercial customers that are interested in or that have signed up for recycling services. Our recycling education campaign, Recycling Simplified program (https://recyclingsimplified.com/), is available not only to our customers and the broader community. These campaigns are designed to inform our customers and the general public about the value of recycling and how to recycle correctly. Education helps reduce contamination in the recycle stream which improves the sustainability of recycling as an offering. In addition to lifecycle GHG reductions, successful recycling improves the financial returns to both our company and the customer, while improving the quality of recovered materials that are sold to downstream re-processors.

Impact of engagement, including measures of success

There are two measures of success for this initiative. One is a benefit for our customers and includes reduction of waste sent to landfills (pounds or tons). A second measure of success is our ability to return more recycled commodities to the economy. We have a goal related to Circular Economy, which is to increase recovery of key materials by 40% on a combined basis by 2030 (from a 2017 baseline). This public goal is achieved in part by educating customers on what materials to recycle. Education reduces contamination in the recycle stream which helps us recover more and provide higher quality commodities to re-processors. Recycling education provides benefits to both Republic, our customers and communities. Republic received and processed over 6.4 million tons of recycled material in our facilities in 2020. Every percentage of contamination represents increased cost to process, handle, re-process and dispose of non-recyclable material. Education can not only increase the amount of recyclables collected, but also decrease the amount of contamination. In 2020, we increased the recovery and resale of targeted commodities (cardboard, metals, plastics, organics, biogas and oil) to over 4.6 million tons, a notable achievement given the difficult market drivers for recycling in 2020. This marks a 4.5 percent increase in recycling since 2017. Benefits to our customers vary by customer. As an example, in working with a global, $13.5B annual revenue food producer, we eliminated close to 22 million pounds of landfilled waste over a four-year period in the US. Financial benefits due to recycling come in the areas of disposal reduction, hauling reduction, new markets for food by-products and recycling of ingredient bags/liners. These benefits lead to lower GHG emissions in a variety of ways – reduced transportation, reduced emissions from landfills and reduced need for virgin materials (food, plastic liners, cardboard).

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?

Trade associations

Other

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

National Waste & Recycling Association (NWRA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The mission of the NWRA (https://wasterecycling.org/page/Federal) is to provide leadership, advocacy, research, education and safety expertise to promote the North American waste and recycling industries, serve as their voice and create a climate where members prosper and provide safe, economically sustainable and environmentally sound services. Given the relationship between climate change and waste, there are a number of areas where NWRA states a position that can influence climate change. Their current agenda includes the following:
Recycled Materials - NWRA urges Congress and federal regulatory agencies to implement policies that encourage development of the domestic market for recycled materials through federal grants and tax incentives.
Energy Generation - NWRA supports the continued use of landfill produced methane gas as a renewable energy product.
Food Waste - NWRA encourages adoption of "The Food Recovery Act" establishing grants and loans for facilities to install anaerobic digesters that use food or crop waste to produce energy.

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

Republic Service's national focus areas are related to solid waste, environment, energy, transportation, labor, and taxes - many of which overlap with NWRA's position stated above. We work closely with them to develop and maintain positions on these matters

that are consistent with our corporate strategy and sustainability objectives, where possible.

C12.3e

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

Republic is involved in numerous policy, trade, advocacy, and community activities across our business at the local, state and federal levels. In general, we support efforts to ensure responsible and ethical handling of waste, increase recycling and other landfill diversion approaches, and create a strong and viable, yet sustainable, market for materials recovered from the waste stream. In 2014 we published a Political Contributions Policy, which can be found at the following link: https://investor.republicservices.com/static-files/be5236da-e21c-4fa6-8689-de9a44151293. The policy was updated in 2018.

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?

All policy engagement at the local, state and federal levels is coordinated by one executive leader at Republic, the Vice President, Government Affairs. He is assisted by a team of government affairs professionals and contracted consultants to engage on issues of importance to our business, under his direction. At the beginning of each legislative session, this team develops a list of proposed legislation that might impact Republic or our industry. Any bills that fall under the evolving ton and/or climate change category are circulated to the appropriate team for a draft position. The draft position is reviewed by the affected local market or area team for comment. The position is then finalized by the evolving ton team. This position is then supported at the appropriate level by the local or contract employees under the direction of the Vice President, Government Affairs. Status updates are provided on an on-going basis to ensure timely engagement.

In terms of trade associations and research organizations, we have numerous employees across the business engaged with these groups. Some are involved in Board leadership of the organizations, others are at various levels and capacities, including individual memberships. With these organizations, we generally support efforts to ensure responsible and ethical handling of waste, increase recycling and other landfill diversion approaches, and create a strong and viable, yet sustainable, market for materials recovered from the waste stream.

The process for ensuring consistent policy influence is evolving and expanding, particularly as it relates to climate change. In our experience of working in 41 states and Puerto Rico, now divested, some markets are more advanced than others and have deployed more resources in adopting measures related to climate change and are therefore more capable of implementing various climate change impact reduction measures. In addition, different markets, associations, and entities have different strategies and legislative agendas for dealing with climate change. It is difficult and oftentimes not straightforward to embrace all of these strategies to achieve our

objectives. However, we continue to work on improving this practice as it is linked to one of our core values of responsibility.

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).

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	COO	Chief Operating Officer (COO)

SC. Supply chain module

SC0.0

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

SC0.1

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

	Annual Revenue
Row 1	10,153,600,000

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

California Department of General Services (DGS)

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

605.02

Uncertainty (±%)

5

Major sources of emissions

Landfill fugitive emissions, fleet and heavy equipment.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Service's Scope 1 profile, which finds that roughly 90% of company Scope 1 emissions are due to material that is sent to the landfill. The fraction resulting from the tons of material collected from our customers compared to the total tons of material that Republic Services collects from all customers is used to determine individual customer's emissions. This percent was applied to Republic Service's total Scope 1 emissions to determine the Scope 1 emissions

allocated to each customer. Republic Service's Scope 1 emissions include emissions due to transportation and landfilling of waste. These Scope 1 emissions do not include LCA emission reductions of materials that are recycled. We feel this would be of value to our customers: Using the tons of material sent to various waste management facilities, as compared to landfilling all waste, and conducting an LCA analysis using the EPA WARM model v15 on that material, we find that the Scope 1 emissions are actually negative by –1440 tonnes of CO2e. Roughly 9% of California DGS's material collected by Republic is recycled.

Requesting member

National Grid PLC

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

170.93

Uncertainty (±%)

5

Major sources of emissions

Landfill fugitive emissions, fleet and heavy equipment.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Service's Scope 1 profile, which finds that roughly 90% of company Scope 1 emissions are due to material that is sent to the landfill. The fraction resulting from the tons of material collected from our customers compared to the total tons of material that Republic Services collects from all customers is used to determine individual customer's emissions. This percent was applied to Republic Service's total Scope 1 emissions to determine the Scope 1 emissions allocated to each customer. Republic Service's Scope 1 emissions include emissions due to transportation and landfilling of waste. These Scope 1 emissions do not include

LCA emission reductions of materials that are recycled. We feel this would be of value to our customers: Using the tons of material sent to various waste management facilities, as compared to landfilling all waste, and conducting an LCA analysis using the EPA WARM model v15 on that material, we find that the Scope 1 emissions are actually negative by –775 tonnes of CO2e. Roughly 20% of National Grid's material collected by Republic is recycled. The recycling LCA analysis does not include C&D material or special waste.

Requesting member

CVS Health

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

23,278.17

Uncertainty (±%)

5

Major sources of emissions

Landfill fugitive emissions, fleet and heavy equipment.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Service’s Scope 1 profile, which finds that roughly 90% of company Scope 1 emissions are due to material that is sent to the landfill. The fraction resulting from the tons of material collected from our customers compared to the total tons of material that Republic Services collects from all customers is used to determine individual customer's emissions. This percent was applied to Republic Service’s total Scope 1 emissions to determine the Scope 1 emissions allocated to each customer. Republic Service’s Scope 1 emissions include emissions due to transportation and landfilling of waste. These Scope 1 emissions do not include LCA emission reductions of materials that are recycled. We feel this would be of value

to our customers: Using the tons of material sent to various waste management facilities, as compared to landfilling all waste, and conducting an LCA analysis using the EPA WARM model v15 on that material, we find that the Scope 1 emissions are actually negative by -161505 tonnes of CO2e. Roughly 30% of CVS Health's material collected by Republic is recycled.

Requesting member

Kellogg Company

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

4,180.48

Uncertainty (±%)

5

Major sources of emissions

Landfill fugitive emissions, fleet and heavy equipment.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Service’s Scope 1 profile, which finds that roughly 90% of company Scope 1 emissions are due to material that is sent to the landfill. The fraction resulting from the tons of material collected from our customers compared to the total tons of material that Republic Services collects from all customers is used to determine individual customer's emissions. This percent was applied to Republic Service’s total Scope 1 emissions to determine the Scope 1 emissions allocated to each customer. Republic Service’s Scope 1 emissions include emissions due to transportation and landfilling of waste. These Scope 1 emissions do not include LCA emission reductions of materials that are recycled. We feel this would be of value to our customers: Using the tons of material sent to various waste management facilities, as compared to landfilling all waste, and conducting an LCA analysis using the

EPA WARM model v15 on that material, we find that the Scope 1 emissions are actually negative by -17910 tonnes of CO2e. Roughly 18% of Kellogg Company's material collected by Republic is recycled.

Requesting member

Schlumberger Limited

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

841.49

Uncertainty (±%)

5

Major sources of emissions

Landfill fugitive emissions, fleet and heavy equipment.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Service's Scope 1 profile, which finds that roughly 90% of company Scope 1 emissions are due to material that is sent to the landfill. The fraction resulting from the tons of material collected from our customers compared to the total tons of material that Republic Services collects from all customers is used to determine individual customer's emissions. This percent was applied to Republic Service's total Scope 1 emissions to determine the Scope 1 emissions allocated to each customer. Republic Service's Scope 1 emissions include emissions due to transportation and landfilling of waste. These Scope 1 emissions do not include LCA emission reductions of materials that are recycled. We feel this would be of value to our customers: Using the tons of material sent to various waste management facilities, as compared to landfilling all waste, and conducting an LCA analysis using the EPA WARM model v15 on that material, we find that the Scope 1 emissions are actually

negative by -872 tonnes of CO2e. Roughly 4% of Schlumberger Limited's material collected by Republic is recycled.

Requesting member

California Department of General Services (DGS)

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

11

Uncertainty (±%)

5

Major sources of emissions

Offices and other facilities.

Verified

No

Allocation method

Allocation based on the market value of products purchased

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

The GHG source was identified using Republic Services Scope 2 profile, which consists of all electricity purchases and consumption. To allocate total Scope 2 emissions at a customer level, Republic Services uses the market value of the collection services delivered to a customer from total revenue.

Requesting member

National Grid PLC

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e
3

Uncertainty (±%)
5

Major sources of emissions
Offices and other facilities.

Verified
No

Allocation method
Allocation based on the market value of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
The GHG source was identified using Republic Services Scope 2 profile, which consists of all electricity purchases and consumption. To allocate total Scope 2 emissions at a customer level, Republic Services uses the market value of the collection services delivered to a customer from total revenue.

Requesting member
CVS Health

Scope of emissions
Scope 2

Allocation level
Company wide

Allocation level detail

Emissions in metric tonnes of CO2e
419.96

Uncertainty (±%)
5

Major sources of emissions
Offices and other facilities.

Verified
No

Allocation method

Allocation based on the market value of products purchased

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

The GHG source was identified using Republic Services Scope 2 profile, which consists of all electricity purchases and consumption. To allocate total Scope 2 emissions at a customer level, Republic Services uses the market value of the collection services delivered to a customer from total revenue.

Requesting member

Kellogg Company

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

75.42

Uncertainty (±%)

5

Major sources of emissions

Offices and other facilities.

Verified

No

Allocation method

Allocation based on the market value of products purchased

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

The GHG source was identified using Republic Services Scope 2 profile, which consists of all electricity purchases and consumption. To allocate total Scope 2 emissions at a customer level, Republic Services uses the market value of the collection services delivered to a customer from total revenue.

Requesting member
Schlumberger Limited

Scope of emissions
Scope 2

Allocation level
Company wide

Allocation level detail

Emissions in metric tonnes of CO2e
15.18

Uncertainty (±%)
5

Major sources of emissions
Offices and other facilities.

Verified
No

Allocation method
Allocation based on the market value of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
The GHG source was identified using Republic Services Scope 2 profile, which consists of all electricity purchases and consumption. To allocate total Scope 2 emissions at a customer level, Republic Services uses the market value of the collection services delivered to a customer from total revenue.

Requesting member
California Department of General Services (DGS)

Scope of emissions
Scope 3

Allocation level
Company wide

Allocation level detail

Emissions in metric tonnes of CO2e
18

Uncertainty (±%)

5

Major sources of emissions

Upstream Transportation and Distribution (e.g., 3rd Party Haulers and Subcontract Collection services) and Business Travel.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Services Scope 3 profile, which consists of upstream transportation activities associated with third party hauling/subcontracting, as well as corporate business travel including air and rental vehicles. These three sources are verified alongside our scope 1 & 2 emissions verification by a 3rd party. Non-verified scope 3 emissions are not included in these figures. The fraction resulting from the tons of material collected from our customers compared to the total tons of material that Republic Services collects from all customers is used to determine individual customer's Scope 3 emissions.

Requesting member

National Grid PLC

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

5

Uncertainty (±%)

5

Major sources of emissions

Upstream Transportation and Distribution (e.g., 3rd Party Haulers and Subcontract Collection services) and Business Travel.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Services Scope 3 profile, which consists of upstream transportation activities associated with third party hauling/subcontracting, as well as corporate business travel including air and rental vehicles. These three sources are verified alongside our scope 1 & 2 emissions verification by a 3rd party. Non-verified scope 3 emissions are not included in these figures. The fraction resulting from the tons of material collected from our customers compared to the total tons of material that Republic Services collects from all customers is used to determine individual customer's Scope 3 emissions.

Requesting member

CVS Health

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

682.16

Uncertainty (±%)

5

Major sources of emissions

Upstream Transportation and Distribution (e.g., 3rd Party Haulers and Subcontract Collection services) and Business Travel.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Services Scope 3 profile, which consists of upstream transportation activities associated with third party hauling/subcontracting, as well as corporate business travel including air and rental vehicles. These three sources are verified alongside our scope 1 & 2 emissions verification by a 3rd party. Non-verified scope 3 emissions are not included in these figures. The fraction resulting from the tons of material collected from our customers compared to the total tons of material that Republic Services collects from all customers is used to determine individual customer's Scope 3 emissions.

Requesting member

Kellogg Company

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

122.51

Uncertainty (±%)

5

Major sources of emissions

Upstream Transportation and Distribution (e.g., 3rd Party Haulers and Subcontract Collection services) and Business Travel.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Services Scope 3 profile, which consists of upstream transportation activities associated with third party hauling/subcontracting, as well as corporate business travel including air and rental vehicles. These three sources are verified alongside our scope 1 & 2 emissions verification by a 3rd party. Non-verified scope 3 emissions are not included in these figures. The fraction resulting from the tons of material collected from our customers compared to the total tons of

material that Republic Services collects from all customers is used to determine individual customer's Scope 3 emissions.

Requesting member

Schlumberger Limited

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

24.66

Uncertainty (±%)

5

Major sources of emissions

Upstream Transportation and Distribution (e.g., 3rd Party Haulers and Subcontract Collection services) and Business Travel.

Verified

No

Allocation method

Allocation based on mass of products purchased

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

The GHG source was identified using Republic Services Scope 3 profile, which consists of upstream transportation activities associated with third party hauling/subcontracting, as well as corporate business travel including air and rental vehicles. These three sources are verified alongside our scope 1 & 2 emissions verification by a 3rd party. Non-verified scope 3 emissions are not included in these figures. The fraction resulting from the tons of material collected from our customers compared to the total tons of material that Republic Services collects from all customers is used to determine individual customer's Scope 3 emissions.

SC1.2

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

Republic Services Scope 1, 2 and 3 emissions were reported to the CDP in July 2021 and are included in the Republic Services 2020 GRI Report found at www.republicservices.com/sustainability.
For the LCA estimates using the EPA WARM Model v15, the methodologies used to develop these emission factors, user guides and other documentation are described in detail in the background reports and are available for download at 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
Other, please specify Complexity of waste/material solutions	The calculations around waste/material logistics are complex with multiple nuances including data issues with 3rd party vendors, access to data for weight of material collected for individual locations, and the dynamic nature of our operations' routes. Depending on the number of locations for a given customer, these calculations get complex quickly. We are exploring the use of software tools to improve this calculation methodology and process, but we would still have gaps with the small supplier data.

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.

We may consider expanding our capability beyond the methodology and approach provided herein in the future, but today we do not get enough requests for this type of data to warrant investment in a tool or expanded process to do so. We believe that the analysis that we do today is sufficient for most customers.

SC2.1

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

SC2.2

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

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, I will submit the Supply Chain questions now

Please confirm below