

Module: Introduction**Page: Introduction****CC0.1****Introduction**

Please give a general description and introduction to your organization.

General Motors is one of the world's largest automakers and traces its roots in the U.S. back to 1908. Based in Detroit, Michigan, GM employs over 215,000 people in 396 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 these vehicles through the following brands: Chevrolet and Cadillac globally, and Baojun, Buick, GMC, Holden, Isuzu, Jiefang, Opel, Vauxhall, and Wuling in certain regions or specific countries.

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

On November 18, 2010, GM completed one of the world's largest initial public offerings as the new General Motors Company. 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.

CC0.2

Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed

Thu 01 Jan 2015 - Thu 31 Dec 2015

CC0.3

Country list configuration

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist

you in completing your response.

Select country
United States of America
Rest of world

CC0.4

Currency selection

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

USD(\$)

CC0.6

Modules

As part of the request for information on behalf of investors, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sub-industries, companies in the oil and gas sub-industries, companies in the information technology and telecommunications sectors and companies in the food, beverage and tobacco industry group should complete supplementary questions in addition to the main questionnaire.

If you are in these sector groupings (according to the Global Industry Classification Standard (GICS)), the corresponding sector modules will not appear below but will automatically appear in the navigation bar when you save this page. If you want to query your classification, please email respond@cdp.net.

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below. If you wish to view the questions first, please see <https://www.cdp.net/en-US/Programmes/Pages/More-questionnaires.aspx>.

Further Information

Module: Management

Page: CC1. Governance

CC1.1

Where is the highest level of direct responsibility for climate change within your organization?

Board or individual/sub-set of the Board or other committee appointed by the Board

CC1.1a

Please identify the position of the individual or name of the committee with this responsibility

(i) The Public Policy Committee of the GM Board of Directors (ii) is comprised of four independent directors and one that was a former Vice Chairman of the Company, but now acts as a strategic advisor to the Company.

The Public Policy Committee provides oversight and guidance to management on public policies to support the Company's progress in growing the business globally within the framework of its core values, including Climate Change. The Public Policy Committee discusses, and brings to the attention of the Board and management as appropriate, current and emerging global political, social, and public policy issues that may affect the business operations, profitability, or public image or reputation of the Company. The Public Policy Committee oversees global public policy matters as well as specific functions of the Company, as appropriate.

Company functions reviewed by the Public Policy Committee include Global Public Policy, diversity, corporate social responsibility, employee health and safety, and philanthropic activities.

CC1.2

Do you provide incentives for the management of climate change issues, including the attainment of targets?

Yes

CC1.2a

Please provide further details on the incentives provided for the management of climate change issues

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Corporate	Monetary	Emissions	GM has a "Commitment and Accountability Partnership" or CAP system for performance evaluation and

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
executive team	reward	reduction target Energy reduction target	compensation. CAP goals are set at the beginning of the year and reviewed every 6 months for performance. Members of the Corporate Executive Team related to facilities have meeting Energy targets in each region as one of their goals that relates to compensation.
Business unit managers	Monetary reward	Emissions reduction target Energy reduction target	GM has a "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. Business Unit managers have meeting Energy targets for their facilities as one of their goals that relates to compensation.
All employees	Monetary reward	Emissions reduction project Energy reduction project Efficiency project Behaviour change related indicator	United States facilities participate in an Employee suggestion program, which provides a 50/50 split of savings for projects suggested by employees that are implemented up to a sizeable maximum award for any category of projects, with many energy savings or renewable energy suggestions being submitted.
Energy managers	Monetary reward	Emissions reduction project Emissions reduction target Energy reduction target Efficiency project	Commitment and Accountability Partnership is an employee evaluation process which includes attainment of energy and carbon reduction goals for energy managers.

Further Information

Page: CC2. Strategy

CC2.1

Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities

Integrated into multi-disciplinary company wide risk management processes

CC2.1a

Please provide further details on your risk management procedures with regard to climate change risks and opportunities

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Annually	Board or individual/sub-set of the Board or committee appointed by the Board	GM has manufacturing facilities in 30 countries and sells its products in over 100 countries and focuses its risk management in these areas.	> 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 must have a long-term approach to regulatory risks.

CC2.1b

Please describe how your risk and opportunity identification processes are applied at both company and asset level

GM has a Chief Risk Officer that reports both to the CFO as well as to the Board of Directors. The CRO is responsible for GM's enterprise and operational risk management plan and processes including identifying and assessing corporate and asset level risks relating to climate change. GM's risk and opportunities identification process is as follows:

- Executives from GM's various functions and geographic locations have been appointed as risk officers
- Annually, these risk officers identify, evaluate and assess various Company and asset risks and opportunities. Risk officers review results with their respective Executive Leadership Team (ELT)
- (i) 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 a number of variables including reputational, operational, revenue, etc.
- All Tier 1 have approved mitigation plans, and are reviewed in detail regularly by the ELT and by the Board.
- All Tier 2 risks have approved mitigation plans and are reviewed at least once a year by the ELT and by the BOD.
- All Tier 3 risks have been fully analysed, put on a "watch list" and are regularly reviewed by the risk officer and their respective ELT member.
- (ii) Risks identified as 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 an overall low impact on the Company and can be absorbed by the reserves on the annual balance sheet. Lessons learned are incorporated into future site planning, supplier selection process, and risk mitigation

planning and strategic development.

CC2.1c**How do you prioritize the risks and opportunities identified?**

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, revenue, etc. 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.

CC2.1d

Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment
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CC2.2**Is climate change integrated into your business strategy?**

Yes

CC2.2a

Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process

i. How has the business strategy has been influenced? Climate change 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 climate change by setting aggressive energy and GHG intensity reduction targets through 2020. 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 and progress is reported to management. An example of how this process has influenced the business strategy, and in particular business priority #4, is the development of an ongoing dedicated fund for energy savings projects of \$15-20 million USD and use of energy performance contracting to fund the energy and carbon reduction methods. In 2015, energy and carbon reduction projects resulted in 5.7% carbon reduction on an absolute basis.

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. 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 2015 we invested \$7.5B in research and development for future vehicles. 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. In 2015, GM's electrified vehicles on the road -- which includes eAssist, two-mode hybrid, extended-range electric vehicle and all electric vehicle models -- increased by 9%.

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

Events such as extreme weather, national, state/provincial and/or policy changes to address climate change 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 climate change:

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 climate change: We have an aggressive focus on advanced propulsion technologies that will benefit customers and the environment. 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 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 2015

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 vehicle electrification and its core technologies, namely power controls, invertors, traction motors, and batteries.

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 or plan to enact increasingly more stringent fuel efficiency and CO₂ emission regulations. Climate change is influencing consumer behavior and governmental policies / regulations that affect our products and manufacturing facilities. Our strategy enables us to look for opportunities in these changing preferences and policies. GM made the following key decisions in 2015 - Operate in a more transparent manner and actively request external input from stakeholders, -Nine manufacturing commitments with 2020 targets, -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, 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.

CC2.2b

Please explain why climate change is not integrated into your business strategy

CC2.2c

Does your company use an internal price of carbon?

Yes

CC2.2d

Please provide details and examples of how your company uses an internal price of carbon

GM's Carbon reduction goal by Chevrolet Marketing used a price on carbon of \$5/ton to establish a basis for implementing the goal. To date they have reduced over 8 million tons of carbon at non-GM residential, commercial, and college campus locations in US.

GM participates in EU Carbon Trading Scheme which sets a price on carbon for our energy efficiency efforts. In 2015 the facilities purchased allowances at

\$6.19/ton and offset the purchase of 151,438 tons with energy efficiency projects.

CC2.3

Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)

Direct engagement with policy makers
Trade associations

CC2.3a

On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Other: European Commission's considering a delay in the mandatory use of R1234yf refrigerant	Oppose	European Commission's Directive 2006/40/EC on mobile air conditioning (MAC) bans, de facto, the use of current refrigerant R134a in newly type-approved vehicles because of its impact on Climate Change. GM led a cooperative research group that included 10 other automakers with the Society of Automotive Engineers to evaluate R1234yf as a replacement refrigerant. Together, they performed extensive analysis including numerous crash tests, simulations, hundreds of lab tests, and led industry forums as part of the investigation into the safety of R1234yf. GM and others accumulated large amounts of data and presented their findings to the European Commission's Joint Research Centre (JRC).	The global warming potential (GWP) of current automotive refrigerant, R134a, is 1300. The GWP of R1234yf is 1, representing a significant improvement. GM is against delaying the use of R1234yf. GM's proposed legislative solution is to keep the timing requirement unchanged – no delay to the use of R1234yf
Other: U.S. long-term Energy policy	Support	GM has directly engaged the Council on Environmental Quality (CEQ) which serves as the principal environmental policy adviser to the President	The U.S. President should immediately appoint a Blue Ribbon Commission to develop a 30-year energy policy framework with checkpoints every five years. The Commission should be made up of multiple stakeholders working together to negotiate the necessary trade-offs and emerge with clear targets and a timeline to advance the U.S. energy agenda.

CC2.3b

Are you on the Board of any trade associations or provide funding beyond membership?

Yes

CC2.3c

Please enter the details of those trade associations that are likely to take a position on climate change legislation

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
Alliance of Automobile Manufacturers	Consistent	The trade association's position on climate change is 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 in 2013 is through the issuance of statements on behalf of its members. In 2013, the Alliance issued this statement calling for a final 2017-2025 single, National Fuel Economy Program: "After years of billion-dollar investments by automakers, consumers have a lot of choice in fuel-efficient cars and light trucks, and automakers are working to sell these high-mileage vehicles in high volumes. Compliance with higher fuel-economy standards is based on sales, not what we put on showroom floors. 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."	No, since GM's position is consistent with the trade association's position.

CC2.3d

Do you publicly disclose a list of all the research organizations that you fund?

CC2.3e

Please provide details of the other engagement activities that you undertake

CC2.3f

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 Foundation budget and grant approval process
- 3) GM Political Action Committee candidate selection process
- 4) Strategic External Stakeholder Engagement process

Overseeing all four processes is the GPP leadership team which includes GM's senior vice president of GPP and direct reports. Regular weekly and monthly meetings have been established to review, analyse, debate, and decide on positions and partnerships to ensure , GM's vice president of sustainability and global regulatory affairs (aka: Chief Sustainability Officer) plays a key role in ensuring consistency between our actions and strategy. Furthermore, GM's senior vice president of GPP is on GM's Executive Leadership Team, GM's most senior management body which includes the CEO, CFO, and President. The CSO is part of the GPP leadership team that approves GM's position on key policy items such as climate change. The CSO GPP senior VP is also on the GM Foundation Board Chairman. The GMF Board has responsibility to review and approve which organizations receive funding and allocates funding along four pillars, one of which is Energy & Environment. Therefore, organizations addressing climate change such as the World Wildlife Fund are regular recipients of GMF grants. An example of aligning process with climate change strategy is GMF's most recent contribution to the WWF. For the past two years, GMF's grant to WWF was directed toward specific conservation activities. However, GMF's most recent contribution was directed toward WWF's work on the "3% Solution." WWF's 3% Solution is a climate and energy initiative that supports and provides business with tools on how to reduce greenhouse gas emissions in ways that makes business sense while helping WWF to meet its climate goal of building a climate-resilient and zero-carbon world powered by renewable energy. In 2012, the Board decided to no longer provide funding to the Heartland Institute and American Legislative Exchange Council due to their positions against addressing climate change. Lastly, the CSO is on the candidate selection committee of the GM Political Action Committee. Factors that are considered when recommending candidates for GM PAC support include the candidate's general support of issues of importance to GM and/or the industry.

CC2.3g

Please explain why you do not engage with policy makers

Further Information

Page: CC3. Targets and Initiatives

CC3.1

Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?

Absolute target
Intensity target

CC3.1a

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment
Abs1	Scope 3: Use of sold products	100%	100%	2010	8000000	2015	No, but we anticipate setting one in the next 2 years	The base year of 8 million tons represents an estimate of the CO2 emissions from Chevrolet vehicles in US purchased from 11/18/2010 to 12/31/2011. This goal has been achieved by purchasing and suspending carbon credits. We've chosen carbon reducing projects that we believe will make a lasting difference in communities across the country.

CC3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment
Int1	Scope 1+2 (market-based)	100%	20%	Metric tonnes CO2e per vehicle produced*	2010	0.93	2020	No, but we anticipate setting one in the next 2 years	GHG emissions from our manufacturing and non-manufacturing operations are included in this target and the total emissions normalized by vehicle production. We are on the glide path to achieve the goal.
Int2	Scope 3: Use of sold products	36%	15%	Grams CO2e per kilometer*	2011	212	2016	No, but we anticipate setting one in the next 2 years	Annual US vehicle emissions, Includes all U.S. light-duty vehicle performance and associated regulatory flexibilities
Int3	Scope 3: Use of sold products	9%	27%	Grams CO2e per kilometer*	2011	135	2020	No, but we anticipate setting one in the next 2 years	Annual European Union vehicle emissions, which Includes vehicles manufactured by Opel/Vauxhall, GM Korea and GM North America.
Int4	Scope 3: Use of sold products	29%	28%	Grams CO2e per kilometer*	2013	180	2020	No, but we anticipate setting one in the next 2 years	Annual China vehicle emissions, Includes all light-duty vehicle performance and associated regulatory flexibilities

CC3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
Int1	Decrease	8	No change	0	Absolute emissions for our facilities is highly sensitive to production volume, which is unknown in future years, e.g. 2020. Assuming carryover sales volume from 2015, the absolute emissions would reduce at the same percentage as the intensity target. As our financial goals are to grow the business, depending on the rate of vehicle sale, if the rate is higher than intensity reduction, an increase in absolute emissions would occur.
Int2	No change	10	Decrease	10	Absolute emissions for vehicles are dependent on sales volume and mix, which is unknown in future years, e.g. 2016. Assuming carryover sales volume from 2015, the absolute emissions is estimated to reduce by 10%.
Int3	No change	33	Decrease	33	Absolute emissions for vehicles are dependent on sales volume and mix, which is unknown in future years, e.g. 2020. Assuming carryover sales volume from 2015, the absolute emissions is estimated to reduce by 33%.
Int4	No change	28	Decrease	28	Absolute emissions for vehicles are dependent on sales volume and mix, which is unknown in future years, e.g. 2020. Assuming carryover sales volume from 2015, the absolute emissions is estimated to reduce by 28%.

CC3.1d

Please provide details of your renewable energy consumption and/or production target

ID	Energy types covered by target	Base year	Base year energy for energy type covered (MWh)	% renewable energy in base year	Target year	% renewable energy in target year	Comment
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CC3.1e

For all of your targets, please provide details on the progress made in the reporting year

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
Abs1	100%	100%	The base year of 8 million tons represents an estimate of the CO2 emissions from Chevrolet vehicles in US purchased from 11/18/2010 to 12/31/2011. This goal has been achieved by purchasing and suspending carbon credits. We've chosen carbon reducing projects that we believe will make a lasting difference in communities across the country.
Int1	50%	76%	GM is ahead of our glide path to meeting our 2020 Scope 1 and 2 public reduction goal
Int2	80%	47%	
Int3	44%	22%	
Int4	29%	20%	

CC3.1f

Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

CC3.2

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

CC3.2a

Please 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	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Group of products	Electric vehicles and extended range vehicles sold globally with lower emissions than comparable other vehicles available for sale.	Low carbon product	Other: US EPA www.fueleconomy.gov	0.4%	Less than or equal to 10%	Comparing similar vehicles for sale, using US EPA fuel economy comparison at www.fueleconomy.gov GM's sales of Volt and Spark EV vehicles resulted in 23,000 tons of GHG avoided in 2015.

CC3.3

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

Yes

CC3.3a

Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	0	0

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Implementation commenced*	0	0
Implemented*	253	428425
Not to be implemented	0	0

CC3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Energy efficiency: Building fabric	Insulate windows and doors, repair roof vents, and build construction wall to isolate unused areas	5974	Scope 1 Scope 2 (market-based)	Voluntary	785173	1324860	1-3 years	6-10 years	
Energy efficiency: Building services	Optimize heating systems and controls, install LED lights and occupancy sensors, steam elimination, install variable speed drives on pumps and fans and optimize building and energy management systems.	146800	Scope 1 Scope 2 (market-based)	Voluntary	20384642	33049736	1-3 years	6-10 years	
Energy efficiency: Processes	Optimize paint booth operations, variable speed compressors, recirculate	226915	Scope 1 Scope 2 (market-	Voluntary	49496389	25980181	<1 year	3-5 years	

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
	booth air in paint shops, 3 wet paint process, and presence sensor controls to shut down equipment during non-production.		based)						
Behavioral change	(10) initiatives to improve shut down of energy using Energy observation tours and manual procedures at team level on plant floor. Rolled out Bring your Green to GM, using EPA Energy Star theme to non-manufacturing facilities.	8318	Scope 1 Scope 2 (market-based)	Voluntary	2280795	0	<1 year	1-2 years	
Low carbon energy installation	Installed ground mounted solar and roof mounted solar systems, and improved output of landfill gas to electric generation	40415	Scope 2 (market-based)	Voluntary	2021000	10000000	4-10 years	16-20 years	
Low carbon energy purchase	Purchase steam from low carbon waste to energy plant and shut down coal fired boilers.	26710	Scope 1 Scope 2 (market-based)	Voluntary	4500000	0	<1 year	11-15 years	
Waste recovery	Reduction, reuse, and recycle of waste from operations provided a large cost savings and avoidance of GHG emissions as calculated from EPA WasteWise.	8900000	Scope 3	Voluntary	1000000000	0	<1 year	<1 year	GM uses EPA WasteWise program to calculate carbon emissions and avoided carbon from reduction, reuse, and recycle of waste products. This

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
									effort also promotes our landfill free initiative where we have 130 facilities that are landfill free.
Product design	Electric vehicles and extended range vehicles sold globally with lower emissions than comparable other vehicles available for sale. Comparing similar vehicles for sale, using US EPA fuel economy comparison at www.fueleconomy.gov GM's sales of Volt and Spark EV vehicles resulted in 23,000 tons of GHG avoided in 2015.	23000	Scope 3	Voluntary Mandatory	0	7500000000	>25 years	6-10 years	
Transportation: use	Partnering with our logistics suppliers, GM initiated 841 carbon and cost savings projects in 2015. These included container modifications, equipment changes, frequency changes, mode changes, scheduling optimizations, and route redesigns.	81216	Scope 3	Voluntary	181800000	13000000	<1 year	1-2 years	

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Dedicated budget for energy efficiency	US and Canada set aside \$19M for energy efficiency projects that follow a common process to deliver substantial savings year over year. Typical practice is that any project with less than a 2 year payback project is implemented and longer payback projects are implemented within budget constraints. Examples are listed in 3.3b as LED lighting, Variable speed drives, steam elimination, and others. GM used Energy Performance Contracting in USA and Europe to implement longer payback projects and avoided an additional \$10M investment.
Internal finance mechanisms	Chevrolet marketing commits up to \$40M to reduce 8 million metric tons of CO2e at sites in US other than GM owned facilities. Examples include landfill gas to energy, reforestation, and wind farms. From 2010 to date 8 Million metric Tons CO2e have been reduced.
Employee engagement	US Employee suggestion program provides sharing in savings of projects, including energy that are suggested by employees and implemented.
Partnering with governments on technology development	DOE grants for vehicle development and manufacturing.
Compliance with regulatory requirements/standards	GM complies with increasingly stronger regulations on climate change in product design and manufacturing.
Internal incentives/recognition programs	GM Team recognition program began in 2011 which provides a method to recognize employees both monetarily and other for performance. Many awards have been issued for energy efficiency and conservation performance resulting in GHG reductions.

CC3.3d

If you do not have any emissions reduction initiatives, please explain why not

Further Information

Page: CC4. Communication

CC4.1

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	Status	Page/Section reference	Attach the document	Comment
In mainstream reports (including an integrated report) but have not used the CDSB Framework	Complete	Page 6/ Hydrogen Fuel Cell Technology; Page 7/US and Canada; Page 9 / Industrial Environmental Control.	https://www.cdp.net/sites/2016/64/7164/Climate Change 2016/Shared Documents/Attachments/CC4.1/GM 10k extract 2015.pdf	
In voluntary communications	Complete	Page 10,12 / Leadership; Page 26 / Highlights; Pages 31,37,38,57 / Approach; Page 97 / Operational Impact; Pages 107,108 / Supply Chain; Page122 / Innovation; Pages 131,134 / Reporting	https://www.cdp.net/sites/2016/64/7164/Climate Change 2016/Shared Documents/Attachments/CC4.1/GM Sustainability 2015 extract.pdf	See yellow highlights

Further Information

Module: Risks and Opportunities

Page: CC5. Climate Change Risks

CC5.1

Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

- Risks driven by changes in regulation
- Risks driven by changes in physical climate parameters
- Risks driven by changes in other climate-related developments

CC5.1a

Please describe your inherent risks that are driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Product efficiency regulations and standards	(i) Currently, GM estimates that nearly 90 percent of the vehicles we sell must comply with an aggressive level of fuel-economy and carbon emissions regulation. Vehicle Emission Standards are becoming more stringent in major markets where we operate including Australia, Canada, China, Europe, South Korea, and the United States. Throughout these regions, vehicle emission standards are being phased in now through 2025. In some cases, existing technology is not sufficient to meet the new	Increased operational cost	1 to 3 years	Direct	Virtually certain	High	An estimated 1% increase in research and development costs would cause an increase in expense of \$75 Million USD to GM.	GM believes the key to developing sustainable transportation is the development of energy alternatives and advanced technologies to reduce dependency on petroleum, improve fuel economy and reduce emissions. GM established a series of product commitments around expanding electrification, increasing fuel economy and reducing the CO2 emissions of our fleet. To meet those commitments, GM invested heavily in research and development on electrification and increasing fuel economy of our	GM's current amount of research and development cost is \$7.5 Billion.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>standards and new technology must be developed and implemented.</p> <p>(ii) There is a risk that these government policies could significantly affect GM plans for product development and could make us subject to various penalties or restricted product offerings to remain in compliance as well as spend additional monies on research and development.</p>							<p>vehicles. The Chevrolet Volt and Cruze Eco are some of examples of products that have been introduced into the market place. Also, Opel/Vauxhall is in the process of rolling out 13 new powertrains that represent an 80 percent renewal of its engine portfolio. The end result by 2017 will be a GM fleet that sets a new performance level in fuel economy and carbon emissions around the globe. Because many of our products are built on common architectures, GM vehicles around the world will benefit from these efficiency gains. We expect that to comply with U.S. standards, we will</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								be required to sell a significant volume of hybrid or electrically powered vehicles throughout the U.S., as well as implement new technologies for conventional internal combustion engines, all at increased cost levels. We have committed to work with EPA, the NHTSA, the states, and other stakeholders in support of a strong national program to reduce oil consumption and address global climate change.	
Fuel/energy taxes and regulations	i) Following on a Government mandatory 20% energy reduction for private facilities in 2010 implemented due to energy shortages, the	Reduction/disruption in production capacity	1 to 3 years	Direct	Virtually certain	Low	Revenue losses to GM due to an inability to sell products produced in Venezuela could result in a net loss of	Venezuela plant implemented several initiatives to achieve the mandatory 20% reduction, such as training and awareness for employees,	The total GM estimated investment for the required generators is \$4.4 Million.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>Venezuela government started enforcement of a regulation in 2011 that requires each private company, including GM to install and operate self-generation for minimum 10% of their total energy demand. (ii) Compliance with such regulations requires GM to make capital investments and there is a risk that if we fail to comply with such regulations, we could incur penalties and/or there could be curtailment during peak energy demand periods resulting in a disruption in production capacity.</p>						income of \$2 million.	<p>replacement of lighting for more efficient ones, elimination of leaks, shutdown improvement, etc. Also, the plant purchased and installed the generator, and is ready to operate and generate energy based on governmental demand for generation.</p>	

CC5.1b

Please describe your inherent risks that are driven by changes in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation extremes and droughts	(i) Increases in the frequency of drought conditions can further depress water availability for production in water-stressed areas (ii) GM has production facilities in Mexico, an area that was hit hard by drought in 2015, and there is a risk that increases in the frequency of such events could disrupt production due to lack of water availability.	Reduction/disruption in production capacity	Up to 1 year	Direct	Likely	Low	Mexico accounts for about 7% of total GM global production and a one month disruption of production could result in loss of \$57 Million in net income.	GM integrated water management into its annual business planning process, or Business Plan Deployment plan (BPD), similar to energy and carbon. Targets are set for each facility to meet a 2020 Manufacturing Commitment to reduce water use intensity by 15% (on a per vehicle basis) by 2020 (2010 baseline). Reduction methods are implemented at a facility level and include conservation with behavioral activities, improving equipment efficiency to	Such water treatment systems, like the one installed in San Luis Potosi, require an investment of approximately \$12 million more capital than traditionally engineered systems.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								<p>reduce, and reuse. An example of water reuse is in paint shops, water is reused from various stages from high purity to low purity to reduce rinse water use. As of 2014, GM has reduced water use intensity by 11% compared to 2010. When plants are located in water-stressed areas, special consideration is given to water treatment technologies. Minimizing water use and withdrawals allows the 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 carrying</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								<p>capacity. GM's responsible use of water also reduces the risk that GM's operating licenses would be revoked. Specific example: In our San Luis Potosi plant, a closed loop water system 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.</p>	

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behaviour	<p>(i) Volatility in fuel pricing and tax incentives may affect consumer behavior. As of 2015, carbon-pricing schemes are expected to be operating in at least 33 countries and 18 subnational 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.</p> <p>(ii) There is a risk that there may be less demand for GM's larger, less fuel efficient vehicles.</p>	Reduced demand for goods/services	1 to 3 years	Direct	More likely than not	High	<p>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. On a global basis, a decrease in sales due to changing consumer behavior of 1% for example may result in a decrease in net income of \$96 million</p>	<p>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</p>	<p>In 2015, GM invested approximately \$7.5 billion in research and development activities.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								<p>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 eight hybrid models and continue to develop plug-in hybrid electric vehicle technology (PHEV) and extended range electric vehicles such as the Chevrolet Volt and Opel Ampera. In 2015 we offered the Chevrolet Spark battery electric</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								vehicle; 5. 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.	

CC5.1d

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1e

Please explain why you do not consider your company to be exposed to inherent risks driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1f

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Page: CC6. Climate Change Opportunities

CC6.1

Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- Opportunities driven by changes in other climate-related developments

CC6.1a

Please describe your inherent opportunities that are driven by changes in regulation

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Product efficiency regulations and standards	(i) Vehicle Emission Standards are becoming more stringent	Increased demand for existing products/services	1 to 3 years	Direct	Likely	Medium-high	An estimated 1% increase in sales from demand for more energy	The best practices GM has established in mature markets to meet	With respect to existing fuel efficient products, the costs for

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>in major markets where GM operates including Australia, Canada, China, Europe, South Korea, and the United States. Throughout these regions, vehicle emission standards are being phased in now through 2025. (ii) This may represent an opportunity to sell more GM vehicles that have incorporated advanced technologies.</p>						<p>efficient vehicles would result in additional net income of \$96 million.</p>	<p>the stringent emissions and diagnostic requirements enable us to quickly develop vehicles to meet the evolving emission requirements in other markets around the world. In addition, GM's global vehicle R&D strategy is driven by a focus on energy alternatives and advanced technologies that could displace petroleum, help address energy security, improve fuel efficiency and reduce emissions, all of which are key to developing new products that support sustainable mobility. By educating consumers and</p>	<p>developing these products has already been accounted for. In pursuit of the development of new products and technology, GM invested \$7.5 billion in research and development activities in 2015.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								other stakeholders on existing fuel-efficient product offerings, our market share in these markets could increase. Examples of these introduced into the marketplace are: downsizing, turbocharging, "stop-start" technology, direct injection, variable valve timing and cylinder deactivation to improve the thermodynamic efficiency of gasoline engines.	
Cap and trade schemes	Implementing energy efficiency in GM operations represents an opportunity for us to reduce our operational costs by	Reduced operational costs	1 to 3 years	Direct	Virtually certain	Low-medium	Energy Efficiency in our manufacturing operations in Europe results in the need to purchase less EUAs. In 2015, GM needed	Based on our ability to implement energy efficiency projects we are able to purchase less EUAs resulting in reduced operating cost.	Energy efficiency projects are implemented on a pay for performance basis resulting in positive cash flow in the year implemented.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	lowering the purchase requirement for EU Allowances (EUAs).						168,963 EUAs (tonnes) costing \$1 Million USD. The avoided cost from implementing energy efficiency projects, avoiding 17,525 tons of Scope 1 GHG is worth \$121,500 as reduced operating cost.	Energy efficiency projects include: Install direct fired gas burners on paint booth air supply units to replace steam, process pump VSD controls, automate process shutdown controls, optimize paint oven burner and controls, and heat recovery from process equipment.	(Similar to Energy Performance Contracting performed in US). Therefore the cost to manage energy efficiency is zero.

CC6.1b

Please describe the inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation pattern	(i) Increases in the frequency of drought conditions	Increased production capacity	1 to 3 years	Direct	About as likely as not	Low-medium	As extreme drought conditions occur, GM	Plants located in water-stressed areas, such as	Such water treatment systems, like

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>can cause disruptions to GM production due to water stress. Proper mitigation allows production to continue without added water stress on local water systems (ii) 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 production.</p>						<p>facilities in Mexico with water reuse systems are resilient and can continue to operate. As Mexico accounts for about 7% of total global production and a one month disruption of GM's production could result in loss of \$56 Million in net income, the opportunity to GM is the continuance of production avoiding a potential loss of \$56 Million USD.</p>	<p>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. An example of the engineering method used is in our San Luis Potosi plant, where a closed loop water system was engineered to reuse 90% of the facility's wastewater for the next cycle of plant operations and the remaining 10% is</p>	<p>the one installed in San Luis Potosi, require an investment of approximately \$12 million more capital than traditionally engineered systems.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								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.	

CC6.1c

Please describe the inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behaviour	(i) As consumer preferences are expected to follow a trend toward more environmentally friendly, manufacturing	Increased demand for existing products/services	1 to 3 years	Direct	More likely than not	Low-medium	On a global basis, an increase in sales due to changing consumer behavior of 1% for	The approach used is to showcase GM's environmental and energy leadership by communicating "Leadership in	GM Brazil invested in excess of \$174 million in the Joinville Industrial Complex that includes low

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>companies, GM has publicized the environmental attributes of a new engine facility in Brazil. (ii) This may represent an opportunity for us to sell more of our vehicles that have been manufactured from a company that shows leadership in energy and the environment that appeals to carbon conscious consumers.</p>						<p>example may result in an increase in net income for GM of \$96 million USD.</p>	<p>Energy and Environmental Design" (LEED) certifications for manufacturing facilities. An example is GM's manufacturing facility, Joinville Industrial Complex, in the state of Santa Catarina, Brazil is a new production facility that includes leading systems of energy efficiency and environmental protection that enabled the Company to obtain the global (LEED) certification. It will also have an innovative treatment of effluent and sewage with stabilization ponds and recycling of industrial water by reverse osmosis, along with other</p>	<p>carbon efficiencies, water reuse, and other environmental leadership installations.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								initiatives. The system will make it possible to reuse up to 22 thousand cubic meters of water a year. The drinking water saved is equivalent to the volume needed to meet the needs of 80 low-consumption homes. Through the reverse osmosis system, it will be possible to supply 100% of the consumption of the engine plant's non-drinking water. The treated, highly pure water will be used for non-drinking purposes (industrial process, bathrooms, gardening, and floor cleaning).	
Changing consumer behaviour	(i) Consumer preferences are expected to follow a trend toward	Increased demand for existing products/services	3 to 6 years	Direct	More likely than not	Low-medium	On a global basis, an increase in sales due to	In 2015, GM introduced a series of product commitments	With respect to existing fuel efficient products, the

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>more environmentally friendly, advanced technology products. (ii) This may represent an opportunity for GM to sell more of our vehicles that have incorporated advanced technologies such as hybrid/electric vehicles and fuel cells, and other environmental features (such as recycled and recyclable materials) and to appeal to carbon conscious consumers through our wider carbon reduction initiatives.</p>						<p>changing consumer behavior of 1% for example may result in an increase in net income to GM of \$96 million USD.</p>	<p>around expanding electrification, increasing fuel economy and reducing the CO2 emissions of our fleet. The Chevrolet Volt, and Cruze Eco are some of our product proof points. Opel/Vauxhall is in the process of rolling out 13 new powertrains that represent an 80 percent renewal of its engine portfolio. The end result by 2017 will be a GM fleet that sets a new performance level in fuel economy and carbon emissions around the globe. Because many of our products are built on common architectures, GM vehicles around the world will benefit from these efficiency gains. One of</p>	<p>costs for developing these products has already been accounted for. In pursuit of the development of new products and technology, we invested \$7.5 billion in research and development activities in 2015. Chevy has pledged to spend up to \$40 Million over 5 years on carbon-reducing initiatives across the U.S.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								<p>GM's wider carbon reduction initiatives is the Chevy Carbon Reduction Initiative: Chevy has pledged to invest in projects that will help reduce 8 million metric tons of carbon dioxide from the atmosphere. That's like planting a forest the size of Yellowstone. Chevy is also collaborating with US colleges, K-12 schools and stakeholders across the country to strengthen their investment in clean energy efficiencies projects on school campuses.</p>	

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading

Page: CC7. Emissions Methodology

CC7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 1	Fri 01 Jan 2010 - Fri 31 Dec 2010	2568555
Scope 2 (location-based)	Fri 01 Jan 2010 - Fri 31 Dec 2010	5441974
Scope 2 (market-based)	Fri 01 Jan 2010 - Fri 31 Dec 2010	5441974

CC7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
US EPA Mandatory Greenhouse Gas Reporting Rule
Australia - National Greenhouse and Energy Reporting Act

CC7.2a

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

CC7.3

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	IPCC Fifth Assessment Report (AR5 - 100 year)
CH4	IPCC Fifth Assessment Report (AR5 - 100 year)
N2O	IPCC Fifth Assessment Report (AR5 - 100 year)
HFCs	IPCC Fifth Assessment Report (AR5 - 100 year)

CC7.4

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page

Fuel/Material/Energy	Emission Factor	Unit	Reference
Natural gas	0.19	metric tonnes CO2 per MWh	US average, used EPA factors for GHG Inventories, 4-April-2014 or IPCC for other countries
Electricity	0.57	metric tonnes CO2 per MWh	Average of EGRID for US states, IPCC for other countries
Coke oven coke	0.39	metric tonnes CO2 per MWh	EPA factors for GHG Inventories, 4-April-2014

Further Information

Page: **CC8. Emissions Data - (1 Jan 2015 - 31 Dec 2015)**

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO₂e

2054543

CC8.3

Does your company have any operations in markets providing product or supplier specific data in the form of contractual instruments?

Yes

CC8.3a

Please provide your gross global Scope 2 emissions figures in metric tonnes CO₂e

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
5483117	5458456	The difference in Market based emissions is mostly bio-genic portion of landfill gas to electric and onsite solar production.

CC8.4

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

CC8.4a

Please 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	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded
Small non-manufacturing facilities that GM does not have verified information to report carbon emissions. GM estimates that these are < 2% of our emissions. We will strive to increase our accuracy and include as many facilities as feasible.	Emissions are not relevant	Emissions are not relevant	Emissions are not relevant	Small remote facilities that data is not being provided and some GM will begin tracking in 2016 and will report in the future.

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less	Data Gaps	Small non-manufacturing facilities that GM does not have verified information to

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
	than or equal to 5%	Metering/ Measurement Constraints	report carbon emissions. GM estimates that these are < 2% of our emissions.
Scope 2 (location-based)	More than 2% but less than or equal to 5%	Data Gaps Assumptions Metering/ Measurement Constraints	Small non-manufacturing facilities that GM does not have verified information to report carbon emissions. GM estimates that these are < 2% of our emissions.
Scope 2 (market-based)	More than 2% but less than or equal to 5%	Data Gaps Metering/ Measurement Constraints	Small non-manufacturing facilities that GM does not have verified information to report carbon emissions. GM estimates that these are < 2% of our emissions.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance process in place

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
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Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2016/64/7164/Climate Change 2016/Shared Documents/Attachments/CC8.6a/11102036Prodin-8-Verification Statement Scope 1-2.pdf	Page 2 / Section 2 - Emissions data verified	ISO14064-3	91

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission
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CC8.7

Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures

Third party verification or assurance process in place

CC8.7a

Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Market-based	Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2016/64/7164/Climate Change 2016/Shared Documents/Attachments/CC8.7a/11102036Prodin-8-Verification Statement Scope 1-2.pdf	Page 2 / Section 2 - Emissions data verified	ISO14064-3	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Year on year change in emissions (Scope 1 and 2)	GHD provided Limited Assurance on GM's Year over Year Scope 1 and 2 GHG emissions.

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

Yes

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

GM purchases landfill gas at two manufacturing facilities in US and generates electricity and thereby reduces the use from the local electric grid. Based on IPCC guidance, we treat this as biologically sequestered emissions and report separately according to the GHG Protocol.

Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2015 - 31 Dec 2015)

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
United States of America	1058805
Rest of world	995738

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
International Operations	401692
Europe	210135
South America	92393
North America	1350324

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
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CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
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Further Information

Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2015 - 31 Dec 2015)

CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
United States of America	2480337	2455677	4132500	203564
Rest of world	3002780	3002779	6161678	11995

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions, location based (metric tonnes CO2e)	Scope 2 emissions, market-based (metric tonnes CO2e)
International Operations	1967230	1967230
Europe	569283	569283
South America	80219	81811
North America	2866385	2774218

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2 emissions, location based (metric tonnes CO2e)	Scope 2 emissions, market-based (metric tonnes CO2e)
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CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions, location based (metric tonnes CO2e)	Scope 2 emissions, market-based (metric tonnes CO2e)
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Further Information

Page: CC11. Energy

CC11.1

What percentage of your total operational spend in the reporting year was on energy?

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

CC11.2

Please state how much heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	Energy purchased and consumed (MWh)
Heat	10049069
Steam	1295475
Cooling	0

CC11.3

Please state how much fuel in MWh your organization has consumed (for energy purposes) during the reporting year

10049069

CC11.3a

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Landfill gas	434579
Natural gas	9375929
Distillate fuel oil No 2	11736
Petroleum coke	149738

CC11.4

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the market-based Scope 2 figure reported in CC8.3a

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Comment
Off-grid energy consumption from an onsite installation or through a direct line to an off-site generator	203564	Solar, landfill gas to electric generation from GM owned facilities, and steam from renewable energy source direct to GM plant.
Direct procurement contract with a gridconnected generator or Power Purchase Agreement (PPA), supported by energy attribute certificates	11995	Renewable energy purchased in South America

CC11.5

Please report how much electricity you produce in MWh, and how much electricity you consume in MWh

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
9084371	8998702	85669	85669	85669	Electricity generated in Europe that is sold to government utilities is not included since the environmental attributes are owned by the government.

Further Information

Page: CC12. Emissions Performance

CC12.1

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

Decreased

CC12.1a

Please 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

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emissions reduction activities	5.2	Decrease	GM Carbon reduction from energy savings activities including LED light retrofits, steam elimination, energy management improvements, variable speed drives, and other energy conservation measures accounted for 428,425 Tons CO2e reduction in 2015 or 428,425 tonnes / 8,232,742 (2014 CO2e emissions in tonnes) equal a 5.2% decrease
Divestment	0	No change	
Acquisitions	0	No change	
Mergers	0	No change	
Change in output	0.3	Decrease	A slight production, decrease accounted for 75,377 Tons CO2e or 75,377 / 8,232,742 (2014 CO2e emissions) for 0.3 % decrease
Change in methodology	2.6	Decrease	Using updated IPCC ARA-5 values resulted in a decrease in 212,803 Tons CO2e emissions due to lower overall emission factors or 212,803 / 8,232,742 (2014 CO2e emissions) for 2.6 % decrease
Change in boundary	0	No change	
Change in physical operating conditions	0.3	Increase	The net effect of climate and inefficiencies; such as new product launches accounted for 21,523 Tons CO2e or 21,523 / 8,232,742 (2014 CO2e emissions) for 0.3 % increase
Unidentified		No change	
Other		No change	

CC12.1b

Is your emissions performance calculations in CC12.1 and CC12.1a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

CC12.2

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.00004947	metric tonnes CO2e	152356000000	Market-based	6	Decrease	Although GM reduced Revenue intensity by 6% due to carbon emissions reduction activities from energy efficiency with LED lights, steam elimination, and energy management systems in 2015 compared to 2014 this Key Performance Indicator is not a valid metric for the automotive industry. Revenue is not a valid measure for the auto industry as rebates and price changes are not reflective of production output. Additionally revenue varies significantly by Auto OEMs as shown by Statistica.com with a 4:1 variance between automakers. Energy use for production is irrelevant to the price for a vehicle sales as an absolute or year over year comparison.

CC12.3

Please provide any additional intensity (normalized) metrics that are appropriate to your business operations

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.78	metric tonnes CO2e	vehicle produced	9689043	Market-based	7	Decrease	The first metric is a Company-wide value, Including all GHG emissions normalized by vehicles produced. This includes all auto parts manufactured, casting, machining, vehicle assembly, and our non-manufacturing, research and development, test tracks, and offices. As overall scope 1 and 2 emissions reduced due to 7% energy efficiency with lighting and HVAC projects, energy conservation, and low carbon alternatives, GHG intensity reduced similarly.
0.41	metric tonnes CO2e	vehicle produced	9689043	Market-based	5	Decrease	As Automakers may have various levels of parts manufacturing integration, the second metric is for vehicle assembly only, Including all GHG emissions from Assembly plants - Paint, Body, Assembly, and contiguous stamping, normalized by vehicles produced. This is more comparable to other Auto companies as they may not have the amount of vertical integration of auto parts manufacturing as GM as we own auto components plants also. As overall scope 1 and 2 emissions reduced due to 5% energy efficiency with lighting and HVAC projects, energy conservation, and low carbon alternatives, GHG intensity reduced similarly.

Further Information

Page: **CC13. Emissions Trading**

CC13.1

Do you participate in any emissions trading schemes?

Yes

CC13.1a

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO ₂ e	Details of ownership
European Union ETS	Thu 01 Jan 2015 - Thu 31 Dec 2015	209373	151438	378336	Facilities we own and operate
Other: South Korea Emissions Trading Scheme	Thu 01 Jan 2015 - Thu 31 Dec 2015	465499	0	359853	Facilities we own and operate

CC13.1b

What is your strategy for complying with the schemes in which you participate or anticipate participating?

Europe: ·
Centralized European CO₂ tracking and purchasing
Aggressive Energy conservation
Energy Performance Contracts
Sharpen Energy awareness
Carbon leakage EUA allocation (Spain and Germany) provides for market allocations

South Korea:
Implement Best practices – Direct fired Gas type AHU, Heat recovery system, LED lighting project, etc.

CC13.2

Has your organization originated any project-based carbon credits or purchased any within the reporting period?

Yes

CC13.2a

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes of CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits cancelled	Purpose, e.g. compliance
Credit purchase	CO2 usage	Chevrolet Marketing has a goal of voluntarily reducing 8 million tons of carbon that was completed on track in 2015. Projects implemented include: Windmills, Coal mine / bed and landfill methane reduction, and forestry projects in communities in USA. We're also collaborating with US colleges, K-12 schools and stakeholders across the country to strengthen their investment in clean energy efficiency projects on school campuses.	VCS (Verified Carbon Standard)	2805710	2805710	Yes	Voluntary Offsetting

Further Information

Page: CC14. Scope 3 Emissions

CC14.1

Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Relevant, calculated	59203910	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 Comprehensive Environmental Data Archive (CEDA). CEDA provides industry average cradle-to-gate emissions factors for 430 economic sectors. CEDA's model year, 2002, has been adjusted for the reporting year, 2014, to match General Motors' activity data, i.e., spend, using industry-specific price indices from the Bureau of Labor Statistics. 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. Additionally, to calibrate the CEDA model, GM uses CDP Supply Chain data from Tier 1 suppliers. The data suggests that CDP Tier 1 suppliers account for about 30% of life cycle emissions substantiated from the life cycle analysis and CDP Supply Chain results.	50.00%	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 2015.
Capital goods	Relevant,	4611554	Following the GHG Protocol, this Supply Chain analysis	50.00%	GM uses WRI protocol using life cycle

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
	calculated		<p>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 Comprehensive Environmental Data Archive (CEDA). CEDA provides industry average cradle-to-gate emissions factors for 430 economic sectors. CEDA’s model year, 2002, has been adjusted for the reporting year, 2014, to match General Motors’ activity data, i.e., spend, using industry-specific price indices from the Bureau of Labor Statistics. 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 corporation for the reporting year. The methodology employed for these calculations conforms to the WRI Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Additionally, to calibrate the CEDA model, GM uses CDP Supply Chain data from our Tier 1 suppliers. The data suggests that CDP Tier 1 suppliers account for about 30% of life cycle emissions substantiated from the life cycle analysis and CDP Supply Chain results.</p>		<p>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 2015.</p>
Fuel-and-energy-related activities	Relevant, calculated	1350184	Using Australia’s National Greenhouse Accounts factors 2015 (Tables 37 & 41) the fuel and energy GHG	50.00%	Based on the methodology used, the value is 18% and exceeds the 5%

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
(not included in Scope 1 or 2)			emission activities not included in Scope 1 or 2 were estimated.		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. This data has been verified by a 3rd party in 2015
Upstream transportation and distribution	Relevant, calculated	2771066	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.	30.00%	GM tracks distances and modes of transportation for disclosure and to identify opportunities for GHG and cost reduction initiatives in North America using EPA SmartWay.
Waste generated in operations	Relevant, calculated	466301	USEPA WasteWise model applied with GM Global waste data. GM avoided 9 Million metric tons by reusing, recycling, and composting significant quantities of materials.	50.00%	As GM increases its landfill free facilities, our GHG from waste is reduced accordingly. In 2015, GM avoided 9 Million tons of GHG through reduction, reuse, recycle, and composting materials and had 130 Landfill-free sites.
Business travel	Not relevant, calculated	59886	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.	50.00%	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

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
					2 emissions and therefore determined to be not relevant.
Employee commuting	Not relevant, calculated	161250	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.	50.00%	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	Not relevant, calculated	10077	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.	50.00%	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.
Downstream transportation and distribution	Relevant, calculated	2651561	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 outbound logistics from third parties over the road carriers. 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.	50.00%	GM tracks distances and modes of transportation for disclosure and to identify opportunities for GHG and cost reduction initiatives in North America using EPA SmartWay.
Processing of sold products	Not relevant, calculated	120731	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	50.00%	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

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
			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.		2 emissions and therefore determined to be not relevant.
Use of sold products	Relevant, calculated	271695651	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 2015 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, Europe, and China based on the most fully developed monitoring and measurement systems.	50.00%	2015 calculation of life cycle GHG from vehicles sold is done using additional regional vehicle emissions rates this year for increased granularity. This category was verified by a 3rd party.
End of life treatment of sold products	Relevant, calculated	3875617	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 2015.	50.00%	Design for the Environment activities provide a method for continuous improvement in End of Life GHG.
Downstream leased assets	Not relevant, calculated	20459	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. .	50.00%	Based on the methodology used, the value is 0.24% 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	Not relevant, calculated	221957	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 20,252 global facilities using average dealer building area and	50.00%	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.

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
			average GHG emission factors per area from data obtained from a dealer based on energy invoice data and local emission factors		
Investments	Not relevant, calculated	31121	Using CDP Analytics, a representative GHG revenue intensity was used along with GM's financial unit's annual 2015 revenue, which increased in 2015, to estimate our GHG from Investment activities.	50.00%	Based on the methodology used, the value is 0.4% 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)					
Other (downstream)					

CC14.2

Please indicate the verification/assurance status that applies to your reported Scope 3 emissions

Third party verification or assurance process in place

CC14.2a

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2016/64/7164/Climate Change 2016/Shared Documents/Attachments/CC14.2a/11102036Hildreth-4-Verification Statement Scope 3.pdf	Page 2 / Data Verified	ISO14064-3	97

CC14.3

Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

CC14.3a

Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Purchased goods & services	Change in methodology	15	Decrease	The current version of CEDA, CEDA 5 was released in 2016 using US Government Bureau of Economic Analysis (BEA) economic input-output tables and environmental statistics from 2007 and updated to 2014. The input-output data module contains information on the structure of inter-industry exchanges of materials and energy throughout the US economy. The emission factors have reduced in the updated version.

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Purchased goods & services	Emissions reduction activities	1	Decrease	CDP Supply Chain responses show that 39% of our suppliers reported emissions reductions in 2015 totaling 9% total emission reduction compared to the previous year. Total reductions reported were 22 million tons for their scope 1 and 2 emissions.
Purchased goods & services	Change in output	2.4	Decrease	GM has reduced our output for auto components more than vehicle production and thus reduced supply chain emissions.
Capital goods	Change in methodology	15	Decrease	The current version of CEDA, CEDA 5 was released in 2016 using US Government Bureau of Economic Analysis (BEA) economic input-output tables and environmental statistics from 2007 and updated to 2014. The input-output data module contains information on the structure of inter-industry exchanges of materials and energy throughout the US economy. The emission factors have reduced in the updated version.
Capital goods	Emissions reduction activities	1	Decrease	CDP Supply Chain responses show that 39% of our suppliers reported emissions reductions in 2015 totaling 9% total emission reduction compared to the previous year. Total reductions reported were 22 million tons for their scope 1 and 2 emissions.
Capital goods	Change in output	45	Decrease	GM spent less in Capital goods on launches in 2015 resulting in a decrease in the life cycle emissions from capital goods.
Fuel- and energy-related activities (not included in Scopes 1 or 2)	Change in methodology	15	Increase	Updating the reference to National Greenhouse Gas Emissions Reporting standard from Australia resulted in an increase in emission factors
Fuel- and energy-related activities (not included in Scopes 1 or 2)	Emissions reduction activities	5	Decrease	Fugitive emissions are reduced as GM uses less delivered energy. This year our net energy gross reduction was 5%
Use of sold products	Change in methodology	6	Increase	1) GM used more granular data for China vehicle emissions in 2015 and 2) we refined Mobile air conditioning leak rates using data from a EU commission.
Use of sold products	Change in output	2	Increase	Vehicle mix changed in 2015 causing increased emissions although intensities continued to reduce from 2014.
Upstream transportation & distribution	Change in methodology	40	Decrease	GM used EPA SmartWay carrier data to extrapolate global over the road emissions based on increased accuracy over revenue intensity method from 2014. Additionally we used an Ocean carriers detailed emissions analysis in-lieu of CDP revenue intensities. For all other, we used CDP revenue intensities for 2015.
Upstream	Emissions	4	Decrease	EPA SmartWay reported a 4% reduction in carbon emissions intensity per mile for GM

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
transportation & distribution	reduction activities			"over the road" carriers in 2015 compared to the previous year due to improved efficiency.
Downstream transportation and distribution	Change in methodology	12	Decrease	GM used EPA SmartWay carrier data to extrapolate global over the road emissions based on increased accuracy over revenue intensity method from 2014. Additionally we used an Ocean carriers detailed emissions analysis in-lieu of CDP revenue intensities. For all other, we used CDP revenue intensities for 2015.
Downstream transportation and distribution	Emissions reduction activities	4	Decrease	EPA SmartWay reported a 4% reduction in carbon emissions intensity per mile for GM "over the road" carriers in 2015 compared to the previous year due to improved efficiency.

CC14.4

Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)

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

CC14.4a

Please give details of methods of engagement, your strategy for prioritizing engagement and measures of success

(i) Methods of Engagement: a.) GM's Global Purchasing and Supply Chain (GPSC) Logistics organization engages directly with transportation suppliers on a daily basis to reduce cost and GHG of transportation activities of parts and vehicle delivery. b.) We actively participate in automotive supply chain organizations that have workgroups promoting Greenhouse gas reporting and reductions between OEMs and automotive suppliers. Automotive Industry Action Group (AIAG) and Supplier Partnership (SP) are two that GM uses to engage suppliers in Climate Change activities. Also, in 2015, GM participated in CDP Supply Chain to further engage with more suppliers regarding Climate Change. c.) GM has been an active partner with EPA Energy Star since 1995, a governmental organization committed to reducing energy and GHG. In 2015, GM hosted a boot camp for Auto Suppliers with Energy Star and other OEMs to train suppliers on Energy Treasure Hunts and carbon reduction. We participate in the Automotive Industry sector working on benchmarking energy and sharing best practices to reduce energy and GHG with other OEMs and suppliers and developed a GHG training webinar for suppliers in 2015. d.) GM partnered with Ceres to assemble a group of external advisers

representing a cross-section of GM's stakeholders including labor, investors, suppliers, and environmental NGOs to name a few. GM has committed to meeting with external stakeholders twice a year by a conference call or face to face meeting organized and facilitated by Ceres. (ii) Prioritization Strategy: a.) GM's Global Purchasing and Supply Chain (GPSC) identifies the highest cost and GHG routes and works with suppliers to either reduce distances traveled or change to a mode of transportation with lower cost and reduced GHG. b.) GM's Public Policy Center prioritizes the engagement with our value chain relating to Climate Change activities. Based on the prioritization, GM provides subject matter expert resources to engage in work groups with suppliers related to Climate Change. c.) GM's Global Facilities and Communication groups participate with EPA Energy Star based on the value provided to GM consistency with our Public Policy Center prioritization. d.) Stakeholders were chosen based on three factors: 1) most important parts of our value chain; 2) GM's impacts; and 3) areas of expertise that GM could benefit from. Agendas for the meetings are developed collaboratively with Ceres and based on input from stakeholders. (iii) Measures of Success: a.) GM tracks cost and GHG reduction as a measure of our success. In 2015 GM realized cost and GHG reductions from our engagement activities with transportation suppliers in North America through EPA SmartWay. b. GM measures the success of our engagement with Energy Star from their recognition for outstanding performance. In 2015 GM received Partner of the Year award from Energy Star, 73 plants received Challenge for Industry recognition for reducing energy intensity by 10%, and 11 facilities received labels as Energy Star certified. c. GM measures success of our external stakeholder engagement process by number of topics covered, quality of feedback received, number of opportunities for engagement outside of planned meetings.

CC14.4b

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Number of suppliers	% of total spend (direct and indirect)	Comment
547	75%	GM engaged with 147 suppliers through CDP Supply Chain directly and through AIAG through regular participation in supply chain GHG activities and promoting the guidelines for Environmental Sustainability as jointly endorsed with AIAG and other OEMs.

CC14.4c

If you have data on your suppliers' GHG emissions and climate change strategies, please explain how you make use of that data

How you make use of the data	Please give details
Identifying GHG sources to prioritize for reduction actions	In 2015 GM participated in CDP Supply Chain, performed a life cycle analysis on our purchased goods and services and capital goods, participated in EPA SmartWay with our carriers, and joined CDP Action Exchange and enlisted interested suppliers to work on GHG reduction.
Managing physical risks in the supply chain	GM has taken a multi-pronged approach to identify risks in the supply chain and is using a variety of tools and outside companies to improve its tiered visibility in the supply chain. For example, GM has partnered with Resilinc, a leading provider of comprehensive end-to-end supply chain resiliency solutions. In conjunction with Resilinc, our model provides real time alerts to potential supply disruptions globally, along with powerful supply chain mapping and analytics capabilities. We have worked with Resilinc to map all

How you make use of the data	Please give details
	Tier 1 suppliers globally as well as 20,000 Tier 2 suppliers. This has significantly enhanced our supply chain resiliency with improved response speed to crisis events and improved sub-tier visibility.

CC14.4d

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

Further Information

Module: Sign Off

Page: CC15. Sign Off

CC15.1

Please provide the following information for the person that has signed off (approved) your CDP climate change response

Name	Job title	Corresponding job category
Charles K. Stevens, III	Executive Vice President and Chief Financial Officer	Chief Financial Officer (CFO)

Further Information

Module: Auto component

Page: AU0. Reference Dates

AU0.1

Please enter the dates of the periods for which you will be providing data in subsequent tables. The years given as column headings in subsequent tables correspond to the year ending dates selected below

Year ending	Date range
2015	Thu 01 Jan 2015 - Thu 31 Dec 2015

Further Information

Page: AU1. Sales Volumes

AU1.1a

Sales of gas/petrol vehicles - Country totals

Country	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated
USA										
EU										
Japan										
China - imports										
China - domestic production										
India										
Brazil										
Russia										
Other										
TOTAL										

AU1.1b

Sales of gas/petrol vehicles - USA - Passenger vehicles

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated
Standard										

AU1.1f

Sales of gas/petrol vehicles - China - imports

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated

AU1.1g

Sales of gas/petrol vehicles - China - domestic production

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated

AU1.1h

Sales of gas/petrol vehicles - India

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated

AU1.1i

AU1.2b**Sales of diesel vehicles - USA**

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated
Passenger car total										
Light trucks & SUVs total										

AU1.2c**Sales of diesel vehicles - EU**

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated
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AU1.2d**Sales of diesel vehicles - Japan**

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated
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AU1.2e**Sales of diesel vehicles - China - imports**

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated
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AU1.2f

Sales of diesel vehicles - China - domestic production

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated
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AU1.2g

Sales of diesel vehicles - India

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated
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AU1.2h

Sales of diesel vehicles - Brazil

Segment types	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2017 estimated	2018 estimated
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AU1.2i

AU1.3d

Companies should provide an explanation if different vehicle segmentation is used or if data is unavailable or commercially sensitive

GM does not track data in the format requested in AU1.3d

Further Information

Page: AU2. Regulatory Compliance

AU2.1

Please explain any historic and anticipated changes in the CO2 emissions profile of vehicles sold (e.g. introduction of clean technologies, changes to sales mix) for the time period 2009-2020

AU2.2

Please explain the methodology used to calculate CO2 emissions from sold vehicles and any differences with data published by industry associations or governmental agencies or the methodologies they have used

GM's methodology tracks very closely with governmental regulatory requirements. As an example the baseline data for our goal is consistent with government values.

AU2.3a

Sales-weighted fleet average CO2 emissions for all vehicles sold, before credits received

This category includes vehicles powered by internal combustion engines as well as alternatively powered vehicles

AU2.3c**Sales-weighted regulatory parameters**

Country and parameter	2009	2010	2011	2012	2013	2014	2015	2016 estimated	2018 estimated	2020 estimated
USA: Sales-weighted average vehicle footprint (square feet)										
EU: Sales-weighted average running order mass (kg)										
Japan: Sales-weighted average vehicle curb weight (kg)										
China – imports: Sales-weighted average curb mass (kg)										
China – domestic production: Sales-weighted average curb mass (kg)										

AU2.3d

Companies should provide an explanation if different vehicle segmentation is used or if data is unavailable or commercially sensitive

Further Information

Page: AU3. Clean Technologies

AU3.1a

Auto-manufacturers only - please give the % of your range of vehicles for which the following technologies are available:

Technology category - ICE

Type	2015	2020 estimated
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AU3.1b

Auto-manufacturers only - please give the % of your range of vehicles for which the following technologies are available:

Technology category - Hybrids

Type	2015	2020 estimated
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AU3.1c

Auto-manufacturers only - please give the % of your range of vehicles for which the following technologies are available:

Technology category - Zero emissions

Type	2015	2020 estimated
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AU3.1d

Auto-manufacturers only - please give the % of your range of vehicles for which the following technologies are available:

Technology category - Transmission

Type	2015	2020 estimated
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AU3.1e

Auto-manufacturers only - please give the % of your range of vehicles for which the following technologies are available:

Technology category - Body

Type	2015	2020 estimated
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AU3.1f

Auto-manufacturers only - please give the % of your range of vehicles for which the following technologies are available:

Technology category - Others

Type	2015	2020 estimated
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AU3.1g

Auto-equipment manufacturers only - please select the technology categories that are relevant to your business:

ICE

AU3.1gi

Technology category - ICE - please state if you provide the following technologies:

Type	2015	2020 estimated
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AU3.1gii

Technology category - Hybrids - please state if you provide the following technologies:

Type	2015	2020 estimated
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AU3.1giii

Technology category - Zero emissions - please state if you provide the following technologies:

Type	2015	2020 estimated
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AU3.1giv

Technology category - Transmission - please state if you provide the following technologies:

Type	2015	2020 estimated
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AU3.1gv

Technology category - Body - please state if you provide the following technologies:

Type	2015	2020 estimated
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AU3.1gvi

Technology category - Others - please state if you provide the following technologies:

Type	2015	2020 estimated
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AU3.2

Auto-manufacturers only – Please provide the following details for existing and new BEV and FCV models available during the current reporting period

Model name	Technology	Market	Retail price currency	Market retail price	Range units	Urban electric range	Extra-urban electric range	Combined electric range	Minimum electric charge time (hours)	Maximum electric charge time (hours)
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AU3.3

Auto-manufacturers only – Please provide the following details for existing and new PHEV models available during the current reporting period

Model name	Market	Retail price currency	Market retail price	Emissions units	Urban emissions	Extra-urban emissions	Combined emissions	Fuel consumption units	Urban fuel consumption	Extra-urban fuel consumption	Combined fuel consumption	Range units	Urban electric range	Extra-urban electric range	Combined electric range	Minimum electric charge time (hours)	Maximum electric charge time (hours)
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AU3.4

Auto manufacturers only – Please indicate your spend in the following research and development (R&D) categories for the reporting year

Type	R&D spend (currency in CC0.4)	Comment
Optimizing combustion engine vehicles		
Traditional hybrids		
Advanced vehicles (BEV, PHEV, FCV)		
Autonomous vehicles		
Other		

AU3.5

For both auto manufacturers and auto-equipment manufacturers: please provide an explanation if data cannot be provided according to the proposed nomenclature or if it is unavailable or commercially sensitive

Further Information

