

General Motors Company - Climate Change 2018

C0. Introduction

C0.1

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

General Motors Co. is a global company committed to delivering safer, better and more sustainable ways for people to get around. With global headquarters in Detroit, Michigan, GM employs 180,000 people in nearly 300 facilities across six continents.

GM offers a comprehensive range of vehicles and services in more than 120 countries around the world. The largest national market for its products is China, followed by the U.S., Brazil, United Kingdom, Germany, Canada and Italy. Along with its strategic partners, GM produces cars and trucks, and sells and services for these vehicles through the following brands: Chevrolet and Cadillac globally, and Baojun, Buick, GMC, Holden, Isuzu, Jiefang, and Wuling in certain regions or specific countries.

GM also maintains equity stakes in major joint ventures including SAIC-GM, SAIC-GM-Wuling, FAW-GM in China and GM Korea, as well as subsidiaries such as OnStar, a recognized industry leader in vehicle safety, security and information services and Cruise Automation, a leader in autonomous driving technology. .

More information on the new GM is available at www.gm.com.

GM's commitment to sustainability applies to every part of our business and creates value for customers. It underscores GM's philosophy of "Customer-Driven Sustainability" – an approach for meeting customers' needs through sustainability by making the mobile experience safer, more efficient and better integrated with everyday life. As part of that commitment and philosophy, it continually assesses and takes steps to reduce the environmental impact of its products and operations. Focusing on areas such as energy management, carbon and waste intensity reduction, resource preservation and more efficient vehicles through its technological advances, global reach and innovative employees, helps the Company reduce its environmental footprint and also share best practices around the world for broad results.

Sustainability is also an important part of GM's people and culture. The company integrates sustainability across every business function and through each level of the organization. GM is actively engaged in cross-functional efforts to seize environmental and social opportunities to improve our Company and the communities in which we operate.

The GM Environmental Principles are the foundation for the Company's environmental efforts and regional-specific policies around the world. Developed over 20 years ago, the Environmental Principles state:

As a responsible corporate citizen, GM is dedicated to protecting human health, natural resources, and the global environment. This dedication reaches further than compliance with the law to encompass the integration of sound environmental practices into our business decisions.

The following environmental principles provide guidance to GM personnel worldwide in the conduct of their daily business practices.

- We are committed to actions to restore and preserve the environment.
- We are committed to reducing waste and pollutants, conserving resources, and recycling materials at every stage of the product life cycle.
- We will continue to participate actively in educating the public regarding environmental conservation.
- We will continue to pursue vigorously the development and implementation of technologies for minimizing pollutant emissions.
- We will continue to work with all governmental entities for the development of technically sound and financially responsible environmental laws and regulations.
- We will continually assess the impact of our plants and products on the environment and the communities in which we live and operate with a goal of continuous improvement.

GM also maintains Environmental Performance Criteria (GM EPC) to support the consistent implementation of the GM Environmental Principles across the globe, particularly where regulatory programs do not clearly address those goals. The GM EPC supplements applicable legal requirements by setting baseline environmental management and performance regardless

of where GM operations are located. The GM EPC provides a common process for planning and implementing resource conservation and pollution prevention or control measures.

General Motors is reporting greenhouse gas emissions (GHG) consistent with GHG Protocol for operations where we have operational control or influence for GHG emissions for owned and joint ventures as applicable. Our operations are managed regionally in North America, South America, and International Operations (rest of world) and will be reporting Scope 1 and 2 emissions by these regions, as well as company wide.

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1 2017	December 31 2017	Yes	2 years
Row 2	January 1 2016	December 31 2016	<Field Hidden>	<Field Hidden>
Row 3	January 1 2015	December 31 2015	<Field Hidden>	<Field Hidden>
Row 4	<Field Hidden>	<Field Hidden>	<Field Hidden>	<Field Hidden>

C0.3

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

Argentina
 Australia
 Brazil
 Canada
 Chile
 China
 Colombia
 Ecuador
 Egypt
 India
 Mexico
 Republic of Korea

Russian Federation
Thailand
United States of America
Uzbekistan
Viet Nam
Other, please specify (Rest of World)

C0.4

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

USD

C0.5

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

Operational control

C-T00.7/C-TS0.7

(C-T00.7/C-TS0.7) For which transport modes will you be providing data?

Light Duty Vehicles (LDV)

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) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Director on board	(i) The Governance and Corporate Responsibility Committee (GCRC) of the GM Board of Directors (ii) is comprised of three independent directors. The Committee selects members of the Board; provides leadership in shaping GM's corporate governance which is important for long-term environmental, social and corporate governance "ESG" success; and oversees GM's policies and strategies related to Sustainability which is achieved through a standing agenda item for ESG related activities which includes climate-related updates. The members of this committee have extensive leadership and strategy experience gained at companies respected for their ESG performance. Their input is valuable as GM further integrates sustainability into its business strategy and addresses climate change on its drive toward a future of zero emissions.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	<ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies 	The Governance and Corporate Responsibility Committee (GCRC) of the board of directors of General Motors assists the board in its oversight of the company's governance structures, programs, and policies., It brings to the attention of the Board and management as appropriate, current and emerging global political, social, and policy issues that may affect the business operations, profitability, or public image or reputation of the Company. The GCRC oversees global public policy matters as well as specific functions of the Company, as appropriate, including strategy, action plans, and risk management. Company functions reviewed by the GCRC include Legal, Global Public Policy, sustainability including climate change, corporate social responsibility, and philanthropic activities.

C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Assessing climate-related risks and opportunities	As important matters arise
Other C-Suite Officer, please specify (GM's Manufacturing Leadership Exec. VP)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

C1.2a

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

GM's CEO is also Chairman of the Board of Directors. Under the CEO's leadership, GM envisions a world with zero crashes, to save lives; zero emissions, so future generations can inherit a healthier planet; and zero congestion, so customers get back a precious commodity -- time.

The CEO is focused on strengthening GM's core business of light-duty vehicles, while also working to lead the transformation of personal mobility through advanced technologies like connectivity, electrification, autonomous driving and car sharing. The CEO has also established a strategic direction based on putting the customer at the center of everything the company does and GM's customers expect GM to help mitigate, if not eliminate, issues such as congestion and emissions.

The CEO receives regular updates and is involved in key decisions that further our long-term strategic objectives including our efforts to reduce GHG emissions toward a future of zero emissions.

The Risk Committee of the Board is responsible for overseeing GM's management of enterprise-level risks. The Strategic Risk Management (SRM) team, led by an executive director with dedicated resources, has risk management responsibility and is supported by the Risk Advisory Council (RAC)—executives who directly report to the Executive Leadership Team (ELT). A global network of executives representing GM's key functions and markets are given additional responsibilities as risk officers to support the overall SRM program and process. GM's risk and opportunities identification process is as follows:

- RAC and Risk officers appointed

- Annual identification, evaluation and assessment of Company and asset risks and opportunities.

- Ongoing mitigation plan development and monitoring by RAC and Risk Officers and approval by the ELT.

- (i) Risks and opportunities are categorized based on frequency, velocity, and impact on financials, operations, reputation, etc.

- All top risks have approved mitigation plans, and are reviewed regularly by the ELT and the Board.

- All other risks have either an approved mitigation plans and are reviewed at least once a year by the ELT, or after being fully analyzed, are put on a "watch list" and are monitored by the risk officer and their respective ELT member.

- (ii) Asset level risks have mitigation plans that are the responsibility of local management. Exposure to and experience with catastrophic risk or losses from climate change or other natural events are continuously analyzed and reviewed for ongoing operations and when evaluating new sites and supplier selection. Asset level risks are generally those that are anticipated to occur with regular or high frequency, but have a low impact on the Company and can be managed locally. Lessons learned are incorporated into future site planning, supplier selection process, and risk mitigation and strategic development. For Manufacturing, each site has a Plant director (PD) that has profit and loss responsibility for operations. PD often need support

for asset level risk and rely on the Manufacturing Leadership Team (MLT), comprised of Executive VP for Global Manufacturing, regional VPs of Manufacturing, VP of Sustainable Workplaces, Manufacturing representative on RAC, and other resources for risk management and action planning and implementation. The MLT has subject matter experts in risk management and sustainability as resources to PD for risk management.

C1.3

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

Yes

C1.3a

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

Who is entitled to benefit from these incentives?

Corporate executive team

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

GM introduced its vision of a future with zero crashes, zero emissions, and zero congestion in 2017. Related, GM updated its executive compensation program in 2017 to continue our leaders focus on the key areas that both drive the business forward and align to the short-term and long-term interests of our shareholders. Accordingly, GM's Short-term Incentive Plan was modified to include an individual performance component weighted at 25%, including results that had a positive impact on Environmental, Social, and Governance (ESG) measures. Individual performance is based on GM's "Commitment and Accountability Partnership" or CAP system for performance evaluation and compensation. CAP goals are set at the beginning of the year and reviewed every 6 months for performance. For example, as highlighted in GM's 2018 Proxy statement, GM CEO's compensation was evaluated against GM's 2017 strategic objectives and included the introduction of GM's vision of zero crashes, zero emissions, and zero congestion, expanding car-sharing capabilities, announcing plans for at least 20 new electric vehicles by 2023, and achieving a record number of electric vehicles sold in 2017. Another example include Business Unit managers, or plant managers, have meeting Energy targets for their facilities as one of their goals that relates to compensation.

C2. Risks and opportunities

C2.1

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

	From (years)	To (years)	Comment
Short-term	1	3	
Medium-term	3	5	
Long-term	5	10	

C2.2

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

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

C2.2a

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

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Annually	>6 years	One of the most significant risks likely to impact GM are regulatory risks. Due to the potentially catastrophic effects of climate change, governments around the world have or are likely to enact policies and regulations that could impact our operations and products. Because it may take 3-5 years to design and develop a vehicle before it is launched in the market and then remain competitive and compliant for another 4-7 years, GM uses a long-term approach to regulatory risks.

C2.2b

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

GM's Executive Director of Strategic Risk Management (SRM), is fully dedicated to risk management at GM and supports executive leadership, including our Chairman and CEO who considers herself the Chief Risk Officer, as well as GM's Board and

Risk Committee. The Risk Committee of the Board is responsible for overseeing the Company's management of enterprise-level risks, including climate-related risks such as climate-related policies and regulations that can impact our products, services, and operations, along with the Strategic Risk Management (SRM) program and processes. This executive director leads the SRM team and is supported by the Risk Advisory Council (RAC)—executives who directly report to the Executive Leadership Team (ELT). A global network of executives representing GM's key functions and markets are given additional responsibilities as Risk Officers to support the overall SRM program and process. GM's risk and opportunities identification process is as follows: - RAC and Risk officers appointed; Annual identification, evaluation and assessment of Company and asset risks and opportunities conducted; Ongoing mitigation plan development and monitoring by RAC and Risk Officers and approval by the ELT.

- Asset level risks have mitigation plans that are the responsibility of local management. Exposure to and experience with catastrophic risk or losses from climate change or other natural events are continuously analyzed and reviewed for ongoing operations and when evaluating new sites and supplier selection. Asset level risks are generally those that are anticipated to occur with regular or high frequency, but have a low impact on the Company and can be managed locally. Lessons learned are incorporated into future site planning, supplier selection process, and risk mitigation and strategic development.

- The process and terminology in place for assessing relative significance of all identified risks, including climate-related risks such increased and more stringent GHG emission regulations, is as follows: (i) Risks and opportunities are categorized based on frequency, velocity, and impact on financials, operations, reputation, etc. - All top risks have approved mitigation plans, and are reviewed regularly by the ELT and the Board. - All other risks have either an approved mitigation plans and are reviewed at least once a year by the ELT, or after being fully analyzed, are put on a "watch list" and are monitored by the risk officer and their respective ELT member.

- GM assesses risks based on management's professional judgment, the relevant case law, definitions and guidance from the U.S. Securities and Exchange Commission (the "SEC") and discussions with external auditors. This includes both a quantitative and qualitative assessment. From a quantitative perspective, GM considers the risk as a percentage of various financial statement amounts (*e.g.*, assets, liabilities, revenues, earnings, etc.). From a qualitative perspective, GM considers all of the relevant circumstances including, whether the risk is strategically integral or important to the company's business plan, whether the risk will have an impact on future results of operations or financial condition, and whether the risk is important to an understanding of the company's business. As a result, risks that we have identified as having a substantive impact will vary from risk to risk in terms of quantitative and qualitative perspectives.

C2.2c

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Our products are subject to extensive laws, governmental regulations and policies, that can significantly increase our costs and affect how we do business. We are significantly affected by governmental regulations that can increase costs related to the production of our vehicles and affect our product portfolio. Meeting or exceeding many of these regulations is costly and often technologically challenging with respect to mandated emissions and fuel economy standards, especially where standards may not be harmonized across jurisdictions. Driven by climate change and other related factors such as air quality and energy security, GHG and fuel consumption standards have become more stringent to meet policy priorities. We anticipate that the number and stringency of these regulations, and the related costs and changes to our product portfolio, may increase significantly in the future. These government regulatory requirements could significantly affect our plans for global product development and given the uncertainty surrounding enforcement and regulatory definitions, may result in substantial costs, including civil or criminal penalties. In addition, an evolving but un-harmonized regulatory framework may limit or dictate the types of vehicles we sell and where we sell them, which can affect revenue.
Emerging regulation	Relevant, always included	We see autonomous technology leading towards a future of zero congestion, zero emissions and zero crashes, since more than 90% of crashes are caused by driver error, according to the National Highway Traffic Safety Administration (NHTSA). We are among the leaders in the industry with significant global real-world experience in delivering connectivity, safety and security services to millions of customers through OnStar, LLC (OnStar) and advanced safety features that are the building blocks to more advanced automation features that are driving our leadership position in the development of autonomous technology. An example of advanced automation is Super Cruise, a hands-free driving customer convenience feature that is available on the 2018 Cadillac CT6 sedan. We are actively testing autonomous vehicles on public roads in San Francisco, California; Scottsdale, Arizona; and Warren, Michigan. Additionally, we plan to develop an integrated network of on-demand autonomous vehicles in the U.S. In November 2017 we announced that our growing fleet of test vehicles will accumulate a significant number of miles in 2018, and based on our current rate of change we expect commercial launch at scale in dense urban environments in 2019. Many of our advanced technologies, including autonomous, present novel issues with which domestic and foreign regulators have only limited experience and will be subject to emerging regulation and evolving regulatory frameworks. Any current or future regulations in these areas could impact whether and how these technologies are designed and integrated into our products, and may ultimately subject us to increased costs and uncertainty.
Technology	Relevant, sometimes included	Technology in our products and facilities is included in Climate Change risk assessments on a case by case basis. In 2018, GM conducted a Climate Workshop (Scenario Analysis) using a 2 degree scenario. The time frame of the analysis was out to 2030. The inputs for the analysis included a number of trends and forecasts such as vehicle sales, technology and innovation, policies and regulations, energy, consumer behaviors, etc. One of the key findings are that the world on a 2 degree C path has implications for key drivers of GM's technology that include vehicle fuel efficiency, vehicle-to-vehicle/customer/infrastructure connectivity, and advance vehicle technology.
Legal	Relevant, always included	In the current uncertain regulatory framework, environmental liabilities for which we may be responsible and that are not reasonably estimable could be substantial. Alleged violations of safety or emissions standards could result in legal proceedings, the recall of one or more of our products, negotiated remedial actions, fines, restricted product offerings or a combination of any of those items. Any of these actions could have substantial adverse effects on our operations including facility idling, reduced employment, increased costs and loss of revenue. There are several putative class actions pending against GM in federal courts in the U.S. and in the Provincial Courts in Canada alleging that various vehicles sold including model year 2011-2016 Duramax Diesel

	Relevance & inclusion	Please explain
		Chevrolet Silverado and GMC Sierra vehicles, violate federal and state emission standards. GM also faces a series of additional lawsuits based primarily on allegations in the Duramax suit, including putative shareholder class actions claiming violations of federal securities law. The securities and shareholder demand lawsuits have been voluntarily stayed by the plaintiffs. At this stage of these proceedings, we are unable to provide an evaluation of the likelihood that a loss will be incurred or an estimate of the amounts or range of possible loss.
Market	Relevant, sometimes included	Marketing of our products is included in Climate Change risk assessments on a case by case basis. In 2018, GM conducted a Climate Workshop (Scenario Analysis) using a 2 degree scenario. The time frame of the analysis was out to 2030. The inputs for the analysis included a number of trends and forecasts such as vehicle sales, technology and innovation, policies and regulations, energy, consumer behaviors, etc. One of the key findings are that the world on a 2 degree C path has implications for key drivers of GM's marketing that include the sharing economy and mobility as a service, fleet turn-over rates, and advance vehicle technology adoption rates,
Reputation	Relevant, always included	The costs and effect on our reputation of product safety recalls and alleged defects in products and services could materially adversely affect our business. Government safety standards require manufacturers to remedy certain product safety defects through recall campaigns. Under these standards, we could be subject to civil or criminal penalties or may incur various costs, including significant costs for free repairs. At present, the costs we incur in connection with these recalls typically include the cost of the part being replaced and labor to remove and replace the defective part. The costs to complete a recall or customer satisfaction action could be exacerbated to the extent that such action relates to a global platform. Concerns about the safety of our products, including advanced technologies like autonomous, whether raised internally or by regulators or consumer advocates, and whether or not based on scientific evidence, can result in product delays, recalls, lost sales, governmental investigations, regulatory action, private claims, lawsuits and settlements, and reputational damage. These circumstances can also result in damage to brand image, brand equity and consumer trust in the Company's products and ability to lead the disruption occurring in the automotive industry. We currently source a variety of systems, components, raw materials and parts, including but not limited to air bag inflators, from third parties. From time to time these items may have performance, quality or reputational issues that could harm our reputation and cause us to incur significant costs. For example, we are currently conducting recalls for certain Takata air bag inflators used in some of our prior model year vehicles. Further recalls, if any, that may be required to re-mediate Takata air bag inflators in our vehicles could have a material impact on our business' Increased scrutiny of compliance with emissions standards may result in changes to standards, including implementation of "real world driving" emissions (RDE) tests, as well as stricter interpretations or redefinition of related standards and more rigorous enforcement. This may lead to increased costs, penalties, and lack of certainty related to product portfolio planning, negative publicity or reputation impact for us.
Acute physical	Relevant, sometimes included	Acute physical considerations of climate change in our facilities are included in risk assessments on a case by case basis. An example is at water stressed sites, like San Luis Potosi, Mexico, GM performed a risk assessment of water scarcity and elected to install Zero Liquid Discharge equipment and operate it to mitigate the risk.
Chronic physical	Relevant, sometimes included	Chronic physical considerations from climate change in our facilities are included in risk assessments on a case by case basis. An example is at our Detroit Hamtramck a risk assessment was done based on high cost of storm water discharge based on flooding events. Working with the City of Detroit, we installed larger storm ponds and filtration equipment to reuse the stormwater.

	Relevance & inclusion	Please explain
Upstream	Relevant, sometimes included	Upstream considerations in our direct and indirect operations is included in risk assessments on a case by case basis. Our upstream logistics operations had increased cost and carbon emission risk that drove efforts to reduce cost and GHG emissions in 2017. Based on significant cost and GHG risk in logistics, GM evaluated mitigation using SmartWay in North America to track emissions and share best practices with carriers third party logistic companies and internal company methods to analyze logistics operations and develop and implement cost and carbon savings initiatives. In 2017, we implemented 1,095 initiatives for significant cost and GHG savings.
Downstream	Relevant, sometimes included	Downstream considerations in our use of sold products by our customers is included in risk assessments on a case by case basis. In 2018, GM conducted a Climate Workshop (Scenario Analysis) using a 2 degree scenario. The time frame of the analysis was out to 2030. The inputs for the analysis included a number of trends and forecasts such as vehicle sales, technology and innovation, policies and regulations, energy, consumer behaviors, etc. One of the key findings are that the world on a 2 degree C path has implications for the use of sold vehicles by our customers such as vehicle fuel efficiency, electric vehicle miles traveled, vehicle-to-vehicle/customer/infrastructure connectivity, the sharing economy and mobility as a service, fleet turn-over rates and advance vehicle technology adoption rates, energy transition, and policies that put a price/value on carbon.

C2.2d

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

The Strategic Risk Management process views risks as new opportunities and therefore, our process takes this into account. All risks and opportunities, including climate-related risks and opportunities, are prioritized based on frequency of occurrence, how quickly they may materialize, and on their potential impact to the Company. Impact may be measured by a number of variables including reputational, operational, financial, etc. Risk management tools employed to help with decision making and mitigation plan development include War-games, Game Theory, and Scenario Planning. For example, the 2 degrees climate scenarios workshop that the SRM team conducted not only focused on future risks, but also resulted in future new business opportunities.

With regard to climate change, risks and opportunities vary from government regulations to supply chain disruption. These are prioritized differently based on frequency of occurrence, time to respond, and impact. For example, government regulations such as new fuel economy/CO2 tailpipe emissions are occurring at a high frequency, but the time to respond is generally adequate to execute mitigation plans that minimize the impact to the Company.

Company level Risks and opportunities are categorized as Tier 1, 2 or 3 based on frequency, how quickly they may materialize, and on their potential impact to the Company. Impact may be measured by variables including reputational, operational, revenue, etc.

- All Tier 1 risks and opportunities have approved plans for mitigation and/or business development, and are reviewed in detail regularly by the ELT and by the Board.
- All Tier 2 risks and opportunities have approved mitigation plans and are reviewed at least once a year by the ELT and by the BOD.
- All Tier 3 risks and opportunities have been fully analyzed, put on a “watch list” and are regularly reviewed by the risk officer and their respective ELT member.

In the short term (0-5 years), GM is responding to climate change in multiple ways. For its operations to **reduce physical risk of rising energy prices and take advantage of the opportunity to reduce cost**, it has set aggressive energy and GHG intensity reduction targets through 2020. This internal process used is to integrate energy reduction into our business plan. Annually, we develop energy and GHG reduction targets at a global, regional, and facility level and include methods in our annual business planning process which GM calls its Business Plan Deployment (BPD). These methods include behavioral - cold shutdown, energy efficiency - LED lights, HVAC controls, and low carbon solutions - for example use landfill gas to generate electricity. An example of how this process has influenced the business strategy is the development of an ongoing dedicated fund for energy savings projects of \$20 million USD and use of energy performance contracting to fund the energy and carbon reduction methods. In 2017, energy and carbon reduction projects resulted in 4.2% carbon reduction on an absolute basis. GM exceeded our 2020 operations carbon reduction goal with 22% on an intensity basis since 2010 and an absolute reduction even though vehicle volume increased by 27%.

GM’s global risk management process includes climate change issues such as policy/regulatory changes and changing consumer behaviors are discussed at our Board of Directors, Executive Operations Committee (highest management committee), Corporate Strategy Committee, and the Product Development Committee.

To achieve our long term (>5 years) carbon reduction plans, we are focusing on our total carbon footprint, including use of sold products (vehicles). For our vehicles we have established and publicly disclosed carbon reduction goals and we have made a commitment to launch 20 new electric vehicles by 2020. Annually, we track our progress to these goals using market sales and measured vehicle emission factors by our Public Policy Group and regional resources. To ensure that we meet these goals on a long term basis, in 2017 we invested \$7.3B in research and development activities. This includes strategic planning to develop and bring to market affordable products that incorporate technologies that improve vehicle safety, displace petroleum with biofuels and electricity, increase fuel efficiency, reduce emissions, and provide additional value and benefits to our customers. In keeping with this strategy, we remain committed to bringing more electrified and fuel-efficient options to market. By the end on 2017, GM had over 300,000 vehicles on the road in US with some form of electrification- which includes

eAssist, two-mode hybrid, extended-range electric vehicle and all electric vehicle models. These products represent mitigation of climate change risk for our value chain and provide an opportunity to sell low carbon products into the market.

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?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Mandates on and regulation of existing products and services

Type of financial impact driver

Technology: Capital investments in technology development

Company- specific description

CARB's latest requirements include increasing ZEVs offered for sale in CA and ZEV volumes for 2018 model year and later. Quebec plans to adopt ZEV requirements starting with 2018 model year; other jurisdictions may follow. The Clean Air Act permits states with air quality compliance issues to adopt CA emission standards in lieu of federal requirements; 13 states use these standards, 10 of which have adopted ZEV requirements. GM's cost profile is private but a third-party cost examination of the Chevy Bolt estimates GM loses \$7,400 per Bolt EV sold. We intend to mitigate this risk by launching 20 new profitable EVs by 2023 and are working to reduce near-term total enterprise costs associated with the Bolt EV .

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Potential financial impact

30192000

Explanation of financial impact

GM's cost profile is private but a third-party cost examination of the Chevy Bolt estimates GM loses \$7,400 per Bolt EV sold. In 2017, GM produced 40,794 EVs (0.5% of annual sales). As an estimate, if ZEV mandates require GM to produce an additional 10% of EVs, it would amount to an additional 4,080 units or \$7,400 times 4,080 = \$30M.

Management method

On a long term basis, we intend to mitigate this risk by launching 20 new profitable EVs by 2023. We currently offer seven models in the U.S. featuring some form of electrification and continue to develop plug-in hybrid electric vehicle technology and extended range electric vehicles such as the Chevrolet Volt and Bolt EV. In October 2017 we announced our plans to launch more than 20 new Zero Emission Vehicles (ZEVs) in global markets by 2023, including two in the next 18 months. In the short term we are working to increase battery electric vehicle production at our Orion Assembly in 2017-8 and a significant expansion of our battery lab in Warren, MI, already one of the largest in the world, brings the facility to more than 100,000 sq. ft. that includes new heavy and mild battery abuse test areas.

Cost of management

7300000000

Comment

GM's current amount of research and development cost is \$7.3 Billion. The continued development of our EV portfolio rests upon 20 years of electrification knowledge and experience and the investment of billions in research and development.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Customer

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact driver

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

Company- specific description

Increases in the frequency of drought conditions can further depress water availability for production in water-stressed areas. GM has production facilities in Mexico, an area that was hit hard by drought in 2016-2017, and there is a risk that increases in the frequency of such events could disrupt production due to lack of water availability. Mexico accounts for approximately 7% of GM's global production.

Time horizon

Short-term

Likelihood

About as likely as not

Magnitude of impact

Medium-high

Potential financial impact

850000000

Explanation of financial impact

Mexico accounts for approximately 7% of GM's global production. 7% of GM's sales and revenues = \$10.1 billion and a one month disruption due to water scarcity would = \$850,000,000.

Management method

GM integrated water management into its annual business planning process and set targets for each facility to reduce water use intensity by 15% by 2020. Reduction methods are implemented at a facility level and include conservation with behavioral activities, improving equipment efficiency to reduce, and reuse. When plants are located in water-stressed areas, special consideration is given to water treatment technologies. A Zero Liquid Discharge (ZLD) system was installed at our San Luis Potisi, Mexico facility that produces vehicles and transmissions and is being operated to reuse water in the process, reduce withdrawal from deep wells, and reduce the risk of lack of water for production while providing an opportunity to continue production without interruption. The installed cost was \$12M and ongoing operations are \$200k

Cost of management

12200000

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Market: Changing customer behavior

Type of financial impact driver

Market: Reduced demand for goods and/or services due to shift in consumer preferences

Company- specific description

Changing consumer behavior could weaken the demand for our higher margin full-size pick-up trucks and sport utility vehicles, which could reduce our market share in affected markets, decrease profitability, and have a material adverse effect on our business if we are unable to offer alternatives that are of interest to our customers. (i) Volatility in fuel pricing and tax incentives may affect consumer behavior. As of 2017, carbon-pricing schemes are operating in at least 33 countries and 18 sub-national jurisdictions, covering around 20 percent of global emissions. Though CO2 pricing schemes vary widely around the world, all are intended to encourage consumers to purchase vehicles that emit less carbon or, at a minimum, to help raise public awareness about the importance of CO2 reduction. (ii) There is a risk that there may be less demand for GM's larger, less fuel efficient vehicles. Changing consumer behavior could weaken the demand for our higher margin full-size pick-up trucks and sport utility vehicles, which could reduce our market share in affected markets, decrease profitability, and have a material adverse effect on our business if we are unable to offer alternatives that are of interest to our customers.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Potential financial impact

128000000

Explanation of financial impact

On a global basis, a decrease in sales due to changing consumer behavior of 1% for example may result in a decrease in earnings before interest and taxes adjusted of \$128 million USD

Management method

Continuous innovation and advanced technology development is key to keeping up with changing consumer behavior. One way GM achieves this is through our global network of engineering centers and R&D labs around the world as well as active collaboration with academia, suppliers and start-ups to identify and develop new technologies centered on five strategic areas: 1. Automotive Cleantech that improves fuel economy and decreases mobile emissions through advanced engine and transmission technology, next-generation batteries and electric motors, and power electronics; 2. Connected Vehicles that leverage data, enhance vehicle safety and connect drivers with their digital worlds in a responsible way; 3. Advanced Materials

that lead to more fuel-efficient vehicles through reduced mass; Sensors, Processors and Memory that can accelerate the advent of the autonomous vehicle; 4. Manufacturing Technologies that yield cost and quality improvements while decreasing our use of resources and materials. We currently offer 7 vehicle models in US with some form of electrification. In 2017 we offered the Chevrolet Bolt, a battery electric vehicle and we plan to continue to invest heavily to support the expansion of our electric vehicle offerings and in-house development and manufacturing capabilities of advanced batteries, electric motors and power control systems.

Cost of management

7300000000

Comment

In 2017, GM invested approximately \$7.3 billion in research and development activities for vehicles.

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?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Type of financial impact driver

Increased revenue through demand for lower emissions products and services

Company- specific description

Autonomous electric vehicles offer GM a significant business opportunity to combat climate change. AV systems integrate more seamlessly with EVs than vehicles with conventional internal combustion engines. All-electric AVs also will help accelerate more widespread adoption of electric propulsion technologies. We see autonomous technology leading toward a future of zero congestion, zero emissions and zero crashes, since more than 90% of crashes are caused by driver error, according to the National Highway Traffic Safety Administration (NHTSA).

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium-high

Potential financial impact

2500000000

Explanation of financial impact

Assuming AV is a trillion dollar global market from third party sources and GM's global market share is 10.2%, we calculated our financial opportunity within the AV market as \$100B. Today, the market is approximately \$5B. We do not publicly report on the financial positive implications at this time, but we did publicly report that SoftBank made a \$2.5B investment in Cruise, which we are including as our financial positive implications for this year.

Strategy to realize opportunity

We are actively testing autonomous vehicles on public roads in San Francisco, California; Scottsdale, Arizona; and Warren, Michigan. Additionally, we plan to develop an integrated network of on-demand autonomous vehicles in the U.S. We are growing a fleet of test vehicles that will accumulate a significant number of miles in 2018, and based on our current rate of change we expect commercial launch at scale in dense urban environments in 2019.

Cost to realize opportunity

581000000

Comment

Investment for Cruise.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Move to more efficient buildings

Type of financial impact driver

Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company- specific description

Energy Efficiency projects implemented in our manufacturing operations in South Korea results in the opportunity to sell carbon credits into the Emission Trading Scheme in South Korea. Implementing energy efficiency in GM operations in Korea began with an energy treasure hunt in early 2017 and ended with the implementation of various initiatives - LED lights, compressed air and building management. These initiatives represents an opportunity for us to reduce our operational costs and to sell carbon credits into the Korean Carbon Emission Trading Scheme.

Time horizon

Current

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Potential financial impact

2100000

Explanation of financial impact

Cost savings resulted from reduced use of electricity and natural gas in GM Korea operations from the implementation of energy conservation and efficiency measures - LED lights, compressed air and building management, and other efficiency projects. In 2018 we expect to receive \$8M from trading carbon credits into the ETS, partially as a result of implementing energy conservation measures.

Strategy to realize opportunity

GM identifies energy and carbon savings opportunities using a standardized Energy Treasure Hunt process as documented by USEPA Energy Star. Action plans were developed to implement energy conservation measures and implemented to provide cost savings and reduction of carbon emissions at GM's Bupyeong, South Korea site that manufacturers vehicles and parts. The process utilized our Operational Excellence process to track progress and measure success. The cost to implement energy conservation measures was \$1.3M.

Cost to realize opportunity

1313000

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Reduced water usage and consumption

Type of financial impact driver

Increased production capacity, resulting in increased revenues

Company- specific description

As extreme drought conditions occur, GM facilities in Mexico with water reuse systems are resilient and can continue to operate. Increases in the frequency of drought conditions can cause disruptions to GM production in our highest water use and production critical process of painting vehicles, due to water stress. Proper mitigation using water conservation and water reuse allows production to continue without added water stress on local water systems. GM's water management approach at production facilities located in water stressed areas offers an opportunity to continue production without disruptions due to lack of water for people and critical paint shop production. In our San Luis Potosi Assembly plant in Mexico, GM uses a Zero Liquid Discharge system to minimize the reliance on well water withdrawal.

Time horizon

Current

Likelihood

Likely

Magnitude of impact

Medium

Potential financial impact

75000000

Explanation of financial impact

Estimated financial implications As Mexico accounts for about 7% of total global production and a one month disruption of GM's production could result in loss of \$75 Million in net income (EBITA), the opportunity to GM is the continuance of production avoiding a potential loss of \$75 Million USD.

Strategy to realize opportunity

Plants located in water-stressed areas, such as Mexico, are given special consideration by GM for water treatment technologies. Minimizing water use and withdrawals from shared water sources allows the GM plant to minimize the stress it is placing on local water sources, which in turn helps lessen the risk that, in times of drought, local water sources will have been depleted beyond capacity potentially causing production disruption. The invested amount for ZLD was \$12M with ongoing operations cost of \$200k/year. An example of the engineering method used is in our San Luis Potosi plant, where a closed loop water system (Zero Liquid Discharge) was engineered to reuse 90% of the facility's wastewater for the next cycle of plant operations and the remaining 10% is sent to an onsite pond where it evaporates. The plant has reduced its water withdrawals by 90% by reusing wastewater. The plant also reduced its water intensity by 10% since opening using BPD management methods and remains our best operating plant for water efficiency.

Cost to realize opportunity

12200000

Comment

C2.5

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

	Impact	Description
Products and services	Impacted for some suppliers, facilities, or product lines	Driven by climate change and other related factors such as air quality and energy security, risks to our business include GHG and fuel consumption standards have become more stringent to meet policy priorities. We anticipate that the number and stringency of these regulations, and the related costs and changes to our product portfolio, may increase significantly in the future. These government regulatory requirements could significantly affect our plans for global product development and may result in substantial costs, including civil or criminal penalties. In addition, an evolving but unharmonized regulatory framework may limit or dictate the types of vehicles we sell and where we sell them, which can affect revenue. Opportunities include the planned launch of 20 new EVs by 2023 and are working to costs associated with EVs. The development of new technologies affects all aspects of our business from vehicle development, supply chain, marketing, and operations. The anticipated lack of EV charging infrastructure is a risk to long-term EV sales. Therefore, we are engaged with the electric utility industry, utility regulators, states, EV charging service providers and numerous EV-related infrastructure efforts, to pave the way for sustained EV charging infrastructure investments. In the past year, GM has supported over 20 utilities in program filings, testified at more than 10 state/federal legislative and regulatory hearings and reviewed state plans. We've initiated a national collaborative stakeholder effort to drive available state funding towards EV infrastructure, and funded another collaborative industry effort to educate state utility regulators on the benefits of EVs and the need for utilities to prepare for this "smart" load. It's now expected that over the next several years, we will see major EV infrastructure investments across the U.S., including a combined \$260 million or more in state-directed funds, an additional \$500 million investment in a national infrastructure program and at least \$300 million in utility investments, based in part on precedent-setting approvals by utility regulators. Consumers want to know there

	Impact	Description
		is enough EV charging infrastructure to ensure they can drive anywhere they need to go—and we are seeing the critical building blocks for a scalable and sustainable infrastructure solution coming together.
Supply chain and/or value chain	Impacted for some suppliers, facilities, or product lines	Driven by climate change and other related factors such as air quality and energy security, risks to our business include GHG and fuel consumption standards have become more stringent to meet policy priorities. Suppliers play a key role in helping GM mitigate risks and take advantage of new opportunities. GM is planning to launch 20 new EVs by 2023 and are working to reduce near-term costs associated with EVs. Suppliers develop or assist in the development of new technologies which affect all aspects of our business from vehicle development, supply chain, marketing, and operations helping to meet regulations and changing consumer preferences. Suppliers such as LG Chem and LG Electronics, Inc., helped integrate a 60-kWh, lithium-ion battery pack in the award-winning Chevrolet Bolt EV, while Magna Exteriors developed a multi-axial laser cutting and welding process on painted thermoplastic, enabling lighter weight design of the 2017 Chevrolet Camaro XL1 fascia which helps with fuel efficiency and we believe consumer appeal.
Adaptation and mitigation activities	Impacted for some suppliers, facilities, or product lines	Droughts have been drier and lasting longer in recent years thanks in part to climate change. GM experiences risk to the continuance of manufacturing operations at our San Luis, Mexico Assembly and Transmission facilities due to water stress brought on by drought. Mitigation efforts include integrating water conservation into our business plan and installation and operation of Zero Liquid Discharge technology equipment to reduce stress on the non-renewable wells. Manufacturing vehicles in the water stressed area of San Luis Potosi. Mexico provides GM with an opportunity to show our leadership in water reduction, recycle, and reuse. Providing jobs in a water stressed area while having minimum impact on the aquifer provides positive local, regional, and global recognition of the extreme efforts taken by GM to protect and conserve water, one of our most precious and important natural resources.
Investment in R&D	Impacted for some suppliers, facilities, or product lines	Costs for research, manufacturing engineering, product engineering and design and development activities relate primarily to developing new products or services or improving existing products or services including activities related to vehicle and greenhouse gas (GHG) emissions control, improved fuel economy, electrification, autonomous vehicles, the safety of drivers and passengers, and urban mobility. Research and development expenses were \$7.3 billion in 2017.
Operations	Impacted	GM has integrated energy and carbon management into our business plan for every major operating facility globally. Additionally, to meet our company goals for energy and carbon intensity reduction, each of approximately 120 facilities has a sufficiency plan to implement efficiency projects to meet their goal. The impact to GM in 2017 was a savings of \$22.4 M USD in operating cost.
Other, please specify	Please select	

C2.6

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

	Relevance	Description
Revenues	Impacted for some suppliers, facilities, or product lines	GM applied for and received \$5.6 M USD in utility incentives as part of our \$41M spend for energy efficiency project investment. Utility incentives are treated as revenue and included in our financial planning.
Operating costs	Impacted	GM invested \$23M of operating expense in 2017 in energy savings and carbon reduction projects to save \$12.6 M in operating cost at our approximately 120 manufacturing and other facilities globally .
Capital expenditures / capital allocation	Impacted	GM invested \$18M of capital expenditures in 2017 in energy savings and carbon reduction projects to save \$9.8 M in operating cost at our approximately 120 manufacturing and other facilities globally .
Acquisitions and divestments	Impacted for some suppliers, facilities, or product lines	GM's vision of a future with zero crashes, zero emissions and zero congestion includes autonomous vehicles (AV) and advanced mobility. As part of that vision, GM acquired Cruise in 2016 for \$581M and invested \$500M in Lyft to enhance our participation in AV and mobility.
Access to capital	Not impacted	We have not experienced an impact on access to capital based on Climate Change risks and opportunities.
Assets	Not impacted	We have not experienced an impact on Assets based on Climate Change risks and opportunities.
Liabilities	Not impacted	We have not experienced an impact on Liabilities based on Climate Change risks and opportunities.
Other	Please select	

C3. Business Strategy

C3.1

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

Yes

C3.1a

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

Yes, qualitative

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

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

Yes

C3.1c

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

i. How has the business strategy been influenced? Climate change (CC) has influenced our short- and long-term business strategy. We recognize that we need to find lower carbon solutions for our products and operations and have publicly stated that we see an economic opportunity by lowering our carbon footprint. Our business strategy includes five key priorities, namely 1) Earn Customers for Life; 2) Grow our Brands; 3) Lead in Technology & Innovation; 4) Drive Core Efficiencies; and 5) Build a Culture to Win.

In the short term (0-5 years), GM is responding to CC by setting aggressive energy and GHG intensity reduction targets through 2020. Our 2020 GHG target is to reduce GHG intensity by 20% from 2010.

The internal process used is to integrate energy reduction into our business plan. Annually, we develop energy and GHG reduction targets at a global, regional, and facility level and include methods in our annual business planning process which GM calls its Business Plan Deployment (BPD). These methods include behavioral - cold shutdown, energy efficiency - LED lights, HVAC controls, and low carbon solutions - for example use landfill gas to generate electricity. Each month data is collected on energy use and carbon emissions performance which is compared, at each site, to the target and if it is not met, countermeasures are developed to meet the targets. An example of how this process has influenced the business strategy is the development of an ongoing dedicated fund for energy savings projects of \$20 million USD and use of energy performance contracting to fund the energy and carbon reduction methods. In 2017, energy and carbon reduction projects resulted in 4.2% carbon reduction on an absolute basis.

GM's global risk management process includes CC issues such as policy/regulatory changes and changing consumer behaviors are discussed at our Board of Directors, Executive Operations Committee (highest management committee), Corporate Strategy Committee, and the Product Development Committee.

To achieve our long term (>5 years) carbon reduction plans, we are focusing on our total carbon footprint, including use of sold products (vehicles). For our vehicles we have established and publicly disclosed carbon reduction goals. Annually, we track our progress to these goals using market sales and measured vehicle emission factors by our Public Policy Group and regional resources. To ensure that we meet these goals on a long term basis, in 2017 we invested \$7.3B in research and development activities. This includes strategic planning to develop and bring to market affordable products that incorporate technologies that improve vehicle safety, displace petroleum with biofuels and electricity, increase fuel efficiency, reduce emissions, and provide additional value and benefits to our customers. In keeping with this strategy, we remain committed to bringing more electrified and fuel-efficient options to market. By the end on 2017, GM had over 300,000 vehicles on the road in US with some form of electrification- which includes eAssist, two-mode hybrid, extended-range electric vehicle and all

electric vehicle models.

ii. What aspects of climate change have influenced the strategy?

Events such as extreme weather, national, state/provincial and/or policy changes to address CC including new and proposed fuel economy/CO₂ emission standards around the world as well as adaption purposes for consumer behavior have influenced the strategy.

iii. The most important components of the short term strategy that have been influenced by CC:

With energy management integrated into our BPD, we're engaging employees in our efforts to reduce energy and carbon to increase awareness about climate change. We have a dedicated fund for energy and carbon reduction projects which has enabled us to further reduce energy and carbon in our facilities thanks to employee suggestions. An example of this is the implementation of team member Energy Observation Tours, which, similar to safety tours, help to find and implement energy savings opportunities.

iv. The most important components of the long term strategy that have been influenced by CC: We have an aggressive focus on advanced propulsion technologies that will benefit customers and the environment as we strive toward a zero emission future. We focus on inventions that make our vehicles more sustainable. We operate global engineering centers and R&D labs and collaborate with academia, suppliers and start-up companies to identify, develop and implement new technologies as well as new business models that will provide more value to our customers as well as use less materials, require less energy to build, and emit fewer GHG emissions.

v. How this is gaining you strategic advantage over your competitors?

Our R&D progress is significant. We've received more than 700 patents in fuel cell technologies since 2002--more than any other company-- and we lead all companies in terms of most U.S. clean-energy patents granted since 2002, according to Clean Energy Patent Growth Index of U.S. Patents. This effort was key to developing the Chevrolet Volt. As a result, the Chevrolet Volt is one of the most award winning vehicles on the road today and has been the best-selling plug-in vehicle in the US through 2017.

vi. What have been the most substantial business decisions made?

The most substantial business decision made for GM was our long-term strategic decision to be a leader in electrified, connected, shared, and autonomous vehicles.

The most substantial aspect of climate change that has influenced this decision was the increasing concentration of CO₂e ppm concentration in Earth's atmosphere which is leading countries around the world to enact increasingly more stringent fuel efficiency and CO₂ emission regulations and cities to restrict or prohibit the use of some vehicles in city centers. CC is

influencing consumer behavior and governmental policies / regulations that affect our products, manufacturing facilities, and business models. Our strategy enables us to look for opportunities in these changing preferences and policies.

GM made the following key decisions in 2017 - Operate in a more transparent manner and actively request external input from stakeholders, -Nine manufacturing commitments with **2020 targets including RE-100 and carbon reduction from our facilities of 20% from a 2010 baseline which was achieved**, -Accelerate & expand the electrification of GM’s global fleet to take advantage of changing consumer behaviors and preferences, -Execute a light-weighting initiative to make all of our vehicle products more fuel efficient, -continue to invest in a new car and ride-sharing brand, MAVEN, - Continue to invest in Cruise Automation, a leader in autonomous vehicle technology, and - Provide access to registered software developers into GM OnStar’s proprietary application program interface to take advantage of changing consumer behaviors with their permission.

C3.1d

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

Climate-related scenarios	Details
2DS	In 2018, GM conducted a Climate Workshop (Scenario Analysis) using a 2 degree scenario. The time frame of the analysis was out to 2030. The inputs for the analysis included a number of trends and forecasts such as vehicle sales, technology and innovation, policies and regulations, energy, consumer behaviors, etc. (i) The key assumption is that the world is on a 2 degree C path which has implications for key drivers of our business such as vehicle fuel efficiency and GHG emission standards; electric vehicle miles traveled, vehicle-to-vehicle/customer/infrastructure connectivity, the sharing economy and mobility as a service, fleet turn-over rates and advance vehicle technology adoption rates, energy transition, and policies that put a price/value on carbon. (ii) Analytical Methods – axes of uncertainty were evaluated and two were selected to develop and analyze different worlds in which GM could be operating in the future. A cross-functional team from risk management, engineering, public policy, legal, and sustainability are currently still reviewing and analyzing the results of the workshop.

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

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

GM's low-carbon transition plan is through renewable energy and vehicle electrification. Our renewable electricity commitment of 100% use in our operations by 2050 (RE-100) will provide for near zero of GHG in our scope 2 emissions. Our four tier approach includes - increasing energy efficiency in our operations, sourcing renewable electricity, addressing intermittent supply through storage, and influencing policy to drive scale. We anticipate being at 20% by the end of 2018.

Additionally, working with governments and utilities for expanded use of renewable electricity globally will greatly reduce carbon in our supply chain (#2 scope 3 GHG) and reduce our #1 scope 3 emission from use of our sold products, including ride share activities. The fourth tier of our RE-100 strategy is to drive scale, globally, for the use of renewable electricity to enhance decarbonization.

Another element of our low-carbon transition plan is reducing operational waste to further reduce our scope 3 emissions. Using EPA WARM model, GM tracks progress of carbon reduction through waste reuse, recycle, and reduction of landfill materials. In 2017, GM avoided 7.7 Million metric tons of CO2e emissions from landfill-free activities - reuse, re-purpose, and/or recycling our wastes. The amount of GHG avoided is more than our combined scope 1 and 2 emissions from our operations. Additionally, we have a goal to have 150 landfill-free sites by 2020 and are on a pathway to meet the goal with 142 in 2017.

Lastly, to address scope 3 emissions from the use of our sold products, we are committed to an all-electric future with zero emissions. To achieve this long-term goal, GM currently sells 13 models globally with some form of electrification and have announced that we will launch 20 new battery electric vehicles by 2023.

C4. Targets and performance

C4.1

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

Intensity target

C4.1b

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

Target reference number

Int 1

Scope

Scope 1 +2 (market-based)

% emissions in Scope

100

% reduction from baseline year

20

Metric

Metric tons CO2e per vehicle produced*

Base year

2010

Start year

2010

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

6173746

Target year

2020

Is this a science-based target?

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

% achieved (emissions)

100

Target status

Underway

Please explain

General Motors met our GHG target in 2017 with 22% intensity reduction compared to 2020 target of 20%. Even with a 27% increase in vehicle volume produced, we were able to reduce absolute emissions. We are in the process of evaluating new targets. Energy efficiency and our RE-100 progress were key success factors in achieving our carbon reduction goal 3 years early.

% change anticipated in absolute Scope 1+2 emissions

-0.4

% change anticipated in absolute Scope 3 emissions

-3.7

C4.2

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

Target

Renewable energy consumption

KPI - Metric numerator

100% renewable electricity use in all GM operations by 2050 (RE-100)

KPI - Metric denominator (intensity targets only)

Not Applicable

Base year

2016

Start year

2017

Target year

2050

KPI in baseline year

3

KPI in target year

100

% achieved in reporting year

7

Target Status

Underway

Please explain

GM announced a renewable energy goal in September 2016 to use 100% renewable electricity by 2050 in our global facilities operations. Our four tier approach includes - increasing energy efficiency in our operations, sourcing renewable electricity, addressing intermittent supply through storage, and influencing policy to drive scale. We anticipate being at 20% by the end of 2018.

Part of emissions target

RE-100 compliments our Scope 2 portion of the GHG target for operations.

Is this target part of an overarching initiative?

RE100

Target

Energy usage

KPI - Metric numerator

Energy use in GM operations globally, including manufacturing and non-manufacturing.

KPI - Metric denominator (intensity targets only)

Vehicles produced

Base year

2010

Start year

2010

Target year

2020

KPI in baseline year

0

KPI in target year

20

% achieved in reporting year

76

Target Status

Underway

Please explain

Energy efficiency and conservation is integrated into our manufacturing business plan within the continuous improvement element.

Part of emissions target

Our energy intensity reduction target is a key success factor in GHG reduction goal as is a major factor in our RE-100 goal.

Is this target part of an overarching initiative?

RE100

Target

Waste

KPI - Metric numerator

Kilograms of Waste

KPI - Metric denominator (intensity targets only)

Vehicles produced

Base year

2010

Start year

2010

Target year

2020

KPI in baseline year

307

KPI in target year

186

% achieved in reporting year

63.5

Target Status

Underway

Please explain

Reducing waste in GM's operations provides an important part of our low-carbon transition plan. Using EPA WARM model, GM tracks progress of carbon reduction through waste reuse, recycle, and reduction of landfill materials. In 2017, GM avoided 7.7 Million metric tons of CO2e emissions from landfill-free activities which is more than our combined annual scope 1 and 2 emissions. Additionally, we have a goal to have 150 landfill-free sites by 2020 and are on a pathway to meet the goal with 142 in 2017.

Part of emissions target

Although our waste and landfill free goals have a positive impact on our scope 3 metrics, they are not currently part of a target

Is this target part of an overarching initiative?

Other, please specify (Low-carbon transition plan)

C4.3

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

Yes

C4.3a

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

	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	450	370000
To be implemented*	400	330000

	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Implementation commenced*	90	75000
Implemented*	310	521892
Not to be implemented	50	41000

C4.3b

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

Activity type

Energy efficiency: Building services

Description of activity

Other, please specify (LED lighting, building controls, HVAC)

Estimated annual CO2e savings (metric tonnes CO2e)

150611

Scope

Scope 1

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

11434000

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

20794200

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

GM has a dedicated fund for energy savings projects and energy management is integrated into our business plan with daily and monthly scorecards and countermeasures required if targets are not met.

Activity type

Energy efficiency: Building fabric

Description of activity

Other, please specify (Windows, seal openings, & repair doors)

Estimated annual CO2e savings (metric tonnes CO2e)

40338

Scope

Scope 1

Voluntary/Mandatory

Voluntary

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

1921000

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

2983000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

GM has a dedicated fund for energy savings projects and energy management is integrated into our business plan with daily and monthly scorecards and countermeasures required if targets are not met.

Activity type

Energy efficiency: Processes

Description of activity

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

64850

Scope

Scope 1

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

9046000

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

17152000

Payback period

1-3 years

Estimated lifetime of the initiative

3-5 years

Comment

GM has a dedicated fund for energy savings projects and energy management is integrated into our business plan with daily and monthly scorecards and countermeasures required if targets are not met.

Activity type

Other, please specify (Low carbon product to market)

Description of activity

<Field Hidden>

Estimated annual CO2e savings (metric tonnes CO2e)

39670

Scope

Scope 3

Voluntary/Mandatory

Voluntary

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

0

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

784000000

Payback period

>25 years

Estimated lifetime of the initiative

6-10 years

Comment

GM produces low-carbon electrified vehicles, Volt and Bolt, that have lower carbon emissions than other similar sized vehicles. In 2017, GM produced 51,690 Volts and Bolts and provided an annual savings of 39,670 tons or life cycle savings of 396,700 metric tons CO₂e for our Scope 3 GHG emissions.

Activity type

Low-carbon energy purchase

Description of activity

Other, please specify (Wind PPA)

Estimated annual CO₂e savings (metric tonnes CO₂e)

146250

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

0

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

0

Payback period

>25 years

Estimated lifetime of the initiative

11-15 years

Comment

Wind PPA involves no investment.

Activity type

Other, please specify (Logistics GHG reduction)

Description of activity

<Field Hidden>

Estimated annual CO₂e savings (metric tonnes CO₂e)

80173

Scope

Scope 3

Voluntary/Mandatory

Voluntary

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

136874000

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

0

Payback period

<1 year

Estimated lifetime of the initiative

1-2 years

Comment

GM uses SmartWay in North America to track emissions and share best practices with carriers. Additionally, we use third party logistic companies and internal company methods to analyze logistics operations and develop and implement cost and carbon savings initiatives. In 2017, we implemented 1,095 initiatives for significant cost and GHG savings.

C4.3c

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

Method	Comment
Dedicated budget for energy efficiency	GM uses a dedicated budget for energy efficiency projects in operations. In 2017, we dedicated and spent \$21M USD with 1.7 year payback.
Employee engagement	Energy management and carbon reduction is integrated into our business plan which engages employees at all levels of the organization.
Internal price on carbon	GM has operations in countries with carbon trading schemes, e.g. South Korea, where we have realized real savings from energy efficiency with sales of credits into the market to fund energy efficiency projects. Our internal price in this instance was \$25 per ton.

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

Group of products

Description of product/Group of products

Electric vehicles and extended range vehicles sold globally with lower emissions than comparable vehicles available for sale provide our customers GHG reduction opportunities.

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

Low-carbon product and avoided emissions

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

Other, please specify (US EPA www.fueleconomy.gov)

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

0.5

Comment

GM produces Electric vehicles and extended range vehicles sold globally (Bolt and Volt) with lower emissions than comparable internal combustion vehicles sold. Comparing similar vehicles for sale, using US EPA fuel economy comparison at www.fueleconomy.gov GM's sales of Volt and Bolt vehicles avoids 39,670 metric tons per year GHG.

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 2010

Base year end

December 31 2010

Base year emissions (metric tons CO₂e)

1902196

Comment

Baseline restated in 2017 for 2010 due to significant divestiture of assets in Europe, India, and Africa.

Scope 2 (location-based)

Base year start

January 1 2010

Base year end

December 31 2010

Base year emissions (metric tons CO₂e)

4271550

Comment

Baseline restated in 2017 for 2010 due to significant divestiture of assets in Europe, India, and Africa.

Scope 2 (market-based)

Base year start

January 1 2010

Base year end

December 31 2010

Base year emissions (metric tons CO₂e)

4271550

Comment

Baseline restated in 2017 for 2010 due to significant divestiture of assets in Europe, India, and Africa.

C5.2

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

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

US EPA Mandatory Greenhouse Gas Reporting Rule

C6. Emissions data

C6.1

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

Row 1

Gross global Scope 1 emissions (metric tons CO₂e)

1848804

End-year of reporting period

<Field Hidden>

Comment

Based on GHG Protocol, 2017 emissions were calculated without divested assets in Europe, India, and Africa and baseline and each year is being restated.

Row 2

Gross global Scope 1 emissions (metric tons CO2e)

1815001

End-year of reporting period

2016

Comment

Based on GHG Protocol, 2016 emissions were calculated without divested assets from 2017 in Europe, India, and Africa and are being restated.

Row 3

Gross global Scope 1 emissions (metric tons CO2e)

1863495

End-year of reporting period

2015

Comment

Based on GHG Protocol, 2015 emissions were calculated without divested assets from 2017 in Europe, India, and Africa and are being restated.

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

Based on GM's RE-100 commitment, we chose to report market based scope 2 GHG.

C6.3

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

Row 1

Scope 2, location-based

4572734

Scope 2, market-based (if applicable)

4302887

End-year of reporting period

<Field Hidden>

Comment

Based on GHG Protocol, 2017 emissions were calculated without divested assets in Europe, India, and Africa and baseline and each year is being restated.

Row 2

Scope 2, location-based

5165683

Scope 2, market-based (if applicable)

5095809

End-year of reporting period

2016

Comment

Based on GHG Protocol, 2016 emissions were calculated without divested assets from 2017 in Europe, India, and Africa and are being restated.

Row 3

Scope 2, location-based

4859274

Scope 2, market-based (if applicable)

4763994

End-year of reporting period

2015

Comment

Based on GHG Protocol, 2015 emissions were calculated without divested assets from 2017 in Europe, India, and Africa and are being restated.

C6.4

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

Yes

C6.4a

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

Source

Scope 1 and 2 GHG emissions from small insignificant facilities, remote offices...

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

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

Emissions are not relevant

Explain why the source is excluded

The GHG emissions from these small facilities are insignificant compared to major operations and non-manufacturing facilities tracked and reported.

C6.5

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

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

46174073

Emissions calculation methodology

Following the GHG Protocol, this Supply Chain analysis is "cradle-to-gate" for emissions associated with the value chain from material extraction through manufacturing. The use and disposal phases of the product are omitted in this case. Using annual

spend provided by General Motors as the Company's activity data combined with emissions factors from the Climate Earth's Environmental Database, the core of which is the USEPA Environmental Extended Input Output database (USEEIO v1.1) which provides industry average cradle-to-gate emissions factors for economic sectors. Due to the complexities of large supply chains, the WRI Corporate Value Chain Accounting and Reporting Standard (WRI Scope 3 Standard) specifically permits the use of industry average emissions factors combined with direct company activity data. General Motors has provided complete direct spend activity data for the Company for the reporting year. The methodology employed for these calculations conforms to the WRI Corporate Value Chain (Scope 3) Accounting and Reporting Standard. The model provides tier analysis and industry analysis to provide strategic planning to reduce life cycle GHG emissions for auto parts. The majority of GHG is in tiers 2-6 and in electric and steel industries.

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

50

Explanation

Spend data is a key component of the economic input output analysis and is derived from supplier spend at a manufacturing country level for increased granularity. This is extremely important for water life cycle analysis since location is important for water security. GM uses WRI protocol using life cycle detailed analysis for auto parts for company owned operations. As a calibration method, CDP Supply Chain tier 1 data is compared to improve accuracy. This data has been verified by a 3rd party in 2017.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

4596326

Emissions calculation methodology

Following the GHG Protocol, this Supply Chain analysis is "cradle-to-gate" for emissions associated with the value chain from material extraction through manufacturing. The use and disposal phases of the product are omitted in this case. Using annual spend provided by General Motors as the Company's activity data combined with emissions factors from the Climate Earth's Environmental Database, the core of which is the USEPA Environmental Extended Input Output database (USEEIO v1.1) which provides industry average cradle-to-gate emissions factors for economic sectors. Due to the complexities of large supply chains, the WRI Corporate Value Chain Accounting and Reporting Standard (WRI Scope 3 Standard) specifically permits the use of industry average emissions factors combined with direct company activity data. General Motors has provided complete direct spend activity data for the Company for the reporting year. The methodology employed for these calculations conforms to the WRI Corporate Value Chain (Scope 3) Accounting and Reporting Standard. The model provides tier analysis and industry analysis to provide strategic planning to reduce life cycle GHG emissions for auto parts.

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

50

Explanation

Spend data is a key component of the economic input output analysis and is derived from supplier spend at a manufacturing country level for increased granularity. GM uses WRI protocol using life cycle detailed analysis for auto parts for company owned operations. This data has been verified by a 3rd party in 2017.

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

Evaluation status

Relevant, calculated

Metric tonnes CO2e

354560

Emissions calculation methodology

Using Australia's National Greenhouse Accounts (NGERS) factors 2017, natural gas fugitive emissions of GHG not included in Scope 1 or 2 were estimated globally based on scope 1 use. USEIA estimates electric losses and the factor was applied globally using scope 2 emissions to estimate fugitive electric GHG not accounted for in scope 2 calculations.

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

50

Explanation

NGERS and USEIA factors account for half of the calculation; whereas, actual data from scope 1 and 2 comprise the remaining portion of data. This data has been verified by a 3rd party in 2017. Based on the methodology used, the value is 6% and exceeds the 5% threshold of relevancy established compared to the total of Scope 1 and 2 emissions and therefore determined to be relevant. Reduction of Scope 1 and 2 reduces this scope 3 emission.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

3029058

Emissions calculation methodology

GM is a member of EPA SmartWay and used their methodology to obtain GHG emissions, based on truck distances and fuel efficiency according to GHG Protocol for GM's North America parts delivery from third party over the road logistics providers. Ocean emissions intensity was evaluated using a major supplier's carbon accounting and extrapolating using revenue intensity. Rail and Air emissions for all global upstream transportation GHG were estimated using CDP Analytics for similar

companies multiplied by revenue spend. Truck emissions for rest of world were calculated using emission factors from EPA SmartWay.

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

50

Explanation

SmartWay provides data from carriers using fuel use and distances traveled. Revenue spend is from suppliers and CDP analytics provides companies revenue intensities as secondary data. The quantity is about half of scope 1 and 2 and is relevant to our carbon footprint.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

66111

Emissions calculation methodology

USEPA WasteWise model applied with GM Global waste data. GM avoided 7.7 Million metric tons by reusing, recycling, and composting significant quantities of materials. The WARM model estimated a negative value for landfill emissions due to biogenic credit for some materials. For conservative reporting, GM is not using the credit to show GHG from landfill activities.

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

50

Explanation

Reuse, recycle, incineration, and landfill activities are inputs to WARM model from actual data and the remaining calculation from WARM uses secondary data factors. As GM increases its landfill free facilities, our GHG from waste is reduced accordingly. In 2017, GM avoided 7.7 Million tons of GHG through reduction, reuse, recycle, and composting materials and had 142 Landfill-free sites. Although CO2e reductions have reduced it to below relevant levels, we continue to treat it as relevant due to the huge offset opportunity as reuse and recycling avoids more than our scope 1 & 2 emissions combined.

Business travel

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

50137

Emissions calculation methodology

GHG Protocol method was used by our 3rd party travel agent to calculate Air Business travel GHG emissions for our global operations from 2013 data and updated based on number of employees.

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

50

Explanation

Distances traveled is primary data and emission factors is secondary. Based on the methodology used, the value is 1% or much less than the 5% threshold of relevancy established compared to the total of Scope 1 and 2 emissions and therefore determined to be not relevant.

Employee commuting

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

135000

Emissions calculation methodology

Using CDP Analytics, an average of employee commuting intensity per employee was calculated and applied to GM's total employee number to estimate our GHG associated with employee commuting

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

25

Explanation

Based on the methodology used, the value is 2% or much less than the 5% threshold of relevancy established compared to the total of Scope 1 and 2 emissions and therefore determined to be not relevant

Upstream leased assets

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

10077

Emissions calculation methodology

GM's leased asset facility area was used along with the GHG intensity of similar facilities to estimate the GHG from GM's global upstream leased assets.

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

50

Explanation

Based on the methodology used, the value is 0.1% or much less than the 5% threshold of relevancy established compared to the total of Scope 1 and 2 emissions and therefore determined to be not relevant. Area of leased space is primary data and intensity factors is secondary.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1609174

Emissions calculation methodology

GM is a member of EPA SmartWay and used their methodology to obtain GHG emissions, based on truck distances and fuel efficiency according to GHG Protocol for GM's North America parts delivery from third party over the road logistics providers. Ocean emissions intensity was evaluated using a major supplier's carbon accounting and extrapolating using revenue intensity. Rail and Air emissions for all global upstream transportation GHG were estimated using CDP Analytics for similar companies multiplied by revenue spend. Truck emissions for rest of world were calculated using emission factors from EPA SmartWay.

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

50

Explanation

SmartWay provides primary data from carriers using fuel use and distances traveled. Revenue spend is primary data from suppliers and CDP analytics provides company revenue intensities as secondary data. The quantity is 26% of scope 1 and 2 and is relevant to our carbon footprint.

Processing of sold products

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

120731

Emissions calculation methodology

GM sells boat engines as an intermediate product to boat manufacturers and customers for recreational use. Based on estimates from boatcarbonfootprint.com, including average hours of operation and fuel efficiency for gasoline engines and USEPA emission factors, a total GHG amount for the use of sold products was calculated and extrapolated for total carbon footprint.

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

25

Explanation

Based on the methodology used, the value is 2% or less than the 5% threshold of relevancy established compared to the total of Scope 1 and 2 emissions and therefore determined to be not relevant.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

220929108

Emissions calculation methodology

GHG from the Use of Sold products or vehicles is calculated using the average regional CO2e emissions per vehicle multiplied by life cycle distance driven by customers of 150,000 km over 10 years and multiplied by 2017 sales volumes. Additionally, fugitive emissions of Mobile air conditioning units are calculated using WRI method 3 and added for total estimated GHG emissions. The regions utilized for emission factors are USA, Brazil, and China based on the most fully developed regulatory monitoring and measurement systems. Vehicle emissions were verified by a third party, except for mobile air conditioning, which accounts for less than 1% and getting less as GHG friendly refrigerants like HF1234yf are being used.

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

80

Explanation

2017 calculation of life cycle GHG from vehicles sold is done using regional vehicle emissions rates for increased granularity. This vehicle emissions portion of the category was verified by a 3rd party. Vehicle emissions were verified by a third party, except for mobile air conditioning fugitive emissions of GHG, which accounts for less than 1% and getting less as more Climate Change friendly refrigerants like HF1234yf are being used in-lieu of R134a.

End of life treatment of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

3559479

Emissions calculation methodology

The total emissions are based on the "end of life" CO2e results of product life cycle analysis calculations performed at General Motors for specific automobiles and their material compositions and is multiplied by the total amount of vehicles that GM sold globally in 2017.

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

50

Explanation

Product life cycle analysis provides a basis for GHG emissions from end of life of an automobile. Design for the Environment activities provide a method for continuous improvement in End of Life GHG. As the GHG is 58% of scope 1 and 2, it is relevant. Primary data is vehicle volume and secondary is Product LCA.

Downstream leased assets

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

20459

Emissions calculation methodology

A portion of GM's global headquarters facility is leased to other tenants as well as a vehicle haul-away site. The GHG represents the estimated use from leased spaces based on energy invoice data and meter allocations. GHG emissions are calculated using GHG Protocol with E-Grid and fuel emission factors from USEPA.

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

80

Explanation

Based on the methodology used, the value is 0.3% or much less than the 5% threshold of relevancy established compared to the total of Scope 1 and 2 emissions and therefore determined to be not relevant.

Franchises

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

136449

Emissions calculation methodology

We market vehicles worldwide primarily through a network of independent authorized retail dealers. These outlets include distributors, dealers and authorized sales, service and parts outlets. GHG for these franchises was calculated based on 12,450 global facilities using average dealer building area and average GHG emission factors per area from data obtained from a dealer based on energy invoice data and local emission factors

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

50

Explanation

Based on the methodology used, the value is 3% or less than the 5% threshold of relevancy established compared to the total of Scope 1 and 2 emissions and therefore determined to be not relevant.

Investments

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

59212

Emissions calculation methodology

Using CDP Analytics, a representative GHG net income intensity was used along with GM's financial unit's annual 2017 income to estimate our GHG from Investment activities.

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

Explanation

Based on the methodology used, the value is 1% or much less than the 5% threshold of relevancy established compared to the total of Scope 1 and 2 emissions and therefore determined to be not relevant.

Other (upstream)

Evaluation status

Not evaluated

Metric tonnes CO2e

Emissions calculation methodology

Not Applicable

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

Explanation

Other (downstream)

Evaluation status

Not evaluated

Metric tonnes CO2e

Emissions calculation methodology

Not Applicable

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

Explanation

C6.7

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

Yes

C6.7a

(C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO2.
94423

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

0.000042

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

6151691

Metric denominator

unit total revenue

Metric denominator: Unit total

145588000000

Scope 2 figure used

Market-based

% change from previous year

10.4

Direction of change

Decreased

Reason for change

For the automobile industry, revenue intensity is not a good measure of performance since revenue is not aligned with output or production. A better metric is production intensity based on vehicle output. Revenue reduced by 2.4% due to mainly asset divestiture and market conditions in 2017 vs. 2016. Absolute carbon reduced by 11% due to sale of assets, energy efficiency and increased renewable energy use. Carbon intensity based on vehicle production decreased by 7% which is indicative of performance as opposed to revenue intensity which is less reduction than product intensity.

Intensity figure

0.69

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

6151691

Metric denominator

vehicle produced

Metric denominator: Unit total

8898697

Scope 2 figure used

Market-based

% change from previous year

7

Direction of change

Decreased

Reason for change

Reduction in vehicle intensity resulted from energy intensity reduction at 2% based on lighting, HVAC, Building envelope, and employee engagement projects and initiatives along with an increase in the use of renewable energy from 3% to 7% in 2017. Vehicle volume reduce slightly at 2%, but overall Scope 1 and 2 absolute emissions reduced by 11% year over year.

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

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	1811235	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	39	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	13	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	37569	IPCC Fifth Assessment Report (AR5 – 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)
North America	1343548
South America	72083
Other, please specify (Rest of World)	433172

C7.3

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

By business division

C7.3a

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

Business division	Scope 1 emissions (metric ton CO2e)
GM North America	1343548
GM South America	72083
GM International Operations	433172

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

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

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions, metric tons CO2e	Comment
Cement production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Chemicals production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Coal production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Electric utility generation activities	<Field Hidden>	<Field Hidden>	<Field Hidden>

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions, metric tons CO2e	Comment
Metals and mining production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Oil and gas production activities (upstream)	<Field Hidden>	<Field Hidden>	<Field Hidden>
Oil and gas production activities (downstream)	<Field Hidden>	<Field Hidden>	<Field Hidden>
Steel production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Transport OEM activities	1848804	<Field Hidden>	GM's entire business is Transport OEM activities
Transport services activities	<Field Hidden>	<Field Hidden>	<Field Hidden>

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
North America	2433599	2181894	5365830	621232
South America	99593	98021	468632	8517
Other, please specify (Rest of World)	2039541	2022972	3022177	22026

C7.6

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

By business division

C7.6a

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

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
GM North America	2433599	2181894

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
GM South America	99593	98021
GM International Operations	2039541	2022972

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Chemicals production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Coal production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Metals and mining production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Oil and gas production activities (upstream)	<Field Hidden>	<Field Hidden>	<Field Hidden>
Oil and gas production activities (downstream)	<Field Hidden>	<Field Hidden>	<Field Hidden>
Steel production activities	<Field Hidden>	<Field Hidden>	<Field Hidden>
Transport OEM activities	4572734	4302887	GM's entire business is Transport OEM activities
Transport services activities	<Field Hidden>	<Field Hidden>	<Field Hidden>

C-T07.8

(C-T07.8) Provide primary intensity metrics that are appropriate to your indirect emissions in Scope 3 Category 11: Use of sold products from transport.

Activity

Light Duty Vehicles (LDV)

Emissions intensity figure

0.0013

Metric numerator (Scope 3 emissions: use of sold products) in Metric tons CO2e

220929108

Metric denominator

p.km

Metric denominator: Unit total

173842500000

% change from previous year

-16

Vehicle unit sales in reporting year

8915000

Vehicle lifetime in years

10

Annual distance in km or miles (unit specified by column 4)

15000

Load factor

Average occupancy rates for passenger vehicles under various use scenarios according to European Environment Agency is 1.3 passengers per vehicle.

Please explain the changes, and relevant standards/methodologies used

GM used (3) methodologies for vehicle emissions intensities (grams/km) based on governmental standards from US EPA, China, and Brazil and applied these to the appropriate country of sale considering vehicle model similarities, e.g. use US for Canada sales and Brazil for South America sales... For mobile air conditioning HFC fugitive emissions calculation we used WRI method 3 and ARA 5 GWP for R-134a and HF1234yf. Vehicle sales is listed in GM financial filing 10-k report with US Securities and Exchange Commission. Passenger km is based on industry standard at 15,000 km/year and vehicle lifetime is 10 years. We used 1.3 passengers per vehicle based on average occupancy from European Environment Agency report on Occupancy rates for passenger vehicles. Changes from 2016 total vehicle emissions that comprise the 16% reduction include: -reduction in emission intensity in all countries ranging from 3% to 11% -used Brazil actual in 2017 versus US intensity in 2016 for South America -used China actual in 2017 for Asia, Africa, and Middle East versus US in 2016 -eliminated EU vehicles based on divestiture in 2017 of EU operations -increased use of HF1234yf as vehicle refrigerant in 2017 versus 2016 with mostly R-134a

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	119192	Decreased	2	Last year 119,192 tCO2e were reduced by a change of our renewable energy consumption, and our total S1 and S2 emissions in the previous year was 6,910,810 tCO2e, therefore we arrived at 2% through $(119,192 / 6,910,810) * 100 = 2\%$ GM Increased renewable use from 3% to 7% on pathway to RE-100 in 2017 with major wind PPA and new onsite solar installations.
Other emissions reduction activities	255799	Decreased	4	Last year 255,799 tCO2e were reduced by a energy efficiency projects, and our total S1 and S2 emissions in the previous year was 6,910,810 tCO2e, therefore we arrived at 4% through $(255,799 / 6,910,810) * 100 = 4\%$ Energy efficiency projects include - lights, HVAC, building envelope, employee engagement, and process changes.
Divestment	789555	Decreased	11	Last year 789,555 tCO2e were reduced based on divestment of assets, and our total S1 and S2 emissions in the previous year was 6,910,810 tCO2e, therefore we arrived at 11% through $(789,555 / 6,910,810) * 100 = 11\%$ GM Sold assets in EU, Africa, and India in 2017
Acquisitions	0	No change	0	Minimal acquisitions that affected GHG emissions.
Mergers	0	No change	0	No mergers that affected GHG emissions.
Change in output	61517	Decreased	1	Last year 61,517 tCO2e were reduced by a change in output from reduced production, and our total S1 and S2 emissions in the previous year was 6,910,810 tCO2e, therefore we arrived at 1% through $(61,517 / 6,910,810) * 100 = 1\%$ GM had a 2% reduction in overall vehicle production volume excluding divested assets.
Change in methodology	432986	Decreased	6	Last year 432,986 tCO2e were reduced by a change in methodology with an update in emission factors, and our total S1 and S2 emissions in the previous year was 6,910,810 tCO2e, therefore we arrived at 6% through $(432,986 / 6,910,810) * 100 = 6\%$ GM Updated GHG emission factors to most recent in IEA database that show continuous improvement as factors reduced compared to last update.
Change in boundary	0	No change	0	No change in boundary
Change in physical operating conditions	30758	Decreased	0.4	Last year 30,758 tCO2e were reduced by a change in our physical operating conditions with 2% overall less degree days, and our total S1 and S2 emissions in the previous year was 6,910,810 tCO2e, therefore

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
				we arrived at 0.4% through $(30,578 / 6,910,810) * 100 = 0.4\%$ Based on local weather stations, we experienced 2% less climate degree days in 2017 versus 2016 at GM Assembly plants globally.
Unidentified	0	Please select	0	calculations balance with no identified sources of change
Other	60352	Increased	1	Last year 60,352 tCO2e were increased based on additional vehicle launch activities, and our total S1 and S2 emissions in the previous year was 6,910,810 tCO2e, therefore we arrived at 1% through $(60,352 / 6,910,810) * 100 = 1\%$ GM's new vehicle launch activities for new models require pre-production activities without real vehicle production.

C7.9b

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

Location-based

C8. Energy

C8.1

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

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

C8.2

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

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes

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

C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	310682	8327690	8638372
Consumption of purchased or acquired electricity	<Field Hidden>	319877	7895570	8215447
Consumption of purchased or acquired heat	<Field Hidden>	0	246291	246291
Consumption of purchased or acquired steam	<Field Hidden>	117056	139056	256112
Consumption of purchased or acquired cooling	<Field Hidden>	<Field Hidden>	<Field Hidden>	<Field Hidden>
Consumption of self-generated non-fuel renewable energy	<Field Hidden>	68846	<Field Hidden>	68846
Total energy consumption	<Field Hidden>	816461	16608607	17425068

C8.2b

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

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	Yes
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

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

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

8254181

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

4945652

MWh fuel consumed for self-generation of steam

3308529

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Landfill Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

310682

MWh fuel consumed for the self-generation of electricity

202489

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

108193

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Coke

Iron production ceased in 2017

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

142356

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

142356

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

C8.2d

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

Coke

Emission factor

0.39

Unit

metric tons CO₂e per MWh

Emission factor source

US EPA Center for Corporate Climate Leadership; Emission Factors for Greenhouse Gas Inventories; Last Modified 9 Mar 2018

Comment

2017 was the last year for GM to use Coke in iron melting operations.

Landfill Gas

Emission factor

0.00091

Unit

metric tons CO2e per MWh

Emission factor source

According to the GHG Protocol, the biogenic portion of the CO2 emissions is reported separately from GHG emissions and assigned a factor of 0. The remaining portion, CH4 and N2O is calculated using IPCC AR5 data and is 0.00091 MT CO2e/MWh of landfill gas.

Comment

Biogenic emissions from landfill gas use are reported separately. We use landfill gas to generate renewable electricity and in boilers for steam production to reduce fossil fuel use.

Natural Gas

Emission factor

0.186

Unit

metric tons CO2e per MWh

Emission factor source

For countries with local GHG regulations, e.g. US, Canada, South Korea..., we use regulatory emission factors and for all others we use IPCC AR5. The average of these for natural gas is 0.186 metric tons CO2e per MWh.

Comment

C8.2e

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	121163	121163	121163	121163
Heat	0	0	0	0
Steam	108193	108193	108193	108193

	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)
Cooling	0	0	0	0

C8.2f

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

Basis for applying a low-carbon emission factor

Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company

Low-carbon technology type

Solar PV

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

4641

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

0

Comment

Onsite solar from contracts for use with GM owned attributes in California, Ohio, and Maryland with zero impact on GHG.

Basis for applying a low-carbon emission factor

Power Purchase Agreement (PPA) with energy attribute certificates

Low-carbon technology type

Wind

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

306719

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

0

Comment

Wind virtual purchase power agreements with attributes in Mexico and Texas with zero impact on GHG.

Basis for applying a low-carbon emission factor

Contract with suppliers or utilities (e.g. green tariff), not supported by energy attribute certificates

Low-carbon technology type

Other low-carbon technology, please specify (Utility mix of renewable energy (RPS))

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

186067

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

0

Comment

Public service commission regulations require carbon certificates to be retired in the name of the customers in the states of Michigan and Missouri for zero impact on GHG.

C-T08.4

(C-T08.4) Provide any efficiency metrics that are appropriate for your organization's transport products and/or services.

Activity

Light Duty Vehicles (LDV)

Metric figure

0.00017

Metric numerator

tCO₂e

Metric denominator

Use phase: Vehicle.km

Metric numerator: Unit total

22092911

Metric denominator: Unit total

133725000000

% change from previous year

2.3

Please explain

Total use of sold product is calculated annually for 2017 (LCA method exceeds CDP range limit for metric denominator). The method is consistent with GHG Protocol, using country regulatory vehicle emission methods for US, China, and Brazil. The GHG emission intensities are applied to every country with sales using emission factors that match the models typically sold in that country, e.g. US factors used in Canada, Brazil factors used in South America, and China used in Asia, Africa, and Middle East.

Emission intensities (Grams/km) are multiplied by 15,000 km/year driven per vehicle and number of vehicles sold by country. Metric tons are normalized by 15,000 km driven for metric figure reported.

C9. Additional metrics

C9.1

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

Description

Waste

Metric value

142

Metric numerator

Number of Landfill-Free sites cumulative 2010

Metric denominator (intensity metric only)

Absolute metric and not applicable

% change from previous year

8.4

Direction of change

Increased

Please explain

GM's goal is to have 150 Landfill-Free sites by 2020 from a baseline of 66 in 2010. Landfill-Free sites encourage reuse and recycle of resources that reduces GM's scope 3 GHG significantly. In 2017, using the USEPA WARM model, GM avoided 7.7 million tons of CO₂e by reuse, recycle and as a last resort incineration. This avoids more than our total scope 1 and 2 emissions for the year. In 2017, we increased the number of Landfill-Free sites by 8.4% to 142 on the pathway to 150 by 2020.

Description

Energy use

Metric value

1.96

Metric numerator

MWh of total energy in operations

Metric denominator (intensity metric only)

Vehicles produced in operations

% change from previous year

2

Direction of change

Decreased

Please explain

A key initiative of de-carbonization in our operations is energy efficiency. We set a goal of 20% intensity reduction from 2010 to 2020 and are on the pathway to meet the goal. We use a dedicated fund for energy, water, and carbon savings projects that ranges from \$20-30 M annually with less than a 2 year return. Also, we use energy performance contracting for projects with a longer return using the shared savings approach. In 2017 we reduced energy intensity by 2%, although vehicle volume also reduced by 2% with a 4% absolute energy savings from projects - lighting, HVAC, building envelop, and employee engagement. Energy efficiency is a key driver of our RE-100 commitment as it right sizes the amount of electricity needed for operations.

C-T09.3/C-TS9.3**(C-T09.3/C-TS9.3) Provide tracking metrics for the implementation of low-carbon transport technology over the reporting year.****Activity**

Light Duty Vehicles (LDV)

Metric

Sales

Technology

Battery electric vehicle (BEV)

Metric figure

29325

Metric unit

Units

Explanation

We set a goal of producing the world's first long-range electric vehicle at a price within reach of most American consumers, and the Chevrolet Bolt EV, now available nationwide in the United States, has enabled us to deliver on that goal. The Bolt EV builds upon lessons learned from the Chevrolet Volt, which provided long-range hybrid electric performance at an affordable price and has sold more than 130,000 units since its release in 2010. The Bolt EV represents the next generation of EV

innovation, affordability and range—and, in its first year of sales, is topping charts and delighting customers across the country.

C-T09.6/C-TS9.6

(C-T09.6/C-TS9.6) What is your investment in research and development (R&D), equipment, products and services and which part of it would you consider a direct investment in the low-carbon transition?

Activity

Light Duty Vehicles (LDV)

Investment start date

January 1 2017

Investment end date

December 31 2017

Investment area

R&D

Technology area

Other, please specify (Total company R&D for safety, AV, and EV)

Investment maturity

Applied research and development

Investment figure

7300000000

Low-carbon investment percentage

41-60%

Please explain

The continued development of our EV portfolio rests upon 20 years of electrification knowledge and experience and the investment of billions in research and development. Today, we estimate that about half of our Global Propulsion Systems engineering workforce is involved with alternative or electrified propulsion. We also benefit from one of the largest battery development labs in the world, as well as our own battery manufacturing facilities. Although we don't publicly state the percentage of R&D for electrification, the investment % is based on number of employees in our Global Propulsion Group working on electrification.

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 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

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

1

[ver stmt final GM Global 20180608 Scope 1-2 water energy waste.pdf](#)

Page/ section reference

Page 2. Table 1 and Page 3 "Verification Opinion"

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

90

Scope

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

1

[ver_stmt_final_GM_Global_20180608_Scope_1-2_water_energy_waste.pdf](#)

Page/ section reference

Page 2. Table 1 and Page 3 "Verification Opinion"

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 3 emissions and attach the relevant statements.

Scope

Scope 3- at least one applicable category

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Attach the statement

1

[ver_stmt_final_GM_Global_20180830_all_scopes.pdf](#)

Page/section reference

Page 2. Table 1 and Page 3 "Verification Opinion"

Relevant standard

ISO14064-3

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
C5. Emissions performance	Year on year change in emissions (Scope 1 and 2)	ISO 14064-3	Limited assurance of year over year scope 1 and 2 emissions reduction.

C11. Carbon pricing

C11.1

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

Yes

C11.1a

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

China national ETS

Korea ETS

Ontario CaT

C11.1b

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

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

49

Period start date

January 10 2017

Period end date

December 31 2017

Allowances allocated

227074

Allowances purchased

0

Verified emissions in metric tons CO₂e

224314

Details of ownership

Facilities we own but do not operate

Comment

Operations in China are a GM Joint Venture that we disclose for Climate Change due to oversight of operations and participation from the JV in energy management sharing. We track GHG emissions in our Global utility database, share best practices, and jointly participate in Energy Treasure Hunts. The ETS is only in various parts of China at this time.

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

100

Period start date

January 1 2017

Period end date

December 31 2017

Allowances allocated

454569

Allowances purchased

0

Verified emissions in metric tons CO₂e

342803

Details of ownership

Facilities we own and operate

Comment

GM Korea participates in phase 1 of the trading scheme that includes emissions from liquid natural gas, heating oil, fuel for company vehicles, acetylene, and CO2 for direct emissions and purchased electricity for indirect emissions. In 2017 we sold 400,000 metric tons to the Korean Emission Trading market for \$8 Million USD and are using \$25/ton as an internal shadow price on carbon to enhance the value of energy efficiency projects.

Ontario CaT

% of Scope 1 emissions covered by the ETS

100

Period start date

January 1 2017

Period end date

December 31 2017

Allowances allocated

122978

Allowances purchased

0

Verified emissions in metric tons CO2e

122978

Details of ownership

Facilities we own and operate

Comment

Effective July 3, 2018, Ontario government cancelled the cap and trade regulation and prohibited all trading of emission allowances. The information provided is for 2017 and allocations were provided free of cost.

C11.1d

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

GM's strategy for participating in emissions trading schemes in Korea and China is to continue implementing energy efficiency projects and initiatives to reduce GHG and provide value from the potential sale of carbon credits in the market place.

C11.2

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

No

C11.3

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

Yes

C11.3a

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

Objective for implementing an internal carbon price

Drive energy efficiency

Drive low-carbon investment

Identify and seize low-carbon opportunities

GHG Scope

Scope 1

Scope 2

Application

Energy efficiency projects usually provide a return on investment within 2 years. Adding the value of carbon credits to the savings provides for quicker payback and allows additional projects to be implemented within the targeted return. An example of this was in our facilities in South Korea where energy project business cases included carbon credits to enhance the returns. In reality, GM Korea was able to sell 400,000 tons into the market at a price of \$25/ton, yielding \$8M USD.

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

25

Variance of price(s) used

We have not used a variance in price on carbon yet as real market data is easiest to sell to management as indicative of current market conditions. We are expanding this to other regions and have started using a shadow price to prioritize energy and carbon efficiency projects in North America.

Type of internal carbon price

Shadow price

Impact & implication

Using a price on carbon provides a number of advantages including greater awareness of the value of carbon reduction, prioritization of projects that favors carbon reduction, and an increase in project spend available in regions where cap and trade is in effect.

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

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

2

% total procurement spend (direct and indirect)

82

% Scope 3 emissions as reported in C6.5

18

Rationale for the coverage of your engagement

General Motors' sustainability strategy is synonymous with its business strategy. Our vision for personal mobility is a world with zero crashes, zero emissions and zero congestion. By delivering safer, simpler and sustainable transportation solutions for our customers, we'll realize that vision. In the process, GM will become the most valued automotive company. In order to build the most valuable automotive company, we must recognize that our impacts go beyond the walls of GM to include our entire value chain, of which customers and suppliers make up a significant part. -The importance of strong supply chain management and relationships is further underscored as new issues arise due to business expansion into emerging markets and increased participation in more advanced technologies, such as electricity-powered vehicles. We seek to partner with

suppliers who share our purpose and values. We expect our employees working with suppliers to hold them accountable to the same environmental principles and ethical standards to which we hold our own employees and operations—so we all win with integrity. Engagement with suppliers to reduce GHG in auto parts life-cycle is an enormous task that needs prioritization. Of the 20,000 suppliers that provide services, parts and systems for GM vehicles, we have developed a Strategic Supplier Engagement (SSE) team of key suppliers. The SSE comprises the top suppliers to GM in spend and strategic importance in the supply chain. We use life cycle analysis of GHG for each supplier to determine the impact on our Scope 3 emissions and also include the top emitters that are not in the SSE group. GM participates with CDP Supply Chain in Climate Change and Water and selected SSE and large GHG emitters to engage in 2017.

Impact of engagement, including measures of success

-The number of suppliers responding to CDP Climate Change increased by 60% in 2017 using the mix of SSE group and large emitters. Measuring our supply chain's disclosure and performance related to Climate Change shows increased governance, emissions reporting, Suppliers engaging with their suppliers, increase in number of Suppliers reporting a target from 95 to 135, and 30 Suppliers reporting a renewable energy target. GM suppliers reported reduction of over 22 million tons of GHG with energy efficiency and conservation efforts. 12 Suppliers are enrolled in Action Exchange cycle for 2017-2018 and 3 reported emissions reduction as a result of Action Exchange.

Comment

GM believes stakeholder engagement in our value chain on Climate Change will not only reduce impact for GM's footprint, but that of the entire industry. Our life cycle analysis shows that the majority of our purchased goods and services GHG emissions occur in tiers 2-6 and that the top two industries that affect GHG is Electricity supply and Steel production. Also a core element of our vehicle electrification strategy to reduce climate change impact includes increased renewable energy in the electric grid. Our RE-100 commitment includes working on policy issues with government and utilities to increase the availability and use of renewable energy. In Michigan, GM recently purchased green tariff electricity from Consumers Energy after working collaboratively on increasing renewable energy supply.

C12.1b

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

Type of engagement

Education/information sharing

Details of engagement

Share information about your products and relevant certification schemes (i.e. Energy STAR)

Size of engagement

5

% Scope 3 emissions as reported in C6.5

77

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

General Motors' sustainability strategy is synonymous with its business strategy. Our vision for personal mobility is a world with zero crashes, zero emissions and zero congestion. By delivering safer, simpler and sustainable transportation solutions for our customers, we'll realize that vision. In the process, GM will become the most valued automotive company. In order to build the most valuable automotive company, we must recognize that our impacts go beyond the walls of GM to include our entire value chain, of which customers and suppliers make up a significant part. -Our growing portfolio of electric vehicles (EVs) is key to meeting our vision of a zero-emissions future and the diverse demands of our customers. Today, we are the most connected automaker in the world, with nearly 14 million vehicles connected, accounting for 200 million daily interactions with customers. We actively work with and engage stakeholders to build EV awareness and help develop national EV charging infrastructure to strengthen the EV market. We remain committed to improving the efficient fundamentals of traditional propulsion technology. Fuel economy and lower emissions are not only a highly regulated part of our business, but also a way in which we increase the customer value proposition of our products. Since 2016, General Motors has shed more than 5,000 pounds across 14 new-vehicle models, saving 35 million gallons of gasoline and 300 thousand metric tons of CO2 emissions per year. Engagement with customers with technology and communications to enhance fuel economy is an important driver to reduce GHG through behavioral methods. Additionally, GM publicly shares the results of our long standing participation with Energy Star with seven years of being recognized with Sustained Excellence for Energy Management for our facilities. We want to show our customers that energy efficiency and carbon reduction matter to us in the products we manufacture. In 2017 we were able to have 3 Assembly plants and 17 buildings certified by Energy Star for Superior Energy Performance.

Impact of engagement, including measures of success

Some of the ways in which we engage customers in being more aware and efficient drivers include: - The GM Sustainability Report online (gmsustainability.com). The interactive version of our yearly business report is updated regularly with content including resources on electric vehicle ownership, how to be a more efficient driver and others. (found in the Knowledge Share tab, along with other areas in the report) - The "9 Ways to be Fuel Efficient and Help Save Gas" post has received 100 views. Our gm.green Sustainability blog is another resource for consumers and business partners: - The "Five Easy Steps to be a Better, Greener Driver" post has had more than 40,000 impressions - General Motors and its brands actively engage media to help scale engagement. In the August issue of Popular Science, Nathan Wilmot, Vehicle Performance Owner for Vehicle Energy Integration at GM shared the tips on getting the best fuel economy. The article, "How to get the Best Possible Gas Mileage" had a readership of nearly 200,000 online and printed views. -Customer engagement in fuel efficiency involves communications to enhance behaviors during the driving experience. On a real time basis, GM provides dashboards in many vehicles to show the instantaneous fuel efficiency and where applicable green indicators for driving in the most efficient modes. Examples are

Variable valve timing paired with cylinder deactivation (Active Fuel Management) shows how many cylinders are active on a real time basis and shows green when driving with less number of cylinders active, e.g. 4 cylinders in an 8 cylinder engine. Also, our Battery Electric Vehicles and hybrid vehicles provide customers with real time efficiency indication on the dashboard with a green indicator showing the best performance. Participation in dashboards is difficult to measure, but comments show success. - Our Energy Star post received more than 30,000 impressions from public viewing.

C12.3

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

Direct engagement with policy makers

Trade associations

Other

C12.3a

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

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Other, please specify (Increase access to electric charging)	Support	GM joined 45 auto-industry peers as signatories to the Guiding Principles to Promote Electric Vehicles and Charging Infrastructure, a commitment to the collaboration between the government and industry to increase consumer access to electric vehicles and charging infrastructure all across the US. This engagement deepens the partnerships and collaborative relationships that are needed to successfully drive nationwide EV adoption into the mainstream and focuses on strategizing EV infrastructure, regulatory and policy enablers at the state and federal	One example of GM support included Pacific Gas & Electric Company's application before the Public Utilities Commission of the State of California to install infrastructure to support electric vehicle charging at multi-unit dwellings, workplaces, and public interest destinations. In its application, PG&E will convene a program advisory council comprised of representatives from state agencies, ratepayer advocates, environmental justice groups, technology providers, automakers, and others to provide feedback and guidance on pilot design and implementation.
Other, please specify (Alternative fuel vehicle tax exemption)	Support	GM has directly supported federal and state legislation that provides alternative fuel vehicle (e.g.: electric vehicles) incentives. Support includes written and verbal testimonies, position papers, distribution of educational material, and participation in supportive coalitions and associations.	One example is GM's support of the State of Washington's House Bill 1925. HB1925 provides an electric vehicle sales tax exemption which would continue until 2025

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

The Alliance of Automobile Manufacturers position on climate change that reducing transportation sector greenhouse gas emissions will require the mass market commercialization of electric vehicles. That includes technologies such as hybrid electrics, plug-in hybrid electrics, battery electrics, and fuel cell vehicles. Widespread consumer acceptance of these technologies will require that efforts be focused on important considerations such as: supporting infrastructure, incentives for consumer adoption, the alignment of regulatory efforts and the removal of market barriers. One example of how the trade association has attempted to influence climate change policy is through the issuance of statements on behalf of its members. The Auto Alliance has called for a single, national program because conflicting requirements from several regulatory bodies raise costs, ultimately losing value to consumers.

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Alliance of Automobile Manufacturers position on climate change that reducing transportation sector greenhouse gas emissions will require the mass market commercialization of electric vehicles. That includes technologies such as hybrid electrics, plug-in hybrid electrics, battery electrics, and fuel cell vehicles. Widespread consumer acceptance of these technologies will require that efforts be focused on important considerations such as: supporting infrastructure, incentives for consumer adoption, the alignment of regulatory efforts and the removal of market barriers. One example of how the trade association has attempted to influence climate change policy is through the issuance of statements on behalf of its members. The Auto Alliance has called for a single, national program because conflicting requirements from several regulatory bodies raise costs, ultimately taking money out of consumers' pockets and hurting sales. We all want to get more fuel-efficient autos on our roads, and a single, national program with a strong midterm review helps us get closer to that shared goal.

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

GM is an active supporter of Automobile Manufacturers Alliance of Automobile Manufacturers. GM's position is consistent with the trade association's position so there is no need to influence the position.

C12.3e

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

GM was a founding signatory for the Renewable Energy Buyer's Alliance and a founding member of REBA, along with the Business Renewables Center. GM is an active member of Solar Energy Industry Association (SEIA) and American Wind Energy Association (AWEA).

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?

GM's Global Public Policy (GPP) group is responsible to ensure that all of our direct (e.g.: government relations) and indirect activities (e.g.: membership in various organizations) that influence climate change policy are consistent with the Company's climate change strategy. The GPP has four primary business processes in place to ensure consistency between our actions and strategy:

- 1) Policy position development process
- 2) GM Political Action Committee candidate selection process
- 3) Strategic External Stakeholder Engagement process
- 4) GM Corporate Giving & Global Philanthropy budget and grant approval process

Overseeing the first three processes and supporting the fourth process is the GPP leadership team which includes GM's executive vice president of Law and Public Policy and direct reports. GM's executive vice president of Law and Public Policy is on GM's Executive Leadership Team, GM's most senior management body which includes the CEO, CFO, and President. Regular weekly and monthly meetings have been established to review, analyse, debate, and decide on positions and partnerships to ensure consistency between the Company's strategy, action, and position on climate change. GM's vice president of global government relations and GM's vice president of GM North America Public Policy play a key role in ensuring day-to-day consistency between our actions and strategy. Furthermore, GM's executive vice president of Law and Public Policy and direct reports support in a variety of ways the review and approval of organizations that receive funding primarily along the areas of STEM, Safety, and Sustainable Communities. GM's Corporate Giving and Global Philanthropy also provides funding to address energy and environmental issues. Therefore, organizations addressing climate change such as the World Wildlife Fund are recipients of philanthropic grants. An example of aligning process with climate change strategy is GM's recent contribution to the WWF in support of science based targets and renewable energy. GM belongs to numerous organizations that take positions on many issues. It is not uncommon that an organization may take a different position than GM. In regard to climate change,

GM makes public its position on climate to ensure there is no confusion on where GM stands. However, GM may consider leaving an organization as it did when GM decided to no longer provide funding to the Heartland Institute and American Legislative Exchange Council due to their positions against addressing climate change.

C12.4

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

Publication

In mainstream reports

Status

Complete

Attach the document

1

[GeneralMotorsCompany_10K_20180206.pdf](#)

Content elements

Strategy

Risks & opportunities

Emission targets

Publication

In voluntary sustainability report

Status

Complete

Attach the document

1

[GM_2017_SR.pdf](#)

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Publication

In voluntary communications

Status

Complete

Attach the document

1

[GM's Vision Drives Value for the Company, Communities and Future Mobility.pdf](#)

Content elements

Strategy

Risks & opportunities

Emissions figures

Emission targets

C14. Signoff

C-FI

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

C14.1

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

	Job title	Corresponding job category
Row 1	Executive Vice President and Chief Financial Officer	Chief Financial Officer (CFO)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

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

Please confirm below

I have read and accept the applicable Terms