



REPUBLIC
SERVICES

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Task Force on Climate-related Financial Disclosures
2020 TCFD Report

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This report was prepared using the reporting entity described in the Republic Services 2020 Form 10-K. All data is as of December 31, 2020, for calendar year 2020, unless otherwise noted.

Unless the context requires otherwise, all references in this 2020 Task Force on Climate-related Financial Disclosures (TCFD) Report to "Republic," "the Company," "we," "us" and "our" refer to Republic Services, Inc. and its consolidated subsidiaries.

Safe Harbor Statement

Disclosure Regarding Forward-Looking Statements

This report contains certain forward-looking information about us that is intended to be covered by the safe harbor for “forward-looking statements” provided by the Private Securities Litigation Reform Act of 1995. Forward-looking statements are statements that are not historical facts. Words such as “guidance,” “expect,” “will,” “may,” “anticipate,” “plan,” “estimate,” “project,” “intend,” “should,” “can,” “likely,” “could,” “outlook” and similar expressions are intended to identify forward-looking statements. These statements include information about our sustainability targets, goals and programs in addition to our plans, strategies, expectations of future financial performance and prospects. Forward-looking statements are not guarantees of performance. You should not place undue reliance on any forward-looking statement. These statements are based upon the current beliefs and expectations of our management and are subject to significant risk and uncertainties that could cause actual results to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot assure you that the expectations will prove to be correct. The inclusion of information in this report should not be construed as a characterization regarding the materiality or financial impact of that information. More information on factors that could cause actual results or events to differ materially from those anticipated is included from time to time in our reports filed with the Securities and Exchange Commission, including our Annual Report on Form 10-K for the year ended December 31, 2020, particularly under Part I, Item 1A - Risk Factors, and in our Quarterly Reports on Form 10-Q. Additionally, new risk factors emerge from time to time and it is not possible for us to predict all such risk factors, or to assess the impact such risk factors might have on our business or sustainability programs and goals. We undertake no obligation to update publicly any forward-looking statements whether as a result of new information, future events or otherwise, except as required by law.

Letter from the CEO

Climate-related risks and opportunities are not new to Republic, nor is our response to them. These risks and opportunities are already shaping key aspects of our industry today and have even greater potential to do so in the future. We respect our investors' interest in how we're thinking about these topics, which is why we're releasing this report following the Task Force for Climate-related Financial Disclosures (TCFD) framework.

We've taken a structured approach to evaluating the nature of physical and transition changes to our industry, how they create risks and opportunities for our business, what the financial implications may be, and how our actions can help us manage our risks and capitalize on opportunities – now and in the future. We've been on this journey for several years, and we'd like to share that with you.

Republic is an industry leader in evaluating the relationship between climate change and responsible waste handling infrastructure, and in developing low-carbon solutions for our customers. These solutions include recovering key materials through recycling, powering more of our collection vehicles with renewable natural gas and producing renewable energy from biogas. We are proud to be the first in the industry to set a Science Based Target initiative (SBTi) approved goal for reducing our direct (Scope 1 and 2) greenhouse gas (GHG) emissions. Targets that are SBTi-approved are consistent with the Paris Agreement and its associated goals.

We started several years ago to evaluate our impact and risks related to carbon and climate change. That analysis led us to establish our SBTi-approved climate goals and other related goals as a means to mitigate our risk and to seize opportunities by developing offerings for our customers and partners to reduce their emissions.

This report enumerates how we've assessed climate change risks and our actions to date. Notably, it describes how we have explored the financial impact of a key element of the transition to a low-carbon economy – a price on carbon, or “carbon tax.” We have found using a carbon tax to be a simple, clear example of the financial analysis we conduct to understand our business risks under different climate scenarios.

We look forward to providing continued leadership in the transition to a low-carbon economy and invite you to join us as we continue driving toward transparency and disclosure.

Sincerely,



Donald W. Slager, Chief Executive Officer

How We're Managing the Low-Carbon Transition

Republic conducted its first non-financial materiality assessment in 2014, which identified several climate-related risks and opportunities. As a result, we established time-bound goals to address our direct (Scope 1) greenhouse gas emissions and develop low-carbon offerings for our customers, among other actions. We met these goals in 2018, which propelled us to update our materiality assessment, including an analysis of global trends, identification of our business model dependencies and engagement with key stakeholders. In 2019, we announced a new set of long-term goals that demonstrate our commitment to a just, low-carbon transition. The goals in the "Operations" and "Materials Management" elements of our sustainability platform are directly linked to climate-related risks and opportunities, as shown in *Figure 1*.

Figure 1: 2030 Sustainability Goals



Although this is our first TCFD Report, we are not new to the governance, strategy, management and metric-setting recommended by the TCFD. Our 2030 climate-related goals represent our actions aimed at managing and reducing our risks and further driving our opportunities. They are the output of our processes to identify, assess, manage and govern climate-related risks and opportunities, which we will describe in this report.

Figure 2: Relationship between our goals and our climate-related risks and opportunities discussed in this report.

Climate-Related Risk	Associated Goal	Mitigation Strategy (Climate-Related Opportunity)	Associated Goal
Fleet GHG Emissions	Climate Leadership	Low-emissions collection offering: <ul style="list-style-type: none"> • Renewable natural gas (RNG) • Electric vehicles 	Climate Leadership
Landfill GHG Emissions	Climate Leadership	Biogas collection	Regenerative Landfills
		Recycling	Circular Economy

TCFD Recommendation One

GOVERNANCE

Disclose the organization's governance around climate-related risks and opportunities.

a) Board's oversight of climate-related risks and opportunities.

Our Board of Directors is actively involved in risk oversight. We believe the Board's role is to ensure that:

- The risk-management processes designed and implemented by leadership are adapted to the overall corporate strategy.
- Those processes are functioning effectively.
- Management regularly communicates material risks to the Board or the appropriate Board committee.
- Actions are being taken to continue to foster a strong culture of compliance and risk-adjusted decision-making throughout the organization.

Republic created a Sustainability & Corporate Responsibility Committee of the Board in 2015. We believe that our sustainability initiatives warrant a dedicated Board committee due to the unique nature of climate risks, which include interconnectedness of risks and the challenges of predicting them, extended time horizons and difficulty in quantifying impact.

The Committee is informed regularly about progress toward Republic's climate-related goals, which are three of the seven long-term commitments in the Company's sustainability platform. These goals address greenhouse gas emissions from Operations and low-carbon offerings to customers in our Materials Management element. The Committee also has oversight over the Enterprise Risk Management (ERM) program, which includes climate-related risks and opportunities. The Committee meets quarterly and receives reports from management on topics such as:

- Management of and progress on environmental topics, including the Company's greenhouse gas emissions.
- Results of the ERM program, which includes assessment, prioritization and management of risks and opportunities, including those related to climate issues.
- Management and progress on social topics, including those that impact the Company's ability to meet goals related to climate change. An example is recycling education, which helps improve the durability of recycling.
- Sustainability strategy, reporting and progress against sustainability goals. Our SBTi-approved greenhouse gas emissions goal and related strategy is included in this

discussion, as are our goals and strategies to increase recycling and biogas beneficial reuse.

The Sustainability & Corporate Responsibility Committee reports to the full Board after each quarterly meeting. These topics are then included in Board actions and decisions, such as:

- Approving budgetary allocations, for example, to work on methods for measuring landfill greenhouse gas emissions.
- Approving capital allocations to support strategic initiatives such as recycling and fleet decarbonization.
- Approving executive compensation plans and management incentive plans, which incorporate the benefits from our strategic initiatives and sustainability efforts, including projects related to climate change. The management incentive plans are applicable to all employees at manager level and above.

Figure 3: Summary of climate-related risk & opportunity governance and management

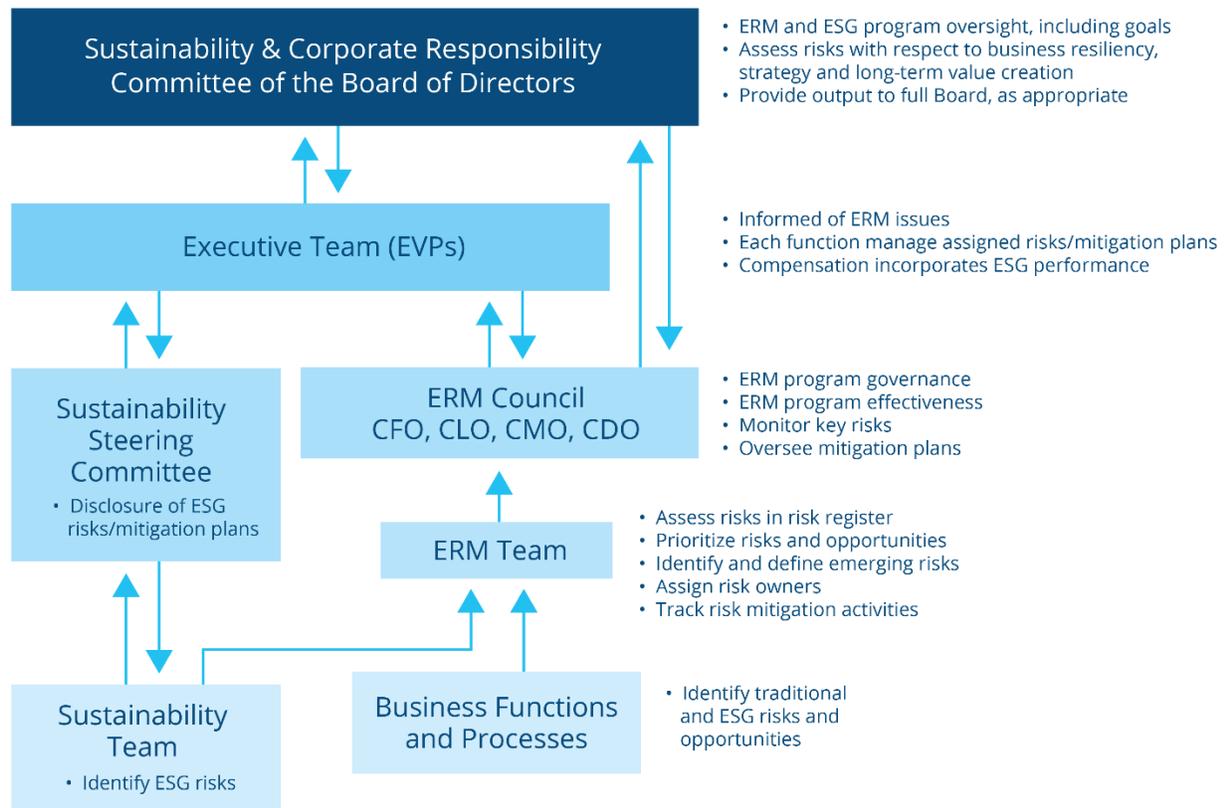
Governance	Overview
Board of Directors	The Board is actively involved in risk oversight, receiving regular reports from the Sustainability & Corporate Responsibility Committee as well as other Board committees and management on matters pertaining to risk oversight. The Board approves the annual budget, which includes funding for the Company's sustainability agenda and climate-related activities.
Sustainability & Corporate Responsibility Committee	The Committee fulfills certain aspects of the Board's oversight responsibility and advises Company management with respect to significant issues, strategic goals, objectives, policies and practices regarding Republic's sustainability risks and opportunities, including those related to climate change.
Executive Team	Republic's executive leadership team integrates ERM results, including climate-related topics, into strategic planning; reports findings of the ERM process to the Sustainability & Corporate Responsibility Committee and the Board; and manages risks and mitigation plans within each function.
ERM Council	Made up of select executives, the ERM Council monitors ERM program effectiveness, key climate-related risks and associated mitigation plans.
ERM Team	A cross-functional team made up of managers and executives leads the ERM process. This team identifies and defines emerging risks, assigns risk owners, tracks risk-mitigation activities and reports to the ERM Council. Climate-related risks and opportunities are managed via the ERM process.
Sustainability Steering Committee	A cross-functional team made up of select executives and functional leaders that provides strategic oversight and guidance to the Sustainability Team.
Sustainability Team	A functional team that develops business-wide sustainability strategy, including risk identification, and manages environmental, social and governance reporting.

b) Management’s role in assessing and managing climate-related risks and opportunities.

The ERM Council provides governance over the ERM program, overseeing program effectiveness and monitoring key enterprise risks and the associated mitigation plans. The ERM Council is staffed by the Chief Legal Officer, Chief Development Officer, Chief Financial Officer and Chief Marketing Officer. The Council was established to support the strategic plan and objectives of the Company through the governance and oversight of enterprise risks and opportunities.

Outcomes of the ERM process, as described in the Risk Management section of this report and depicted in *Figure 4*, are provided to the Executive Team, as well as the Sustainability & Corporate Responsibility Committee of the Board. This process informs strategy development and ensures the resilience of our strategy, contributing to long-term value creation aligned with business objectives.

Figure 4: Sustainability risk governance & management structure

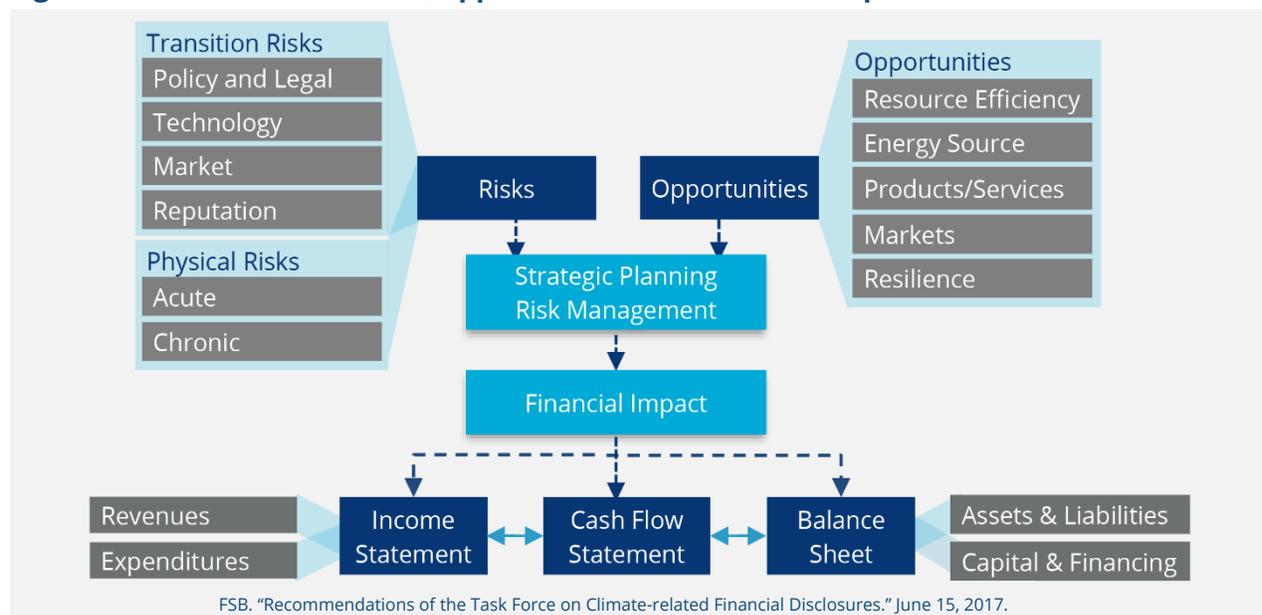


TCFD Recommendation Two

STRATEGY

TCFD guidance: Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning.

Figure 5: Climate-related risks, opportunities and financial impact



Republic has leveraged the TCFD framework and guidance in developing our disclosure of climate-related risks and opportunities. The framework is useful in providing common language for naming, discussing and categorizing climate-related risks and opportunities. It also helps identify which strategic and financial aspects to include, and it makes recommendations on the use of scenarios in the report.

a) Climate-related risks and opportunities the organization has identified over the short, medium and long term.

As addressed earlier, climate-related risks and opportunities are integrated into the Company's ERM system. This facilitates robust conversations about risk management and strategic planning that include climate-related topics. The process prioritizes risks and opportunities based on financial materiality as described in the risk-management section.

Republic has discussed and disclosed many of these topics in our annual report on Form 10-K, and in our Sustainability, GRI and SASB reports over the last several years. Our intent in publishing a TCFD Report is threefold:

1. Highlight and aggregate those risks and strategic activities that are climate-related to make it easier for investors to evaluate.
2. Establish a baseline climate-related disclosure that we can build on in future years as climate-related risks and opportunities evolve and emerge.
3. Demonstrate transparency of the processes used to identify, prioritize and manage these topics.

The risks and opportunities identified in this report are public information, and certain information regarding these risks and opportunities can be found in Republic’s annual report on Form 10-K, our proxy statements and in our Sustainability, GRI and SASB reports posted on our website. These are the key risks and opportunities that Republic has identified, prioritized and disclosed to date.

Figure 6: Climate-related risks resulting from a carbon tax

Risk Type	Risk	Potential Financial Impact	Impact			Associated Goal
			Time horizon			
			0-5 yrs	5-10 yrs	10-40+ yrs	
Transition: Policy and Legal	Fleet Fuel Emissions	Increased operating costs due to increased pricing of GHG emissions (carbon tax)	Medium	High	High	1. Science Based Target initiative (SBTi) approved goal to reduce fleet fuel emissions by 35% by 2030 (2017 baseline year) through: <ul style="list-style-type: none"> • Renewable natural gas • Electric vehicles
	Landfill Emissions	Increased operating costs due to increased pricing of GHG emissions (carbon tax)	Low	Medium	Medium	1. SBTi-approved goal to reduce landfill emissions by 35% by 2030 (2017 baseline year) through: <ul style="list-style-type: none"> • Maximizing biogas collection (Goal) • Improving landfill diversion via recycling (Goal)

Figure 7: Climate-related opportunities

Opportunity Type	Business Activity Impacted	Potential Financial Benefit	Opportunity			Benefit Capture Strategy
			Time horizon			
			0-5 yrs	5-10 yrs	10-40+ yrs	
Energy Source/ Products and Services	Collection Service Offering	Reduced operating costs through lower cost fuel usage/ Increased revenue serving customers that value a low-emissions offering	High	High	High	Transition to lower-emissions fuels: Measurement: <ul style="list-style-type: none"> 21% percent of alternative-fuel vehicles in fleet, as of 12/31/2019¹
Products and Services	Recycling Service Offering	Increased revenue serving customers that value recycling as a low-emissions offering	High	High	High	Increase recovery of key materials: Measurement <ul style="list-style-type: none"> In 2019, \$34M invested in technology and equipment upgrades at 39 recycling facilities²

b) Impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning.

Figure 8: Policy and legal climate-related impacts

Risk Type	Risk/ Impact	Potential Impact On:		
		Businesses	Strategy	Financial Planning
Transition: Policy and Legal	Fleet Fuel Emissions	We have 16,000 collection vehicles ³ , which are used in the majority of our lines of business, including recycling.	Advances in alternative-fuel technology to increase fuel economy and decrease emissions to limit the effects of increases in atmospheric carbon emissions are an integrated part of our "Operating Model" foundational element ⁴ .	Reducing fleet emissions requires the following: <ul style="list-style-type: none"> Capital planning for replacement vehicles and fueling infrastructure Partnering with manufacturers of electric vehicle technology Use of renewable fuel credits
	Landfill Emissions	Republic handled 114 million tons of material in 2019 ⁵ , a significant portion of which is taken to a Republic landfill or a third-party landfill.	We believe that vertical integration provides us with a strategic advantage. This requires that we monitor and manage landfill emissions to maintain our license to operate as part of our "Market Position" foundational element ⁶ .	Reducing landfill emissions requires the following: <ul style="list-style-type: none"> Capital planning to ensure appropriate biogas collection and monitoring systems are in place Operating expenses to fund daily, intermediate and final cover

¹ As reported in our [2020 Form 10-K](#).

² As reported in our [2019 Sustainability Report](#). Our 2020 Sustainability Report will be published in summer 2021.

³ As reported in our [2019 SASB Report](#). Our 2020 SASB Report will be published in summer 2021.

⁴ Republic's foundational elements are described on page 2 of our [2020 Form 10-K](#).

⁵ As reported in our [2019 SASB Report](#).

⁶ Republic's foundational elements are described on page 2 of our [2020 Form 10-K](#).

Efforts to curtail the emission of GHGs and to ameliorate the effects of climate change continue to progress. Our landfill operations emit anthropogenic methane, a highly potent GHG, and our vehicle fleet emits, among other things, carbon dioxide, another GHG.

Many municipalities are concerned about greenhouse gas and air emissions from large, heavy-duty truck fleets, and some have responded with regulations and/or ordinances. In addition to setting a science-based target to reduce our fleet GHG emissions, Republic has responded by converting a portion of our fleet to CNG, 98% of which was fueled by renewable natural gas (RNG) in 2020. In addition to reduced operational costs, these actions provide us with a competitive advantage that can translate into additional contract wins.

Increasingly, our stakeholders are taking steps to address the climate-related impacts of sending waste to landfills. Most of the states in which we operate require counties and municipalities 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 materials, such as yard waste, at landfills. Local jurisdictions also have enacted extended producer responsibility regulations, which require producers to fund the post-use lifecycle of their products by providing recycling programs or otherwise taking their post-use products back from consumers. Further, some of the largest companies in the U.S. are setting zero-waste goals in which they strive to send no waste to landfills, and we are seeing many of our customers voluntarily reducing waste through recycling and composting. By supporting diversion of waste from landfills, we are able to both reduce our GHG emissions and create a revenue-generating line of business, recycling.

Figure 9: Additional climate-related impacts

Opportunity Type	Business Activity Impacted	Potential Impact On:		
		Businesses	Strategy	Financial Planning
Energy Source/ Products and Services	Collection Service Offering	We have 16,000 collection vehicles ⁷ , which are used in the majority of our lines of business, including recycling.	Advances in alternative-fuel technology to increase fuel economy and decrease emissions to limit the effects of increases in atmospheric carbon emissions are an integrated part of our "Operating Model" foundational element ⁸ .	Transitioning to alternative-fuel vehicles requires the following: <ul style="list-style-type: none"> • Capital planning for replacement vehicles and fueling infrastructure • Partnering with manufacturers of electric vehicle technology • Use of renewable fuel credits
Products and Services	Recycling Service Offering	Percentage of customers receiving recycling services by service type in 2019 ⁹ : Residential: 74% Small container: 26% Large container: 25%	Climate-related issues such as customer demand for increased diversion of waste (i.e. recycling) influences our approach to managing the evolving ton (growth in diversion) and is part of our "Market Position" foundational element ¹⁰ .	Providing recycling services requires the following: <ul style="list-style-type: none"> • Capital planning for investment in recycling center and other material handling technologies

c) Resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2° c or lower scenario.

To assess the financial impacts of the risks identified above, Republic conducted a scenario analysis consistent with the recommendations of the TCFD framework. We focused on 2025 and 2040 using the following from the International Energy Agency’s World Energy Outlook 2020 (IEA WEO 2020):

- Stated Policies Scenario (STEPS) – For the purpose of this report, this is our business as usual. We projected our Scope 1 (fleet and landfill) carbon emissions out to 2025 and 2040 using current policies and assuming no additional GHG reduction activities taken by the business beyond those included in the five-year plan as of 2017 (the baseline year for our science-based target).
- Sustainable Development Scenario (SDS) – For the purpose of this report, this is our pathway to achieving our SBTi-approved goal of a 35% reduction by 2030. For this analysis, we assumed that we would stay on our science-based target trajectory through 2040.

⁷ As reported in our [2019 SASB Report](#).

⁸ Republic’s foundational elements are described on page 2 of our [2020 Form 10-K](#).

⁹ As reported in our [2019 SASB Report](#).

¹⁰ Republic’s foundational elements are described on page 2 of our [2020 Form 10-K](#).

Figure 10: Republic’s projected fleet and landfill carbon emissions

Name	Scenario		2025 Carbon Emissions Estimate (MMtCO ₂ e)	2040 Carbon Emissions Estimate (MMtCO ₂ e)
Stated Policies Scenario (STEPS)	IEA WEO 2020	Fleet	1.38	1.47
		Landfill	12.85	14.92
Sustainable Development Scenario (SDS)	IEA WEO 2020	Fleet	1.15	0.56
		Landfill	9.40	4.55

Landfill Fugitive Emissions

Reducing emissions from our landfills according to our SBTi-approved goal reduces our risk in a scenario in which governments enact carbon-reduction policies. 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. Although the impact to operating costs due to this type of policy is difficult to model, we can discuss the actions we are taking to maintain our strategic options in the face of this type of policy.

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 69 landfill gas-to-energy projects that convert collected biogas for beneficial reuse.

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.

We continue to invest in proven technologies to control costs and to simplify and streamline recycling for our customers. For example, robotics and advanced sorting equipment, such as

disk screens, magnets and optical sorters, identify and separate different kinds of paper, metals, plastics and other materials to increase efficiency and maximize our recycling efforts.

In 2020 the 76 recycling centers that we own or operate generated \$297.1M in revenue. For the same year, recycling processing and sale of commodities revenue represented roughly 3% of total Company revenue. Additionally, a portion of our collection revenue is related to hauling of recyclable materials.

Fleet Fuel Emissions

Following the STEPS, or business as usual, does not involve putting a price on carbon. Following the SDS is equivalent to setting prices on our carbon emissions as discussed above.

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.

Powering our fleet with renewable natural gas (RNG) is one way we're lowering our 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. Our new CNG-powered trucks replace older, diesel-powered vehicles; can run on RNG; and help decrease emissions and reduce unwanted noise. With an expanding fleet of vehicles that produce significantly fewer greenhouse gas emissions, we're making a difference throughout the communities we serve.

We believe using CNG vehicles powered by RNG provides us a competitive advantage in communities with strict clean emissions initiatives that focus on protecting the environment. Although upfront capital costs are higher, using RNG reduces our overall fleet operating costs through lower fuel expenses.

We are also monitoring and influencing a number of alternative fuel technologies, such as electrification, to improve the total cost of ownership of our fleet and reduce our environmental impact through lower fleet emissions.

Costs of Carbon Pricing on Fleet Emissions

We used the carbon tax estimates provided by the IEA WEO 2020 analysis in 2025 and 2040 to develop an estimate of the incremental costs to the business of a carbon tax under both the STEPS and SDS scenarios, mentioned above. We reviewed a variety of calculations to set a carbon tax, including governments, corporations and NGOs, and we chose the calculations in the IEA WEO 2020 analysis because they are part of widely accepted climate scenarios. We then modeled our risk-management strategy, reflecting GHG reductions aligned with our SBTi-

approved goal, and have reflected the potential range of resulting Operating Income impacts below. We chose to use a carbon tax as an example of a regulatory device that could impact our business because it is a very specific type of policy lever that is readily modeled using scenarios to determine financial impact and demonstrate the resilience of our strategy. The estimated fleet fuel emissions cost impact shown in the table below is presented for illustrative purposes only, is based on numerous assumptions and estimates, is subject to numerous uncertainties, and does not necessarily reflect or predict the actual impact on the Company's fleet fuel emissions costs in the years shown.

Figure 11: Estimated Fleet Fuel Emissions Cost Impact

Risk Potential	STEPS	SDS
2025		
Carbon tax impact on fleet fuel usage (\$/ton)	0.00	63.00
Impact on fuel operating costs (\$M)	0.00	72.47
2040		
Carbon tax impact on fleet fuel usage (\$/ton)	0.00	140.00
Impact on fuel operating costs (\$M)	0.00	77.85

TCFD Recommendation Three

RISK MANAGEMENT

TCFD guidance: Disclose how the organization identifies, assesses and manages climate-related risks.

a) Describe the organization's processes for identifying and assessing climate-related risks.

Climate-related risks are identified via two separate methods, then integrated into the ERM process for assessment and prioritization. These methods are via regular business processes and through dedicated climate-risk tracking as part of the sustainability function, see *Figure 4*, above. The regular business processes identified in our local markets tend to focus on short-term risks, within a 0-5-year time frame. However, when discussing long-lived assets such as recycling facilities or landfills, long-term issues may come up. The Corporate planning function for fleet, recycling facilities and landfills aligns with the time frames discussed above (short-term, 0-5 years; medium-term, 5-10 years; long-term, 10-40 years). The sustainability function focuses on risks across all time frames: 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 opportunities identified through these processes cover topics that are directly linked to climate change, such as fuel and electricity consumption, our recycling business, fleet emissions, landfill emissions and impacts of adverse weather.

Once identified and aggregated, risks are assessed for severity and prioritization within existing ERM processes using a ranking that includes financial, legal/regulatory/compliance, operational and brand/reputational impacts. Each risk is scored by impact, resulting in a negligible, minor, moderate, major or catastrophic risk categorization. The likelihood and probability are then estimated, and the risks are plotted into a matrix that facilitates discussions about risk management. For the purposes of assessing climate-related risks, these analyses consider financial impacts at or above \$1M. Risks at this level are included in the risk matrix.

Any risks that fall into the high significance and/or high likelihood categories, and that are likely to impact the business in the short-term (1-5 years), are monitored and managed in the following ongoing forums:

- Monthly and as-needed Sustainability Steering Committee meetings
- Periodic Area operating reviews with the Executive Team
- Monthly CEO staff meetings
- Quarterly corporate operating reviews
- Quarterly Board meetings
- Annual reviews of risks identified in Form 10-K
- Periodic interviews with Senior Management
- Day-to-day oversight of risks by functional leaders throughout the organization

b) Describe the organization's processes for managing climate-related risks.

The process for managing all business risks and opportunities, including those that are climate-related, is handled by the ERM team and the appropriate functional owners throughout the organization. The ERM team determines the management approach and assigns a functional leader/owner. The functional leader creates a mitigation plan and is responsible for reporting out on progress. This process is completed at least once a year, or more often if new risks emerge or the nature or severity of a risk changes, which requires an adjustment to the previously developed management approach.

c) Processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

Our ERM process is designed to identify, assess, prioritize, 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 steps of the process are shown in *Figure 12*, below.

Figure 12: Enterprise Risk Management process



As described earlier, the ERM matrix is populated with risks and opportunities from a variety of business functions and processes. These risks include those originating from climate-related issues. Aggregated risks and opportunities are then assessed and prioritized based on their impact to the strategy and organization by the ERM Team, which consists of multiple functional representatives. This group, which leads the ERM process, also identifies and defines emerging risks, assigns risk owners, tracks risk-mitigation activities and reports to the ERM Council. The ERM Team is led by the Deputy General Counsel.

TCFD Recommendation Four

METRICS & TARGETS

TCFD guidance: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities.

a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk-management process.

In general, climate-related risks and opportunities that arise through the ERM process, described under TCFD Recommendation Three, are aggregated and evaluated against a number of criteria, including employee safety, cost/benefit, brand and reputation, business continuity impacts or other factors specific to the risk. Free cash flow generation, internal rate of return and return on invested capital are key metrics that are used consistently across the business. The outcome of this evaluation is used to determine the correct management approach for each risk and opportunity.

Transition risks to the organization due to policy and legal actions are also evaluated in this process. The Company accounts for its direct greenhouse gas emissions each year and projects those emissions into the future using a blended growth rate for the business. These projected emissions are used to calculate the potential operating cost impacts from a USD/ton carbon tax in 2025 and 2040. These calculations are applied to both fleet and landfill operations.

Opportunities are evaluated using a traditional internal rate of return model for each initiative.

b) Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.

Figure 13a: 2019 Scope 1 and 2 GHG Emissions

2019 GHG Emissions	Metric Tons CO ₂ e
Gross global Scope 1 emissions (metric tons CO ₂ e)	13,930,867
Gross global Scope 2, location-based	242,878
Gross global Scope 2, market-based (if applicable)	254,973

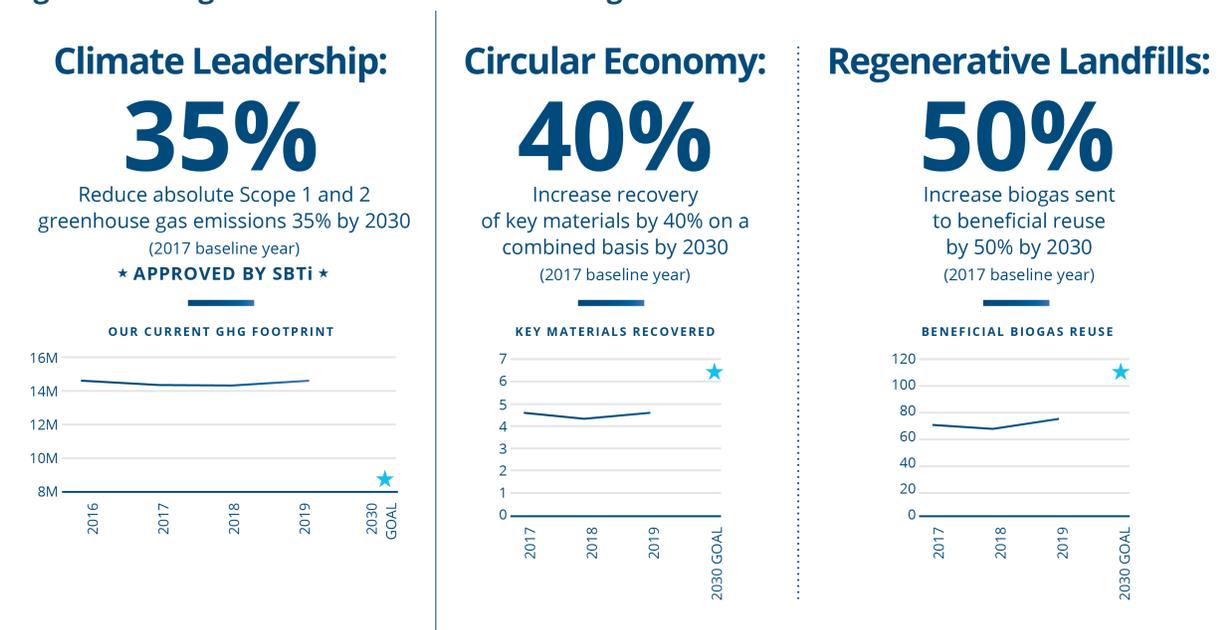
Figure 13b: 2019 Scope 3 GHG Emissions

2019 GHG Emissions	Metric Tons CO ₂ e
Gross global Scope 3 emissions (metric tons CO ₂ e)	3,423,766
- Purchased good and services	2,005,961
- Capital goods	516,148
- Fuel and energy-related activities	406,356
- Upstream transport and distribution	377,745
- Waste generated in operations	90,767
- Business travel	9,089
- Employee commuting	13,466
- Upstream leased assets	4,224
- Use of sold products	10

c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

We report our progress against our climate-related goals in our annual Sustainability Report. The financial analysis presented in this TCFD Report is a foundation for additional work at the direction of leadership.

Figure 14: Progress toward climate-related goals



Read more about our sustainability and ESG work at republicservices.com/sustainability