2018

Environmental, Social, and Governance Report

A Sustainability Accounting Standards Board and
Task Force on Climate-related Financial Disclosures Report

Posted October 24, 2019

KINDER MORGAN INC.

A Message from Our CEO

Delivering Energy to Improve Lives and Create a Better World

Kinder Morgan is an energy infrastructure company focused on the transportation and storage of energy products across North America. Our pipelines transport natural gas, refined petroleum products, crude oil, condensate, and CO_2. Our terminals primarily store and handle petroleum products, chemicals and bulk products.

As one of the largest energy infrastructure companies in North America, we recognize the world's energy needs are evolving and expanding. The global population, currently at 7.7 billion, is projected to reach 9 billion by 2040. Yet even today nearly one billion people do not have access to electricity, and one third of the world relies on wood or solid wastes to cook and to heat and light their homes.

Access to safe, reliable, and affordable energy is perhaps the single most important contributor to human development. However, energy use is also a contributor to greenhouse gas emissions. Today, human activity produces billions of metric tons of greenhouse gas every year - about 30% is from China, 15% from the U.S., 9% from Europe, 7% from India, and 39% from the rest of the world. No matter its origin, greenhouse gas affects the entire globe. Everyone needs to contribute to its reduction and we are ready to do our part.

Making a Difference

We believe that natural gas will be part of the solution in the reduction of the world's greenhouse gas emissions. With about half of the CO_2 emissions of coal, natural gas is playing a significant role in providing cleaner energy to the world. We are proud to be part of the effort to reduce greenhouse gas emissions by delivering natural gas - a lower-carbon fuel for electricity generation and an excellent complement to renewable energy sources.

One potential drawback to natural gas is the methane emissions associated with the production, transportation, storage and distribution of natural gas. For more than 25 years, we have been implementing solutions to reduce the methane emissions from our natural gas transportation and storage assets. In 2016, we set a goal of achieving an intensity target of 0.31% of methane emissions per unit of throughput by 2025 for our natural gas transmission and storage assets. In 2017 and 2018, we were able to achieve a methane emission intensity rate for these operations of 0.04% and 0.02%, respectively - surpassing our 0.31% target years ahead of schedule.

We have also been working to reduce our emissions footprint by making enhancements to our business practices and operations. Over the last three years, we have avoided more than five million metric tons of CO_2e emissions through emissions reduction activities.

Our Mission

Our mission is to provide energy transportation and storage services in a safe, efficient, and environmentally responsible manner for the benefit of people, communities and businesses. We recognize that operating critical energy infrastructure is a great responsibility. We are committed to continuing to foster a culture of compliance within our company, as well as with our contractors and vendors.
We invest heavily in integrity management, maintenance, and environmental programs to protect our assets, our employees, the public, and the environment. We have a proven track record of beating our health and safety performance targets,

which are based on industry averages and our own three-year averages.

Beyond our operational activities, our Board has oversight responsibility for the assessment of major risks and opportunities inherent in our business. The EHS Committee assists the Board with matters related to the environment, health, and safety. These activities include reviewing with management our reputation as a responsible corporate citizen, our efforts to employ sustainable business practices, and related ESG reporting. In 2018 and 2019, the EHS Committee monitored the progress and reviewed the results of the 2° C scenario analysis included in this report.

The communities in which we conduct our business are also the places where we live, work, and play. We strive to build and maintain healthy relationships within these communities, and our policies are designed to facilitate building trust and fostering collaboration. This drives many of our Community Relations Policy commitments, which are accomplished through ongoing stakeholder engagement and consultation. Our internal guidelines are designed to identify project stakeholders and help to address their needs and expectations. Additionally, stakeholder engagement is a priority on our projects. We respond to stakeholder feedback and incorporate it into our project planning process to address potential issues prior to the start of construction.

To further reaffirm our commitment to making the places in which we live and work even better, we actively seek opportunities for our employees to get involved in community programs. In 2018, we formed regional Community Outreach Committees to more systematically connect employee volunteers to local organizations, thus formalizing our long-standing community volunteer activities.

ESG Report Highlights

This report builds on our history of analysis and disclosure of our environmental, social, and governance performance and includes more details on our methane reduction programs and other ways we are contributing to efforts to address climate change. We have also continued to develop and expand our ESG disclosure and reporting infrastructure over the past year and made improvements to the way we present some of the information in this report. We are now reporting metrics for ecological impacts and employee relations, as well as providing more details and quantifying the energy savings from programs that reduce our electricity usage and Scope 2 GHG emissions.

Conclusion

We remain dedicated to doing business the right way, every day. We seek to be a best in class operator, striving to maintain financial and operational excellence. We are committed to serving our investors, our colleagues, our customers, and our neighbors to improve lives and create a better world.

Thank you for taking the time to read our report.

Steven J. Kean

Steve Kean
Chief Executive Officer

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Cautionary Note and Forward-Looking Statements

References to policies and procedures in our Report do not represent guarantees or promises about their efficacy, or any assurance that such measures will apply in every case, as there may be exigent circumstances, factors, or considerations that may cause implementation of other measures or exceptions in specific instances. This report includes forward-looking statements within the meaning of applicable securities laws, including the U.S. Private Securities Litigation Reform Act of 1995 and Section 21E of the Securities and Exchange Act of 1934 and securities laws in Canada. Please see the "*Important Information about Policies, Procedures, Practices, and Forward-Looking Statements*" for additional information.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE REPORT

Glossary

Company Abbreviations

KMI	=	Kinder Morgan, Inc., its operated subsidiaries, and its operated investees	TMEP	=	Trans Mountain expansion project
KML	=	Kinder Morgan Canada Limited, and its operated subsidiaries, and its operated investees	TMPL	=	Trans Mountain pipeline system

Unless the context otherwise requires, references to "KMI", "Kinder Morgan", "we," "us," "our," or "the Company" are intended to mean Kinder Morgan, Inc., and its operated subsidiaries, including its consolidated subsidiary, KML, and operated investees.

Common Industry and Other Terms

2°C	=	2° Celsius	COO	=	Chief Operating Officer
ACC	=	American Chemistry Council	CSB	=	Chemical Safety Board
AOPL	=	Association of Oil Pipe Lines	CSO	=	Chief Strategy Officer
API	=	American Petroleum Institute	DI&M	=	Directed Inspection and Maintenance
ARPA-E	=	U.S. Advanced Research Projects Agency-Energy	DOE	=	U.S. Department of Energy
ASEA	=	National Agency for Safety, Energy and Environment of Mexico	DOT	=	U.S. Department of Transportation
bbl	=	barrel	DRA	=	Drag Reducing Agent
BBtu/d	=	billion British thermal units per day	EBDA	=	Earnings before Depreciation and Amortization
Bcf/d	=	billion cubic feet per day	ECCC	=	Environment and Climate Change Canada
bcm	=	billion cubic meters	EDF	=	Environmental Defense Fund
Bn-bbl	=	billion barrel	EHS	=	Environmental, Health and Safety
BOE	=	barrel of oil equivalent	EIA	=	U.S. Energy Information Administration
CCATF	=	Climate Change Adaption Task Force	EPA	=	U.S. Environmental Protection Agency
CCUS	=	Carbon Capture, Use, and Sequestration	ESG	=	Environmental, Social, and Governance
CEO	=	Chief Executive Officer	EV	=	Electric vehicle
CER	=	Canadian Energy Regulator	FCPA	=	U.S. Foreign Corrupt Practices Act
CFO	=	Chief Financial Officer	FERC	=	U.S. Federal Energy Regulatory Commission
CFR	=	Code of Federal Regulations	FRA	=	U.S. Federal Railroad Association
CFTC	=	U.S. Commodity Futures Trading Commission	FTC	=	U.S. Federal Trade Commission
CGA	=	Common Ground Alliance	GHG	=	Greenhouse Gas
CH_4	=	methane	GHGRP	=	Greenhouse Gas Reporting Program
CO	=	carbon monoxide	GIS	=	Geographical Information Systems
CO_2	=	carbon dioxide	GRI	=	Global Reporting Initiative
CO_2e	=	carbon dioxide equivalent	GWP	=	Global Warming Potential

HR	=	Human Resources	OMS	=	Operations Management System
IAB	=	Industrial Advisory Board	ONE	=	Our Nation's Energy
IBAT	=	Integrated Biodiversity Assessment Tool	OQ	=	Operator Qualification
ICA	=	U.S. Interstate Commerce Act	OSHA	=	U.S. Occupational Safety & Health Administration
IEA	=	International Energy Agency	PHMSA	=	U.S. Pipeline and Hazardous Materials Safety Administration
ILI	=	In-line Inspection	PM	=	particulate matter
IMP	=	Integrity Management Program	PM_{10}	=	particulate matter 10 micrometers or less in diameter
INGAA	=	Interstate Natural Gas Association of America	$PM_{2.5}$	=	particulate matter 2.5 micrometers or less in diameter
ISO	=	International Organization for Standardization	PRCI	=	Pipeline Research Council International, Inc.
IUCN	=	International Union for Conservation of Nature	PV	=	photovoltaic
KMAP™	=	Kinder Morgan Assessment Protocol™	RTM	=	revenue ton miles
LDAR	=	leak detection and repair	SASB	=	Sustainability Accounting Standards Board
LEED	=	Leadership in Energy and Environmental Design	SCADA	=	Supervisory Control and Data Acquisition
LMS	=	Learning Management System	scf	=	standard cubic foot
LNG	=	liquefied natural gas	SEC	=	U.S. Securities and Exchange Commission
LTIR	=	lost time incident rate	SICS™	=	Sustainable Industry Classification System™
MBbl/d	=	thousand barrels per day	SO_x	=	sulfur oxides
Mcf	=	thousand cubic feet	TCFD	=	Task Force on Climate-related Financial Disclosures
MMBbl	=	million barrels	tcm	=	trillion cubic meters
MMBbl/d	=	million barrels per day	TEU	=	twenty foot equivalent unit capacity
MMBtu	=	million British thermal units	TRIR	=	Total Reportable Incident Rate
MMton	=	million tons	TSB	=	Transportation Safety Board of Canada
MONITOR	=	Methane Observation Networks with Innovative Technology to Obtain Reductions	TWh	=	terawatt-hour
N_2O	=	nitrous oxide	U.S.	=	United States of America
NETL	=	U.S. National Energy Technology Laboratory	USCG	=	U.S. Coast Guard
NGA	=	U.S. Natural Gas Act	USFWS	=	U.S. Fish and Wildlife Service
NGL	=	natural gas liquids	VOCs	=	volatile organic compounds
NGOs	=	non-government organizations	VPP	=	Voluntary Protection Program
NO_x	=	nitrogen oxides	WDPA	=	World Database on Protected Areas
NPRI	=	National Pollutant Release Inventory	WEM	=	World Energy Model
NTSB	=	U.S. National Transportation Safety Board	WEO	=	World Energy Outlook
OGI	=	optical gas imaging	WHC	=	Wildlife Habitat Council

Part 1 - Sustainability Report

1.0 Introduction

We refer to the SASB portion of our Report as our "Sustainability Report" and the TCFD portion as our "TCFD Report." We refer to the SASB Report and TCFD Report, collectively, as our "Report."

Our Report builds on our history of disclosure and analysis of our ESG performance. Since 2007, we have posted on our website each month our performance compared to industry averages and our own three-year average. Our performance against these metrics is regularly reported to our Board of Directors (Board), presented at our investor meetings, and used to determine compensation for our employees, including executives. Since 2009, we have posted annually on our website and Operational Excellence Report, listing ESG operational achievements. In 2018, we published our 2017 Report, our first stand-alone ESG Report using the SASB standards and the TCFD's recommended disclosures. In this 2018 Report, we have updated and expanded our disclosures to include several additional metrics, more detailed discussion and analysis, and an assessment of our business strategy under a 2°C scenario.

In addition to our corporate and business segment EHS leadership teams and departments, our Board has a standing EHS Committee. The EHS Committee's charter is available on our website at https://www.kindermorgan.com/content/docs/kmi_ehs_committee%20charter.pdf. This committee assists our Board in overseeing management's establishment and administration of our EHS policies, programs, procedures, and initiatives. Each of these items helps promote the safety and health of our employees, contractors, customers, the public, and the environment.

Our Board has delegated the review and approval of our Report to its EHS Committee. Our Report has also been reviewed and received input from each business segment and our ESG Disclosure Committee, which consists of our:

- CEO,
- President,
- CFO,
- Chief Strategy Officer,
- Business Segment Presidents,
- General Counsel,
- Treasurer and Vice President of Investor Relations, and
- Vice President of Corporate EHS.

Our Board also has a standing:

- Nominating and Governance Committee,
- Compensation Committee, and
- Audit Committee.

These committees assist our Board in fulfilling its oversight responsibilities including social and governance responsibilities. The Nominating and Governance Committee oversees our Board's governance. The Compensation Committee oversees our compensation and benefit programs. The Audit Committee monitors our compliance with legal and regulatory requirements. The Audit Committee also reviews complaints, including confidential and anonymous submissions by our employees, regarding accounting, internal controls, disclosure, or auditing matters.

We recognize there are many frameworks available for ESG reporting. Accordingly, after engaging in extensive stakeholder dialogue and evaluating a number of reporting standards and guidelines, we selected SASB as our primary Sustainability Report framework. We chose the SASB framework and standards based on investor and lender feedback and because SASB focuses on disclosures of industry-specific ESG topics. Our disclosure is also informed by the GRI standards and CDP, formerly the Carbon Disclosure Project, questionnaires. The metrics we report include the SASB SICS™ codes and, where there is alignment in metrics, GRI's disclosure codes, and CDP's question numbers. We also used *The Ceres Roadmap for Sustainability* for guidance in developing our Sustainability Report.

In this Report, we use SASB's October 2018 final standards and primarily include metrics from the SASB Extractives & Minerals Processing Sector Oil & Gas - Midstream Standard (EM-MD, Version 2018-10). Our Sustainability Report also includes metrics from other SASB standards, including:

- Extractives & Minerals Processing Sector Oil & Gas - Exploration & Production Standard (EM-EP, Version 2018-10),
- Extractives & Minerals Processing Sector Oil & Gas - Refining & Marketing Standard (EM-RM, Version 2018-10),
- Transportation Sector - Marine Transportation Standard (TR-MT, Version 2018-10), and
- Transportation Sector - Rail Transportation Standard (TR-RA, Version 2018-10).

In *Appendix A – Sustainability Disclosure Topics & Sustainability Accounting Metrics*, we summarize our ESG metrics.

In *Appendix B – Activity Metrics*, we include a set of metrics that quantify the scale of our business. These activity metrics are intended to allow users of our Report to normalize data and facilitate comparisons in conjunction with the sustainability accounting metrics.

In *Appendix C – Sustainability Disclosure Topics & Sustainability Accounting Metrics Reporting Criteria*, we include the current SICS™ codes for the SASB metrics we report. Where there is alignment in metrics, we have included GRI's disclosure codes and CDP's question numbers.

In *Appendix D – Recent SASB Pronouncements*, we summarize recent changes to the SASB metrics.

In *Appendix E – Third Party Assurance and Verification Statements*, we include the third-party assurance letter for our Report, which provides limited assurance for specific metrics reported for 2018. We have also included the third-party verification letter for our 2016 and 2017 KML GHG emissions data.

2.0 Overview of Business

Our vision is to deliver energy to improve lives and create a better world. We are one of the largest energy infrastructure companies in North America. We own an interest in or operate approximately 84,000 miles of pipelines, 24 natural gas storage facilities, and 157 terminals.

We have four business segments:

- Natural Gas Pipelines,
- Products Pipelines,
- Terminals, and
- CO_2.

Our pipelines transport:

- natural gas,
- refined petroleum products,
- crude oil,
- condensate,
- CO_2,
- biofuels, and
- other products.

Our terminals store and handle commodities including:

- gasoline,
- distillate,
- crude oil,
- chemicals,
- petroleum coke, and
- other products.

We are also a leading provider of CO_2 for our and others' use for enhanced oil recovery projects, primarily in the Permian Basin.

On August 31, 2018, KML, our publicly traded Canadian subsidiary, completed the sale of the TMPL, the TMEP, the Puget Sound pipeline system, and Kinder Morgan Canada Inc. to the Government of Canada. For 2018, "discontinued operations" includes TMPL data up to the date of sale. KML continues to manage a portfolio of strategic infrastructure assets across Western Canada, including the:

- crude terminal facilities, which constitute the largest merchant terminal storage position in the Edmonton market and the largest origination crude by rail loading facility in North America;
- Vancouver Wharves Terminal, the largest mineral concentrate export/import facility on the west coast of North America;
- Jet Fuel pipeline system; and
- Canadian portion of the U.S. and Canadian Cochin pipeline system.

KML has two business segments, Terminals, which consolidates into KMI's Terminals business segment, and Pipelines, with a small portion consolidating into KMI's Products Pipelines and a larger portion consolidating into KMI's Natural Gas Pipelines business segments. On August 21, 2019, KML announced an agreement under which Pembina Pipeline Corporation will acquire all the outstanding common equity of KML subject to the terms of an arrangement agreement between KML and Pembina.

The parties expect to close the transaction late in the fourth quarter of 2019 or in the first quarter of 2020, subject to customary closing conditions, including KML shareholder and applicable regulatory approvals.

Our mission is to provide energy transportation and storage services in a safe, efficient, and environmentally responsible manner for the benefit of people, communities, and businesses. We are committed to doing business the right way, every day. To meet this commitment, our employees and representatives must act in accordance with our core values of:

- integrity,
- accountability,
- safety, and
- excellence.

Our Code of Business Conduct and Ethics establishes the high standard of ethical conduct that our employees and representatives are expected to meet and outlines how everyday behavior should align with our core values. We train each of our employees annually on our Code of Business Conduct and Ethics and maintain compliance programs to prevent and detect potential violations. We encourage employees to speak up, seek guidance, and report issues or concerns through appropriate channels. We also maintain an anonymous third-party ethics hotline. Reported concerns are evaluated and investigated, as appropriate, by our Internal Audit, HR, EHS, and/or Legal Departments. For more information, see our Code of Business Conduct and Ethics at https://www.kindermorgan.com/content/docs/km_code_of_business_conduct_and_ethics.pdf.

Our common stock trades on the New York Stock Exchange under the ticker symbol "KMI." For more information about us, please see our Annual Report on Form 10-K for the year ended December 31, 2018, which can be found at: https://www.sec.gov/Archives/edgar/data/1506307/000150630719000033/kmi-2018x10k.htm

3.0 Greenhouse Gas Emissions

3.1 Gross Global Scope 1 and 2 Emissions

We anticipate publicly reporting our Company-wide GHG Scope 1 and Scope 2 emissions beginning in 2021. Our current U.S. GHG emissions reporting infrastructure is designed primarily to meet the requirements of the EPA GHGRP, Natural Gas STAR Program, and Methane Challenge Program. We are currently developing the additional processes, procedures, information technology systems, personnel, and controls necessary to expand our emissions reporting infrastructure to meet the SASB Midstream Standard. Before reporting publicly, we plan to conduct pre-assurance readiness testing using the standards of the American Institute of Certified Public Accountants. We intend to address observations and significant recommendations resulting from the pre-assurance readiness testing before issuing our public report.

Over the past year, we have made progress in expanding our U.S. and Mexico GHG emissions reporting infrastructure to address additional sources, including:

- establishing GHG protocols outlining the calculation methodologies for our Scope 1 and 2 emission sources,
- establishing internal roles and responsibilities for GHG data collection and compilation, and
- conducting a gap analysis of our fleet vehicle and electricity usage databases.

Our Canadian operations have the processes, procedures, personnel, and controls necessary to report GHG Scope 1 and Scope 2 emissions. This data is included in *Section 3.2 KML Gross Global Scope 1 and 2 Emissions, Percentage Methane, Percentage Covered under Emissions-Limiting Regulations*.

3.2 KML Gross Global Scope 1 and 2 Emissions, Percentage Methane, Percentage Covered under Emissions-Limiting Regulations

(SASB Midstream EM-MD-110a.1, SASB Exploration & Production EM-EP-110a.1, SASB Refining & Marketing EM-RM-110a.1, GRI 305-1, CDP C6.1 & 6.3, CDP C7.3 & 7.6, CDP C7.9, CDP C8.1-8.2f)

Kinder Morgan Canada Limited is KMI's publicly held Canadian subsidiary, which trades on the Toronto Stock Exchange under the ticker symbol "KML." KML's significantly smaller scale relative to KMI makes its GHG emissions more readily measurable than KMI's, which is why KML's GHG emissions are available to be included in our Report and KMI's are not. KML generates Scope 1 direct GHG emissions from various sources related to pipeline and terminal operations and Scope 2 indirect GHG emissions from electricity consumption. GHG emissions, including methane, are calculated using the methodologies outlined in *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard.*[1]

KML's gross global Scope 1 and Scope 2 GHG emissions data are provided below.

	Year Ended December 31		
	2016	**2017**	**2018**
	(In metric tons CO_2e, except percentages)		
KML gross global Scope 1 emissions from continuing operations(a)(b) (by business segment)			
Pipelines	400	406	318
Terminals	9,469	15,969	15,715
Total KML gross global Scope 1 emissions from continuing operations	**9,869**	**16,375**	**16,033**
KML gross global Scope 1 emissions from discontinued operations(c)	4,779	5,636	6,003
KML gross global Scope 1 emissions including discontinued operations	14,648	22,011	22,036
KML gross global Scope 1 emissions from continuing operations(b)(d) (by type of emission)			
Flared Hydrocarbons	0	0	0
Other Combustion(e)	9,677	16,179	15,914
Process Emissions	—	—	—
Other Vented Emissions	192	196	94
Fugitive Emissions from Operations	—	—	25
Total KML gross global Scope 1 emissions from continuing operations	**9,869**	**16,375**	**16,033**
Percentage covered under emissions-limiting regulations from continuing operations(b)	0%	0%	0%
Percentage methane from continuing operations(b)(f)	2%	1%	1%

[1] World Resources Institute and World Business Council for Sustainable Development. "The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard." World Resources Institute and World Business Council for Sustainable Development. Mar. 2004. 2019. <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>.

	Year Ended December 31		
	2016	2017	2018
	(In metric tons CO_2e, except percentages)		
KML gross global Scope 2 emissions from continuing operations(a)(b)(g) (by business segment)			
Pipelines	60,934	69,768	59,516
Terminals	7,964	10,156	8,685
Total KML gross global Scope 2 emissions from continuing operations	**68,898**	**79,924**	**68,201**
KML gross global Scope 2 emissions from discontinued operations(c)(g)	114,922	114,870	89,694
KML gross global Scope 2 emissions including discontinued operations(g)	183,820	194,794	157,895
KML combined gross global Scope 1 and 2 emissions from continuing operations(b)(g)	**78,767**	**96,299**	**84,234**
KML Scope 1 emission intensity per BOE throughput (metric tons CO_2e per BOE throughput)(h)	**0.0002**	**0.0003**	**0.0002**

(a) GHG emissions were quantified per the SASB Midstream Standard and the ISO 14064-1:2006, Greenhouse gases - Part 1: Specification with guidance at the organization level for the quantification and reporting of greenhouse gas emissions and removals. Annual emissions are reported for CO_2, CH_4, and N_2O from direct and indirect sources. The IPCC Fifth Assessment Report (2013) GWPs were used to convert CH_4 and N_2O emissions to equivalent emissions of CO_2 (CO_2e). A GWP of 28 was used for CH_4. A GWP of 265 was used for N_2O. Gross emissions are GHGs emitted to the atmosphere before accounting for GHG reduction activities, offsets, or other adjustments for activities in the reporting period that have reduced or compensated for emissions.

(b) Subject to KML shareholder and regulatory approvals, KML is expected to be sold in the fourth quarter of 2019 or first quarter 2020.

(c) Represents emissions from the TMPL, Puget Sound pipeline system, and Kinder Morgan Canada Inc. sold on August 31, 2018, and presented here as discontinued operations. For 2018, discontinued operations contain TMPL data up to date of sale on August 31, 2018.

(d) Emission source types included combustion from equipment, such as stationary and fleet vehicle engines, generators, process heaters, and other industrial equipment; combustion from assist gas from vapor control units for vapor displaced from tankers and rail cars during loading; venting from storage tanks and pipeline pigging operations; and fugitive emissions.

(e) We have updated the 2016 and 2017 “Flared Hydrocarbons” values reported in the 2017 Report to “Other Combustion” to align with the final SASB standards.

(f) The percentage of methane from GHG emissions from KML’s continuing operations ranged from 1% to 2%. The products handled by KML generally contain little to no methane.

(g) Scope 2 emissions were calculated using a location-based method.

(h) The Scope 1 emission intensity metric normalizes total Scope 1 methane emissions to annual throughput. Annual throughput information was converted to BOE using product heat content to provide a common denominator. Heat content used are in MMBtu per barrel: natural gasoline/condensate - 4.62, propane - 3.836, diesel fuel - 5.838, jet fuel - 5.67, and ethanol - 3.259. Conversion calculation is barrels of product multiplied by MMBtu per barrel (product heat content) divided by 5.8 MMBtu per barrel (Barrel Oil Equivalent).

KML’s largest source of Scope 1 GHG emissions from continuing operations was from vapor control operations in our Terminals business segment which increased from 2016 to 2017 due to increased operations and decreased from 2017 to 2018 due to reduced natural gas usage. Natural gas is used in the vapor control operations to assist in the combustion of vapor hydrocarbons from rail car loading operations. KML’s Scope 2 GHG emissions from continuing operations were indirect emissions from electricity consumption. From 2017 to 2018, KML’s Scope 2 emissions decreased primarily due to a drop in electricity consumption at the Pipelines business segment pump stations due to the completion of a power reduction project.

A third party verified our 2016 and 2017 KML emissions inventory following the ISO 14064-3: Greenhouse Gases - Specification with guidance for the validation and verification of greenhouse gas assertions standard. Another third party provided limited assurance of our 2018 KML emissions inventory. The third parties' assurance and verification statements are included in *Appendix E – Third Party Assurance and Verification Statements*.

Even including its discontinued operations, KML's Scope 1 and Scope 2 emissions represent approximately 0.1% of Canada's 2017 oil and gas sector emissions of approximately 195 million metric tons of CO_2e.[2]

3.3 Strategy to Manage Gross Global Scope 1 and 2 Emissions

(SASB Midstream EM-MD-110a.2, SASB Exploration & Production EM-EP-110a.3, SASB Refining & Marketing EM-RM-110a.2, CDP C3.1)

We operate approximately 70,000 miles of natural gas pipelines that transport approximately 40% of the natural gas consumed domestically. Accordingly, we have been an important part of the transition from coal-fired to natural gas-fired electricity generation, which has benefited the environment. When burned, natural gas emits virtually no SO_x, PM, or mercury, approximately half as much CO_2, and one-fifth as much CO and NO_x as compared to coal.[3,4] These lowered emissions from natural gas-fired plants have contributed to the recent dramatic drop in U.S. CO_2 emissions. They have the added benefit of significantly reducing acid rain formation due to the drop in SO_x emissions, which is a precursor of sulfuric acid.

Partly due to the increased number of cleaner burning natural gas-fired power plants, CO_2 emissions from U.S. electricity generation in 2018 were roughly the same as 1988 levels,[5] and 26% below 2008 levels,[6] while the U.S. population increased 33% from 245 million in 1988 to 327 million in 2018.[7,8]

Natural gas-fired power plants also provide a reliable source of electricity to back up more intermittent renewable sources such as solar and wind. This interconnected electricity generation network helps to further reduce CO_2 emissions. Therefore, natural gas-fired power plants are an important component of the continued expansion of renewable energy.

A recent EDF report presented its analysis of methods for assessing methane emissions from the U.S. oil and gas supply chain.[9] This report recognized both the long-term climate advantages of using natural gas in electricity generation and the feasibility of achieving significant emission reductions by addressing fugitive emissions. Significant fugitive emission reductions are possible through broader adoption of

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[2] Government of Canada. "Greenhouse gas emissions." Government of Canada. 17 Apr. 2019: 7-8. 2019. <https://www.canada.ca/content/dam/eccc/documents/pdf/cesindicators/ghg-emissions/2019/national-GHG-emissions-en.pdf>.
[3] U.S. EIA. "How much carbon dioxide is produced when different fuels are burned?" U.S. EIA. 8 June 2018. 2019. <https://www.eia.gov/tools/faqs/faq.php?id=73&t=11>.
[4] U.S. EIA. "Natural Gas Issues and Trends: Table 2." U.S. EIA. 1998: 58.
[5] U.S. EIA. "May 2019 Monthly Energy Review: Table 12.6." U.S. EIA. May 2019: 209. 2019. <https://www.eia.gov/totalenergy/data/monthly/archive/00351905.pdf>.
[6] U.S. EIA. "May 2019 Monthly Energy Review: Table 12.6." U.S. EIA. May 2019: 209. 2019. <https://www.eia.gov/totalenergy/data/monthly/archive/00351905.pdf>.
[7] U.S. Census Bureau. "Quick Facts." U.S. Census Bureau. 2019. <https://www.census.gov/quickfacts/fact/table/US/PST045216>.
[8] U.S. Census Bureau. "Historical National Population Estimates." U.S. Census Bureau. 2019. <https://www.census.gov/population/estimates/nation/popclockest.txt>.
[9] R. A. Alvarez et al. "Assessment of methane emissions from the U.S. oil and gas supply chain." Science 361 (2018): 186-188.

emission measurement and reduction best practices and technologies. While several energy companies have made recent headlines for publicly pledging to slash methane emissions from their operations, we have been focused on and committed to methane emission reductions in our operations for multiple decades. Our commitment and the actions we have taken are discussed in detail in *Section 3.3.1 Methane Reduction Commitment* below.

We participate in several industry initiatives to implement methane emission reductions. Below are a few examples of how we actively engage with various trade organizations and regulatory entities to share data, our experience with methane monitoring and management, and best practices for achieving methane emission reductions.

3.3.1 Methane Reduction Commitment

We recognize that methane emissions associated with the production, transportation, storage, and distribution of natural gas should be minimized so that those emissions do not diminish the climate advantage of natural gas over other fuels. We support performance-based federal regulations and intend to continue to manage and minimize methane emissions in our operations as we have for 25 years. Since 1993, we have implemented initiatives that have resulted in over 110 billion cubic feet of methane reductions.

We continue to apply methane emission reduction strategies and report voluntary methane emission reductions as part of EPA's Natural Gas STAR and Methane Challenge programs and through the ONE Future Coalition. Through ONE Future and other efforts, we are working with other sectors of the natural gas industry to improve the efficiency of the natural gas value chain, from production to distribution, and to engender a collective commitment to addressing methane emissions.

EPA's Natural Gas STAR Program
For over a quarter of a century, we have voluntarily participated in the EPA's Natural Gas STAR Program to implement initiatives to reduce our methane emissions. Our reductions have contributed to U.S. methane emission reductions from natural gas systems of 14% from 1990 to 2017, while natural gas production has increased 53% over the same period.[10,11] These results reflect both the environmental benefit of minimizing and preventing methane emissions, and the economic incentive to keep natural gas in our pipelines and storage facilities.

The EPA's Natural Gas STAR Summary Report for our reported activities from 1993 through 2018 is included in *Appendix F – Natural Gas STAR Summary Report.*

ONE Future - Founding Member
ONE Future is a unique coalition of members across the natural gas value chain focused on identifying policy and technical solutions for reducing the methane emissions associated with natural gas:

- production,
- gathering,
- processing,

[10] U.S. EPA. "Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990-2017." U.S. EPA. 19 Apr. 2019: 41. 2019. <https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf>.
[11] U.S. EIA. "U.S. Dry Natural Gas Production." U.S. EIA. 2018. Aug. 2018 <https://www.eia.gov/dnav/ng/hist/n9070us2m.htm>.

- transmission,
- storage, and
- distribution.

ONE Future's members include some of the largest natural gas companies in the U.S. These ONE Future companies account for approximately 10% of total natural gas production, 32% of natural gas transmission miles, and 9% of natural gas distribution.[12]

ONE Future aspires to enhance the energy delivery efficiency of natural gas by:

- limiting energy waste, and
- achieving a methane emissions intensity target (i.e., "leakage" rate) of 1% or less of total natural gas production across the natural gas value chain by 2025.

To put the 1% methane emissions intensity target in context, the natural gas supply chain's actual methane emission intensity is estimated to range from 1.6% to 2.3% of total natural gas production.[13,14] In order to meet the ONE Future 1% target, the natural gas industry would require an additional 38% to 57% reduction in methane emissions across the supply chain. Initial reports indicate that ONE Future members have already surpassed the 1% target. ONE Future's first annual report estimates that ONE Future members' actual methane emissions intensity was just 0.6% in 2017.[15]

As a founding member of ONE Future, we have taken a leadership role working with the EPA to identify the most effective means of implementing methane emission reductions at natural gas transmission and storage operations. Through ONE Future, we committed to achieving a methane emission intensity target of 0.31% across our natural gas transmission and storage operations by 2025. Our 2018 actual methane emission intensity from our natural gas transmission and storage operations was 0.02%, surpassing our target.

EPA's Natural Gas STAR Methane Challenge Program

In 2016, we became a partner in the EPA Natural Gas STAR Methane Challenge Program. This program builds upon the Natural Gas STAR Program and provides U.S. oil and gas companies with a flexible way to make specific and transparent commitments to implement methane emission reductions from their operations. We are participating in the Methane Challenge Program under the ONE Future Emission Intensity Commitment Option for our natural gas transmission and storage assets.

The ONE Future Emission Intensity Commitment is intended to drive actions to achieve segment-specific methane emission reduction targets established by the ONE Future Coalition. To meet these targets, we have committed to reduce methane emissions while maintaining pipeline integrity and safety and minimizing customer impacts.

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[12] "ONE Future Releases Methane Intensity Numbers of 0.552%." 15 Nov. 2018. ONE Future Coalition. 20 Aug. 2019. <https://onefuture.us/one-future-releases-methane-intensity-numbers-of-0-552/>.

[13] NETL. "Industry Partnerships and Their Role in Reducing Natural Gas Supply Chain Greenhouse Gas Emissions." DOE NETL. 01 May 2018: 58. 2019. <https://www.netl.doe.gov/projects/files/NETL-ONE-Future-LCA-Report-01MAY18.pdf>.

[14] R. A. Alvarez et al. "Assessment of methane emissions from the U.S. oil and gas supply chain." Science 361 (2018): 186-188.

[15] "ONE Future 2017 Methane Emission Intensities: Initial Progress Report." 15 Nov. 2018: 3. ONE Future Coalition. 2019. <http://onefuture.us/wp-content/uploads/2018/11/ONE-Future-2017-Initial-Report-Final-Report-Nov-15.pdf>.

Methane Reduction Strategies

We intend to continue meeting our reduction targets by implementing a variety of methane reducing strategies including:

- performing maintenance and repairs on component leaks, where feasible, found through annual methane leak surveys;
- minimizing methane emissions from transmission pipeline blowdowns by using pipeline pump downs and using sleeves and composite wraps to avoid pipeline blowdowns, and
- implementing other methane emission reduction technologies and work practices on a case-by-case basis.

In addition, since the inception of the EPA GHGRP, our annual methane leak surveys have included natural gas processing plants and transmission and storage compressor stations subject to the EPA GHGRP. At these facilities, we conduct methane leak surveys using OGI cameras or other EPA-approved technologies. We use EPA-approved methods, such as direct flow measurement, to estimate methane leak rates from compressors and other components. For compressor leaks, we use the direct flow measurements to develop entity-specific emission factors.

When replacing or installing new natural gas pneumatic devices at our gathering, transmission, processing, and storage facilities, we use pneumatic devices with low or zero natural gas bleed rates, unless there is a safety or functional need for a high-bleed device.

We anticipate evaluating and potentially implementing other methane emission reduction technologies or methane reduction work practices at our natural gas operations on a case-by-case basis. We expect to report to the EPA annually other specific technologies and work practices as we implement them.

3.3.2 Industry and Agency Participation

Our employees have undertaken leadership roles in the INGAA GHG Task Force, serving as co-chairs from late 2008 to 2011, and from 2013 through 2019. As part of that leadership role, we, along with INGAA, participated in the DOE's Quadrennial Energy Review. The Quadrennial Energy Review included a joint effort by the natural gas industry, several federal agencies, and other stakeholders to better understand the issues confronting the natural gas transportation sector and to develop mutually beneficial solutions.

We collaborate with the EPA and DOE on methane emission reductions. We work with the EPA to share data and engage in discussions about potential emissions management strategies. This joint effort aims to identify the most effective means of implementing methane emission reductions at natural gas transmission and storage operations.

In 2016, our employees contributed to industry technical papers that were presented in joint hearings of the DOE and PHMSA for the Interagency Task Force on Natural Gas Storage Safety. We also participated in collaborative meetings with various NGOs to improve understanding of natural gas storage facilities, operations, emissions, and safety technologies. Our work is ongoing in numerous federal, state, and industry venues.

We have also worked closely with the DOE, academic institutions, environmental groups, and consultants on several independent technology evaluations and scientific studies.

As a participant in the IAB for DOE's ARPA-E Project, we advised ARPA-E and Colorado State

University on the development of a methane emission test site. This test site simulated actual natural gas leaks that might occur at production, gathering, and underground pipeline facilities. This test site project is part of the ARPA-E MONITOR program. The MONITOR program's goal is to develop innovative and cost-effective methane leak detection technologies to more precisely and efficiently locate and measure methane emissions associated with natural gas operations and oil production wells with associated gas production. The next generation leak detection technologies should drive enhanced leak detection and repairs to further reduce methane emissions. We are actively engaged in multiple aspects of the project including:

- development of the test site,
- evaluation of the various leak detection technologies being developed, and
- providing guidance to the test site developers on industry expectations and steps for regulatory approval of these technologies.

We collaborated with DOE on three additional DOE-funded studies[16,17] to develop improved national methane emission estimates and methane emission factors; two studies for natural gas gathering compressor stations and one study for underground natural gas storage wells and fields. The current methane emission factors used for gathering compressor stations are more than 20 years old and based on a limited dataset. In October 2018 and April 2019, the final reports for the natural gas gathering compressor station studies were issued, which established recommendations for improved and more representative methane emission factors. The study for underground natural gas storage wells and fields was completed in May 2019 and the final report is pending. Our employees participated on the Steering Committee and Technical Review Committee for each study. We also permitted academic institutions and consultants to perform testing at more than 30 of our natural gas gathering compressor stations.

We also collaborated with DOE's NETL through participation in a methane emissions life cycle analysis. This analysis was performed by NETL and included input from ONE Future members representing each sector of the natural gas industry value chain. The study evaluated specific emission reduction opportunities in each part of the natural gas value chain. The study results indicated that the average life cycle methane emission rate for ONE Future members was below the methane emission rate for the U.S., at 0.67% and 1.6% respectively.[18] Results from the study have helped inform ONE Future members and others interested in the impact of ONE Future members' emission reduction activities on overall methane life cycle emissions.

We are one of seven natural gas transmission companies that worked with the EDF to develop a comprehensive GHG emissions inventory for the natural gas transmission and storage sector. Importantly, this study's results demonstrate that the natural gas transportation sector's multi-year efforts to address methane emissions were not fully accounted for in EPA emissions estimates. In fact, the EPA had been overstating emissions from natural gas transmission and storage facilities.[19] Since the release of this EDF study, the EPA has used the results to improve its GHG emission estimates for natural gas transmission

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[16] Zimmerle, Daniel, et al. "Characterization of Methane Emissions from Gathering Compressor Stations: Final Report." Energy Institute Colorado State University. 01 Nov. 2018. 2019. <https://mountainscholar.org/bitstream/handle/10217/194544/DATAENEI_CharMethEmiss_DOEFinalRep.pdf?sequence=1&isAllowed=y>.

[17] DOE NETL. "Integrated Component-Specific Measurements to Develop Emission Factors for Compressors and Gas Gathering Lines." DOE NETL. 01 Oct. 2018. 2019. <https://www.netl.doe.gov/sites/default/files/2019-01/FE0029084_FInal.pdf>.

[18] NETL. "Industry Partnerships and Their Role in Reducing Natural Gas Supply Chain Greenhouse Gas Emissions." DOE NETL. 01 May 2018: 1-3. 2019. <https://www.netl.doe.gov/energy-analysis/details?id=2637>.

[19] Zimmerle, D.J., et al. "Methane Emissions from the Natural Gas Transmission and Storage System in the United States." Environ. Sci. Technol. 49.15 (2015): 9374-9383. <https://pubs.acs.org/doi/pdf/10.1021/acs.est.5b01669?rand=oljtjxgy>.

and storage facilities in its National GHG Emission Inventory report.

We also worked with PRCI on a study of GHGRP methane emissions data resulting in two reports with recommendations for more up to date and accurate emission factors. The first report evaluated emissions from compressor seals, isolation valves, and blowdown valves based on direct measurements as required by EPA GHGRP. The second report evaluated other facility leaks, pneumatic controller venting, condensate tank dump valve leakage, and station blowdown emissions. The objective of the project was to evaluate and analyze the dataset, and compare methane emission estimates from these sources to historical data used by EPA in its annual GHG inventory report, which are primarily the emission factors from the U.S. EPA and Gas Research Institute June 1996 Report, *Methane Emissions from the Natural Gas Industry.*[20] The results can be used to provide more current emission factors, estimate the relative contribution of different methane emission sources, and support more efficient methane emission reduction activities for natural gas transmission and storage operations.

We have participated in the New York City Mayor's Office of Resiliency CCATF since 2016. The CCATF was established in January 2013 to assist with New York City's Hurricane Sandy recovery efforts. The CCATF's objectives are to:

- identify critical infrastructure in New York City that could be at risk from the effects of climate change,
- facilitate knowledge sharing and develop coordinated adaption strategies to secure these assets, and
- develop findings and recommendations.

3.3.3 Reporting and Compliance Regulation

Facilities in each of our business segments are subject to GHGRPs with the EPA or ECCC, as applicable, and to federal and state leak detection and repair regulations. We measure, monitor, and quantify GHG emissions to satisfy the requirements of these rules. We have extensive emissions monitoring equipment and measurement programs. We use these tools to conduct leak surveys for both regulatory and voluntary programs. For 2018, we reported emissions to the EPA, ECCC, and 13 state or local agencies.

The EPA's GHGRP requires annual leak detection surveys at subject facilities. We have conducted the GHGRP leak surveys at our subject facilities and used the data in annual EPA GHGRP reports. The EPA's New Source Performance Standards for natural gas processing plants and oil and gas production, transmission, and distribution facilities, and several state specific regulations also require LDAR inspections to identity and fix equipment leaks. For facilities subject to these LDAR inspections, monitoring frequency and methods vary depending on facility type. Surveys may be conducted monthly, quarterly, or annually. We conduct LDAR inspections and identify leaks using OGI, flame ionization detectors, and other technologies. If we identify a leak during our LDAR surveys, we repair it and then resurvey to confirm that the repair addressed the leak.

[20] U.S. EPA. "Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990-2017." U.S. EPA. 11 Apr. 2019: 67. 2019. <https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf>.

3.3.4 Energy Management
(CDP C8.2)

One of the most impactful ways we reduce our overall emissions is by managing the energy we consume. Our annual budgets may include budget targets based on reduced energy consumption, which results in fewer Scope 2 emissions. Per our OMS, which is described in greater detail in *Section 7.1.1 Management System Overview*, we strive for continuous improvement in our operations' performance through energy efficiency and the implementation of several energy management initiatives. These initiatives reduce both our energy consumption and Scope 2 indirect GHG emissions.

People
We employ energy management personnel who oversee multiple programs and strategies to both minimize energy costs and monetize our reductions in energy usage.

Demand Response
We optimize our operations to reduce peak demand by participating in curtailment and demand response programs. As a participant in these programs, when possible, we reduce energy usage when requested by local electric grid operators. By analyzing our operations and energy consumption at a detailed level, we are able to quickly and voluntarily reduce the amount of energy we are pulling from local electric grids. Some of the largest demand response, load management, and utility reliability programs we participate in include the Base Interruptible Program in California and the 4 Coincident Peak Program in Texas.

Engineering Design
We have reduced energy consumption by optimizing our pipeline and facility design to utilize devices that use less energy while maximizing output. For example, we use variable frequency drives on many of our pumps to improve pipeline flow control and increase energy efficiency. Variable frequency drives also allow us to monitor the efficiency of our pumps, control pump speed, and reduce surge to nearby power supplies.

DRA
One of the methods we use to reduce energy consumption in our Products Pipelines and CO_2 business segments is the use of DRA. DRA is a long-chain polymer chemical that disrupts the molecular activity at the fluid boundary layer near the inside pipe wall, thereby reducing friction loss. DRA decreases the amount of energy lost due to turbulence formation and allows us to move more product through our pipelines using less energy.

Our deployment of DRA in key locations has reduced the electricity needed to move products within our Products Pipelines and CO_2 business segments. This energy savings also reduces the number of pump stations we need to use. The use of DRA has allowed us to shut down pump stations that were no longer needed, and avoid construction of new pump station infrastructure.

Our Products Pipelines business segment has seen a significant reduction in energy consumption from the use of DRA. In 2018, the deployment of DRA reduced our energy consumption by approximately 750

GWh.[21] This energy savings is roughly equivalent to 530,000 metric tons of CO_2 emissions avoided,[22] which is comparable to the energy used by 63,000 homes for one year or the carbon sequestered by 624,000 acres of trees.[23]

Offices and Buildings
We continue to seek ways to improve our energy efficiency in the office buildings we own. Our Houston headquarters building is LEED Gold certified. At many facilities, we have replaced compact florescent light bulbs with light-emitting diode lighting to reduce energy consumption and this initiative is ongoing.

Renewable Energy
We have programs to make energy efficiency improvements in our operations and explore new low-carbon technologies where it is economically feasible. In some cases, we have found renewable energy optimal for powering our operations. For example, some of the equipment at our facilities is powered through solar panels installed on-site. As these locations are often very remote and far from an existing electric grid, these installations have been successful from both a cost-savings and energy-efficiency perspective.

In 2018, EnterSolar completed construction of a 2.6 megawatt ground-mounted solar panel array on land leased from us at our Staten Island Terminal. EnterSolar's array consists of 9,000 panels and provides power to commercial and residential properties on Staten Island. At the time of completion, the solar array was the largest in New York City. We are considering similar arrangements at other locations where we may also be able to take advantage of this renewable resource to power our equipment.

3.4 GHG Offsets, Reductions, and Targets

3.4.1 GHG Offsets
(CDP C4.3, CDP C11.2)

The GHG emission offsets we purchased, and the average price per metric ton paid for each offset, are provided below.

	Year Ended December 31		
	2016	**2017**	**2018**
GHG emission offsets purchased			
Purchased offsets (metric tons CO_2e)	118,609	75,923	66,581
Average price per metric ton CO_2e	$ 0.85	$ 0.99	$ 1.75

[21] Avoided energy consumption value determined by comparing calendar 2018 actual hourly operational data for each pipeline segment with various theoretical pipeline-modeling techniques to calculate the avoided energy consumption due to the use of DRA. From this, an energy reduction factor was then determined for each key pipeline segment. This factor was applied to actual 2018 energy consumption to calculate the electricity that we would have consumed had DRA not been deployed.
[22] Total metric tons of CO_2 avoided is calculated using U.S. EPA's 2018 national marginal emission factor specified in EPA's Avoided Emissions and Generation Tool. U.S. EPA. "AVoided Emissions and geneRation Tool (AVERT)." U.S. EPA. 2019. <https://www.epa.gov/statelocalenergy/avoided-emissions-and-generation-tool-avert>.
[23] The equivalent number of homes and tree acreage is calculated using EPA's Greenhouse Gas Equivalencies Calculator. U.S. EPA. "Greenhouse Gas Equivalencies Calculator." U.S. EPA. 2019. <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>.

3.4.2 GHG Reductions
(GRI 305-5, CDP C4.3)

One of the largest sources of methane emissions from the natural gas transmission sector results from pipeline blowdowns. Natural gas transmission pipeline blowdowns can occur between compressor stations during planned maintenance or as the result of an emergency. We look for opportunities to use maintenance methods that do not require pipeline blowdowns. If maintenance-related blowdowns are required, our procedures minimize blowdown emissions by evaluating and using minimization technologies, where available.

Our reduction metrics are provided below.

	Year Ended December 31		
	2016	**2017**	**2018**
Volume of voluntary methane emission reductions (Mcf)(a)(b)	2,676,969	4,603,489	4,013,727
Estimated value of natural gas saved (millions of U.S. dollars)(c)	$ 8	$ 14	$ 12
Voluntary GHG emission reductions (metric tons CO_2e)(d)	1,284,945	2,209,674	1,926,589

(a) Methane content of pipeline quality natural gas is estimated at 95% per Methane Challenge Program Guidance.
(b) Projected submittal date for 2017 and 2018 methane reductions to EPA is based on availability of reporting forms from EPA for the Methane Challenge Program. Schedule is projected to be late 2019.
(c) The estimated value of natural gas saved is based on an assumed price of $3.00 per Mcf for the periods presented. EPA's Natural Gas STAR Summary Report for our reported activities from 1993 through 2018 is included in *Appendix F – Natural Gas STAR Summary Report*.
(d) Emission reductions are emissions mitigated or avoided that would otherwise have been emitted. The reported CO_2e is based on a GWP of 25 if the methane were directly emitted to the atmosphere (GHGRP Subpart W, IPCC 2007). Calculation is from 40 CFR Part 98.233, Equation W-36: methane (scf) multiplied by 0.0192 kg/ft^3 (methane density) multiplied by 0.001 metrics tons/kg (kg to metric tons conversion) multiplied by 25 metric ton CO_2e/metric ton methane (GWP).

The methane emission reductions we reported to EPA for 2016 were primarily the result of pipeline drawdowns and gas engine and turbine replacements. Pipeline drawdowns minimize the gas released from blowdowns by reducing line pressure prior to blowing a pipeline down for inspections, testing, or maintenance.

For calendar years 2017 and 2018, we included methane reductions from compressor station leak repairs, pipeline drawdowns, gas engine and turbine replacements, electric motor installations, and alternative pipeline maintenance technologies that reduce the need for pipeline blowdowns.

3.4.3 GHG Targets
(CDP C4.1)

Through ONE Future, we have committed to achieving a methane emission intensity target for our natural gas transmission and storage operations by 2025. Our target is the ONE Future methane emission intensity commitment for the natural gas transmission and storage segment, which is methane emissions per volume of throughput of 0.31%.

Our methane emission intensity rates and targets are included below.

	Year Ended December 31	
	2017	2018
Methane emission intensity rate target	0.31%	0.31%
Methane emission intensity rate(a)	0.04%	0.02%

(a) The emission intensity rate is calculated by dividing our natural gas transmission and storage total methane emissions by our natural gas transmission and storage throughput. Methane emissions are calculated using 40 CFR 98 Subpart W procedures.

In 2017 and 2018, we performed better than our transmission and storage methane emission intensity target of 0.31%.

In November 2018, the first ONE Future Methane Emission Intensity Report was released. The results showed a methane intensity rate across member companies of 0.6% for 2017, surpassing the goal of 1.0% by year 2025.

We aim to perpetually improve our methane management approach by:

- looking for new ways to reduce emissions,
- providing training to our operations personnel, and
- communicating policies detailing program requirements.

Since the inception of the EPA GHGRP, our annual methane leak surveys have included natural gas processing plants and transmission and storage compressor stations subject to the EPA GHGRP. In 2017, we voluntarily began increasing the number of leak surveys conducted at natural gas transmission and storage compressor stations not subject to the EPA GHGRP. Our target is to increase the number of leak surveys conducted at these facilities by 20% each year from 2017 to 2021. We committed to these additional leak surveys as part of our implementation plan to meet the ONE Future emission intensity commitment under EPA's Natural Gas STAR Methane Challenge Program, which we successfully reached ahead of schedule in 2017.

The number of leak surveys conducted at our natural gas transmission and storage compressor stations and our leak survey targets are included below.

	Year Ended December 31	
	2017	2018
Targeted number of natural gas transmission and storage compressor stations to survey(a)	182	217
Actual number of natural gas transmission and storage compressor stations surveyed	242	279

(a) In 2017 and 2018, targets were calculated by adding an incremental 20% of the transmission and storage facilities that were not required to perform a leak survey under a regulatory program to the 147 facilities required to conduct a leak survey in 2016.

In 2017 and 2018, we performed better than our target number of leak surveys at natural gas transmission and storage compressor stations. In addition, we completed leak surveys at 18 of our natural gas processing plants in 2018.

We have set a 2019 GHG reduction target of 2 Bcf of methane, which is equivalent to 1.1 million metric tons CO_2e or the annual energy usage from approximately 132,000 homes.

4.0 Air Quality

4.1 Air Emissions

To manage our air permitting and compliance program in each of our business segments, we conduct the following activities:

- monitor, record, report, and pay emission and permit fees;
- identify, record, and maintain a list of stationary air emission sources;
- quantify facility annual emissions per federal, state, provincial, or local requirements and document the basis of the quantification and estimation;
- quantify emissions when changes and/or modifications occur at a facility to determine if the facility permitting status is affected (e.g., exempt, minor, synthetic minor or major under Title V);
- deconstruct and manage permit requirements in our compliance tracking system along with required actions, deadlines, and designated responsible persons; and
- provide regular training and re-training for operations, engineering and maintenance staffs' understanding of permit requirements.

We are committed to minimizing emissions by operating our facilities in a manner consistent with good air quality control standards.

We expect to include the Company-wide criteria air emissions that we report to federal, state, provincial, or local agencies beginning with our 2020 report.

Included below are the emissions reported for our Canadian operations annually through ECCC's NPRI program. These operations include the TMPL, Puget Sound pipeline system, and Kinder Morgan Canada Inc. that were sold on August 31, 2018, which are presented in the tables below as discontinued operations up to the date of sale.

4.2 KML Air Emissions for the Following Pollutants: NO_x (excluding N_2O), SO_x, VOCs, and PM_{10}

(SASB Midstream EM-MD-120a.1, SASB Exploration & Production EM-EP-120a.1, SASB Refining & Marketing EM-RM-120a.1, GRI 305-7)

KML's air emissions data are provided below in metric tons.

	Year Ended December 31		
	2016	**2017**	**2018**
KML air emissions from continuing operations(a)(b)(c)			
Pipelines(d)			
NO_x (excluding N_2O)	—	—	—
SO_x	—	—	—
VOCs	—	—	—
PM_{10}	—	—	—
Subtotal	—	—	—

	Year Ended December 31		
	2016	2017	2018
Terminals			
NO_x (excluding N_2O)	—	—	—
SO_x	—	—	—
VOCs	12	12	32
PM_{10}	10	17	15
Subtotal	22	29	47
KML total air emissions from continuing operations			
NO_x (excluding N_2O)	—	—	—
SO_x	—	—	—
VOCs	12	12	32
PM_{10}	10	17	15
KML total air emissions from continuing operations	**22**	**29**	**47**
KML total air emissions from discontinued operations(e)	110	120	113
KML total air emissions including discontinued operations	132	149	160

(a) Included are the emissions reported annually through ECCC's NPRI program. The ECCC NPRI annual emission reporting thresholds for facilities are as follows: NO_x (excluding N_2O) - 20 metric tons per year, SO_x - 20 metric tons per year, VOCs - 10 metric tons per year, and PM - PM_{10} 0.5 metric tons per year and $PM_{2.5}$ 0.3 metric tons per year. We have updated the 2016 and 2017 PM values from our 2017 Report to align with updates to the final SASB standard.
(b) NO_x and SO_x emissions for KML's operations were below the reporting thresholds for 2016, 2017, and 2018.
(c) Subject to KML shareholders and regulatory approvals, KML is expected to be sold in the fourth quarter of 2019 or first quarter 2020.
(d) Pipeline facilities were below the ECCC NPRI reporting thresholds for 2016, 2017, and 2018.
(e) For 2018, discontinued operations contain TMPL data up to date of sale on August 31, 2018.

The increase in VOC emissions from 2017 to 2018 is due to the startup of a new terminal, and the addition of VOC emissions from two terminals that met the NPRI VOC reporting threshold. The change in PM_{10} emissions from year to year is due to changes in natural gas combustion from vapor control activities in the Terminals business segment.

4.3 Number of Refineries

(SASB Refining & Marketing EM-RM-120a.2)

The number of refineries we own is included below.

	Year Ended December 31		
	2016	2017	2018
Number of refineries in or near areas of dense population	1	1	1

We own and operate a splitter facility in Galena Park, Texas, which is regulated by the EPA as a refinery, although it is not a full-scale refinery. The Galena Park Splitter is a condensate processing facility consisting of two units that separate condensate into its various components to produce intermediate, semi-finished blend stocks like naphthas and distillates. These blend stocks are generally processed further at full-scale refineries.

5.0 Water Management

(CDP W1.1, CDP W1.2, CDP W6.1)

Water resources are important to the ecosystems and communities in which we operate. We are committed to responsibly managing our consumption and disposal of the water we use. We have policies and procedures focused on compliance with water and wastewater effluent monitoring, measurement, recordkeeping, and reporting requirements. While certain sectors of the energy industry can be relatively water intensive, our primary business is in the energy infrastructure sector where water usage is less intensive. Because of this, we can readily build and operate pipelines and terminals without creating an undue burden on the environment, even in water-stressed areas. Water management is more important for our CO_2 segment's enhanced oil recovery projects. Although the risks to our operations associated with water management are low, we are nevertheless committed to responsibly managing the consumption and disposal of the water we do use.

Some of the ways we use water include:

- hydrostatic testing of the integrity of new and existing pipelines and related equipment prior to operation,
- dust control,
- cooling and processing in natural gas processing facilities, and
- cleaning our equipment.

We are committed to efficient operations, including the management of water and reduction of water usage and wastewater effluent. For example, when performing hydrostatic testing on large segments of pipe, we often test in smaller sections and reuse the same water from one section to the next. This approach minimizes the amount of wastewater effluent from hydrostatic testing and the amount requiring subsequent disposal. This approach also minimizes risk associated with storing and transporting larger volumes of water. As another example, we collect condensation from the air conditioning units at our corporate headquarters in Houston, Texas, and reuse it to irrigate the flowerbeds around our building.

We monitor our stormwater and wastewater discharges to determine whether treatment is necessary before being safely released back into the environment. Some of our facilities require on-site treatment systems to process stormwater and wastewater discharges to meet water quality standards that protect humans and aquatic life. In addition, our operations follow procedures to minimize the risk of accidental discharges. If we do experience a non-permitted wastewater discharge, we have detailed response and incident management procedures. Significant discharge incidents are investigated and corrective actions are developed to address incident causes.

6.0 Ecological Impacts

6.1 Environmental Management Policies and Practices for Active Operations

(SASB Midstream EM-MD-160a.1, SASB Exploration & Production EM-EP-160a.1, GRI 103-2)

We continually evaluate the regulatory landscape for our operations and new projects and look for opportunities to improve. To manage environmental matters across our assets, we maintain corporate policies and business segment-specific procedures. Through our internal monthly regulatory update and verification program, we identify, assess, and manage compliance with changing regulatory requirements.

We review, approve, and implement policy and procedural changes through our Management of Change process or similar established processes.

Project Development
Prior to beginning new construction or an expansion project, we develop plans and procedures that consider a number of important factors that help:

- maintain operational efficiency,
- minimize our impact on biodiversity, and
- take into consideration our stakeholders' concerns.

Our project development plans look at the overall impact of the project and include:

- surveying,
- environmental and cultural impact avoidance,
- mitigation,
- construction,
- revegetation, and
- operation.

Pre-construction
To evaluate a proposed route for a new pipeline project, we conduct surveys in the following areas:

- civil surveys that provide soil, topography and land use information;
- cultural surveys that provide cultural significance and archaeological information; and
- environmental surveys that provide information about water, vegetation, wildlife and other important biodiversity considerations.

In addition to the information collected in these surveys, our teams also consult with local stakeholders about project-specific considerations, including environmental issues. We consider and use this information to help develop a pipeline route that avoids or minimizes impacts on people, critical habitats, and lands.

We follow construction and mitigation procedures that take into account several biodiversity issues by employing:

- mitigation measures to minimize erosion and enhance revegetation;
- plans to maintain existing drainage and water flow near our projects, including drain tiles;
- project-specific spill prevention and response procedures;
- plans to minimize impacts to nearby residents; and
- traffic plans to keep affected roadway crossings safe and accessible.

We work to minimize impacts on biodiversity in the areas where we work and operate. Land preservation is a key component of our construction efforts both when designing a new route for a pipeline project and when performing maintenance on facilities that have been in service for many years.

We coordinate with regulatory agencies and landowners, as appropriate, to minimize our impacts to the local environment by developing plans to:

- prevent the introduction or spread of invasive species during construction or restoration, and
- allow for the movement and protection of wildlife and livestock during construction.

High Conservation Value Areas Mitigation
We employ a variety of strategies to minimize our operating assets' impact on high conservation or biodiversity value areas, such as sensitive habitats and conservation areas for threatened or endangered species,[24] water bodies, and wetlands. Business segment integrity management teams assess whether our pipelines and facilities could affect commercially navigable waterways, populated areas, or environmentally sensitive areas with high biodiversity value.[25] We work to meet or exceed the regulatory standards that protect these important areas.

When our internal analysis determines that our asset is located within an environmentally sensitive area, the asset is subjected to more stringent and frequent integrity management measures to improve the asset's resilience and help protect the surrounding environment. Read more about our integrity management program in *Section 10.1 Asset Integrity Management.*

Where warranted, based on the nature of the project and project areas, our project framework requirements include:

- presence of an environmental inspector with wetlands or water body knowledge to check that environmental conditions are met during construction;
- establishment of baseline characteristics for high conservation areas to help develop mitigation measures during a project;
- routing to avoid construction through or minimize disturbances to wetlands and water body crossings;
- spill prevention and response procedures that provide for prompt and effective spill cleanup in the event of a spill;
- wetlands delineation; and
- detailed mitigation and avoidance plans for project areas identified as a habitat for a threatened or endangered species and fisheries.

We also focus on wildlife preservation in sensitive areas. Being good stewards of the land requires extra attention in areas impacted by construction. For more information about our assets identified in or near high conservation areas, such as protected conservation land and endangered species habitats, see *Section 6.2 Percentage of Land Owned, Leased, and/or Operated within Areas of Protected Conservation Status or Endangered Species Habitat*.

Restoration
Overall, post-construction actions for new projects include restoring the right-of-way, including landowner agreed upon specifications, and restoring the land within our facility fence lines where appropriate. In some instances, our restoration improves a habitat compared to the condition in which we found it. For example, we plant indigenous vegetation seed mixes to promote a healthy ecosystem that adapts quickly to the local conditions. In other projects, we have also constructed new habitats, including wetlands, or improved existing conservation or reservation areas.

Our restoration and revegetation efforts include:

- grading construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting;

[24] Threatened or endangered species defined by federal, state, provincial, and local regulatory agencies.
[25] Environmentally sensitive areas in the U.S. are defined by the 49 CFR 195.6 designation of unusually sensitive areas. Canada's CER rules define environmentally sensitive areas in the GEOGratis database published by The Natural Resources Canada.

- stabilizing streambeds and banks, natural drainage ways, and steep grades to meet permit requirements;
- establishing successful revegetation of soils disturbed by project-related activities; and
- working with affected landowners to restore structures, fences, hedges, buildings, and/or other property displaced or damaged during construction.

After completing construction on a new or existing project, we strive to meet the biodiversity targets and deadlines established in our project plans.

Biodiversity Enhancement Initiatives
We are actively involved in a number of projects designed to enhance biodiversity within our operating areas. We have made long-term commitments to managing biodiversity and participate in conservation education and community outreach initiatives as described below.

- The Conservation Fund Donation:
  We consider local threats to biodiversity beyond our operations. For example, in 2018 we made a $100,000 donation to The Conservation Fund to purchase wildlife corridors for the improvement and preservation of wildlife habitats.

- USFWS Collaboration:
  During the construction of our Gulf Coast Express Pipeline in south Texas, we worked with USFWS to develop a biodiversity mitigation and avoidance strategy. This area is home to many important wildlife species including ocelots as well as several threatened plant species such as the Tobusch fishhook cactus. USFWS was instrumental in helping us avoid potential ocelot habitats during the planning of our project route. This collaboration also helped us transplant over one hundred Tobusch fishhook cacti from our construction right-of-way and help reestablish this species throughout the region.

- Wildlife Habitat Council Certifications:
  We have received several certifications from the WHC, a nonprofit organization that promotes and certifies habitat conservation and management. For a project to receive WHC's Conservation Certification, a third party must validate the biodiversity enhancement and conservation education activities. Since 1999, we have received certification at 14 sites, and seven of our facilities have held WHC certification over the last three years.

  In 2017, the WHC awarded our Hartford Street Terminal their Remediation Project Award for pollinator forage enhancements as part of a phytoremediation project at the terminal. The Hartford Street Terminal program received its Conservation Certification in 2015 for the removal of invasive species vegetation and planting of approximately 3,000 native trees.

- Trees for Tucson:
  We are a designated Tree Champion to the Tucson Clean and Beautiful organization for our ongoing commitment to the Trees for Tucson program. The program provides tree plantings for neighborhoods and community sites, such as schoolyards, to improve the environment and provide shade. In 2018, we sponsored tree plantings at 16 schools in the Tucson metro area. Our team also met with school and administration staff to provide:
    - landscape planning and design services,
    - irrigation infrastructure, and
    - helping hands.

Over two thousand students helped plant 153 new trees. Our representatives attended many of the plantings and spoke with students about the importance of civic engagement and respecting the environment.

- Nature Conservancy Collaboration:
  Over a two-year period, we collaborated with The Nature Conservancy and several industry peers to develop a report enumerating ways to reduce the environmental impacts of pipeline construction on steep slopes.[26] The report was published in 2018 and includes details on ten recommended and four potential best practices. The report focuses on reducing the risk of landslides, slips and erosion, and protecting habitat health and water quality. The best practices in the report include:
    - performing geohazard assessments and post-construction geohazard monitoring,
    - accurately identifying water features,
    - optimizing groundwater management, and
    - using hydroseeding and hydromulching.

Managing our Impacts
We use compliance tracking systems to manage:
- regulatory requirements,
- permit conditions, and
- best practices.

We present a summary of our compliance performance to our management on a monthly basis. We maintain an operations audit program that monitors, among other factors, environmental and safety practices. The audit results are used to implement corrective measures where warranted. Audits are performed by qualified external or internal personnel not involved in the operations being audited. Audits are conducted at our operating facilities every three to five years based on the nature of facilities.

We use an incident management database to internally report accidents and near misses, document incident investigation findings, and corrective action items. Our incident management system provides us with the following capabilities:
- gather incident data,
- analyze causes,
- track actions and deadlines,
- identify trends, and
- identify and share preventive actions.

Our incident reporting system serves as an analysis and prevention tool. Weekly senior management meetings include discussions of notable incidents including injuries, vehicle accidents, releases, third-party encroachments onto our thousands of miles of right-of-way, and near misses that may have occurred during the previous week.

In May 2017, we were chosen by an independent panel of EHS executives to receive the 2017 Verdantix EHS Innovative Technology Award. The award recognized our innovative use of technology to improve our EHS performance through the implementation of our incident management system.

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[26] The Nature Conservancy, et al. "Improving Steep-Slope Pipeline Construction to Reduce Impacts to Natural Resources." July 2018. Conservation Gateway: The Nature Conservancy. 2019. <https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/virginia/Pages/Steep-Slope-Report-July2018.aspx>.

For more information, see our EHS Policy Statement and Biodiversity Policy on our ESG/Sustainability webpage at https://www.kindermorgan.com/ehs/esg_sustainability.aspx.

6.2 Percentage of Land Owned, Leased, and/or Operated within Areas of Protected Conservation Status or Endangered Species Habitat
(SASB Midstream EM-MD-160a.2, GRI 304-1)

We are committed to protecting the environment and conserving environmentally sensitive areas and areas of high conservation value. Our Biodiversity Policy outlines the approaches we implement to minimize impacts on biodiversity in areas where we operate. This includes evaluating design options and, where warranted, making adjustments to the location, scope, and/or timing of a new project to minimize or avoid impacts to vulnerable species or sensitive ecosystems.

Areas of Protected Conservation Status or Endangered Species Habitats
The percentage of land operated within or near areas of protected conservation status or endangered species habitat is provided below.

	2018		
	Near Designated Areas(a)	**Inside Designated Areas(b)**	**Inside or Near Designated Areas**
Percentage of Land Operated within or near Areas of Protected Conservation Status or Endangered Species Habitat(c)			
Natural Gas Pipelines	28%	4%	32%
Products Pipelines	33%	8%	41%
Terminals (d)(e)	84%	0%	84%
CO_2 (d)	8%	0%	8%
Company-wide	29%	4%	33%

(a) Defined as operated land within five kilometers of the boundary of a protected conservation area or endangered species habitat.
(b) Defined as operated land within the boundary of protected conservation area or endangered species habitat.
(c) Acreage of land used in this analysis is based on acreage we operate, which is most of the land we own and lease. There may be additional land that is owned and leased, but not operated, which is not included in this analysis. Acreage operated for pipelines includes land within the 50-foot corridor of a pipeline's centerline, and excludes gathering lines in the CO_2 business segment. Acreage operated for a facility includes land within the facility's security fence line for the Natural Gas Pipelines, Terminals, and CO_2 business segments and acreage we own, in and outside the security fence line, for the Products Pipelines business segment. The areas characterized as protected conservation areas are determined by the WDPA. The areas characterized as endangered species habitats are determined by the IUCN designations of "critically endangered" and "endangered" species for our Canada and Mexico operations. This analysis deviated from the SASB standard for our U.S. operations and used the USFWS designated areas for "endangered species" as this dataset better reflects the biodiversity risk for our operations. The WDPA and IUCN datasets were acquired in the first quarter of 2019 from the IBAT Alliance. The USFWS dataset was acquired in the third quarter of 2019 from the USFWS website. Analysis was completed using our asset GIS datasets as of the first quarter 2019.
(d) Land operated within designated areas for Terminals and CO_2 business segments is not zero, but instead rounds to zero as a percentage of the total land operated inside designated areas.
(e) Our Terminals business segment assets are often located in coastal areas for marine transportation access; these coastal areas have a higher concentration of conservation areas.

6.3 Hydrocarbon Spills

(SASB Midstream EM-MD-160a.4, SASB Exploration & Production EM-EP-160a.2, GRI 306-3)

We strive to prevent hydrocarbon releases from our operations, but sometimes such releases do occur. They usually are:

- minimal,
- below reportable quantities,
- contained in secondary containment facilities, and
- promptly remediated.

In most cases, releases of liquids are confined to our property. Our emergency response procedures are designed to promptly limit the impact to the environment if a release occurs or migrates outside of containment. Although measures are in place to prevent environmental contact, there are infrequent cases where some volume of hydrocarbon migrates outside containment.

The number of hydrocarbon spills, the aggregate volume of hydrocarbon spills, and the volume recovered are included below in barrels. The percentage recovered is also included.

	Year Ended December 31		
	2016	**2017**	**2018**
Number of hydrocarbon spills(a)(b)			
Natural Gas Pipelines	12	13	9
Products Pipelines	12	6	7
Terminals	9	6	9
CO_2	20	13	11
Kinder Morgan Canada(c)	2	1	1
Corporate Shared Services	0	0	0
Company-wide	55	39	37
Aggregate volume of hydrocarbon spills(a)			
Natural Gas Pipelines	100	141	23
Products Pipelines	457	254	11,180
Terminals	570	90	70
CO_2	90	90	229
Kinder Morgan Canada(c)	16	3	28
Corporate Shared Services	0	0	0
Company-wide	1,233	578	11,530
Volume recovered(d)			
Natural Gas Pipelines	82	45	23
Products Pipelines	221	234	7,047
Terminals	552	10	32
CO_2	59	63	211
Kinder Morgan Canada(c)	16	0	19
Corporate Shared Services	0	0	0
Company-wide	930	352	7,332
Percentage recovered			
Company-wide	75%	61%	64%

(a) A spill is defined as greater than one barrel, excluding spills contained within impermeable secondary containment.

(b) We did not have any spills in the Arctic and did not determine the volume of spills in Unusually Sensitive Areas as identified by the National Pipeline Mapping System of the Office of Pipeline Safety.

(c) Includes TMPL (Kinder Morgan Canada) data up to date of its sale on August 31, 2018.
(d) The volume of spills recovered is the amount of spilled hydrocarbons (in bbls) removed from the environment through short-term spill response activities, excluding: amounts that were recovered during longer-term remediation at spill sites and amounts that evaporated, burned, or were dispersed. The volume recovered is reported for the year the associated spill occurred.

The data for 2018 includes a 10,910 barrel release from our Products Pipelines business segment of which, as of August 2019, 6,779 barrels have been recovered. Installation of a remediation system is planned, following regulatory agency approval, to remediate the remainder.

6.4 Marine Spills and Releases to the Environment

(SASB Marine Transportation TR-MT-160a.3, GRI 306-3)

We own a fleet of 16 medium range Jones Act-qualified product tankers, each with 330,000 barrels of cargo capacity. Our fleet is the largest and most modern fleet in the industry.[27] Our fleet transports crude oil, condensate, and refined products under long-term contracts. Our vessels are operated by Intrepid Ship Management, a subsidiary of Crowley Maritime Corporation, a leading operator and technical manager in the U.S. maritime industry.

Intrepid's management system is designed to fulfill the requirements of:

- International Safety Management Code for the Safe Operation of Ships and for Pollution Prevention,
- ISO 9001:2008 Quality management system, and
- ISO 14001:2004 Environmental management systems.

Consistent with our own philosophy, one of Intrepid's goals is to continually operate with no harm to people, property, or the environment.

The number of marine spills and releases and the aggregate volume are included below in cubic meters.

	Year Ended December 31		
	2016	**2017**	**2018**
Number of marine spills and releases to the environment	0	1	1
Aggregate volume of marine spills and releases to the environment	0	<0.0001	0.0002

2017 includes a release of approximately four ounces of hydraulic fluid from a ballast pump bleeder plug. 2018 includes a release of approximately six ounces from a ballast valve.

[27]Based on average ship age and number of latest generation vessels operated. Fleet age assessment based on Wilson Gillette December 2018 report of operational Jones Act product tankers and large oceangoing barges.

7.0 Employee and Contractor Health and Safety

7.1 Discussion of Safety Management Systems to Integrate Culture of Safety and Emergency Preparedness

(SASB Midstream EM-MD-540a.4, SASB Exploration & Production EM-EP-320a.2, SASB Refining & Marketing EM-RM-320a.2, GRI 103-2, GRI 403-1, GRI 403-4)

7.1.1 Management System Overview

We value the safety of our workforce and integrate a culture of safety, emergency preparedness, and environmental responsibility through our OMS. Our OMS conforms to *API Recommended Practice 1173* for *Pipeline Safety Management Systems* and establishes a framework that helps us:

- provide employees and contractors with a safe work environment;
- comply with laws, rules, regulations, policies, and procedures; and
- identify opportunities to improve.

Specifically, our OMS provides a detailed road map to build and sustain a robust safety and environmentally sustainable culture based around:

- leadership and management commitment;
- risk and opportunity management;
- operational controls;
- incident investigation, evaluation, and lessons learned;
- safety assurance;
- emergency management;
- stakeholder engagement;
- management review; and
- continuous improvement.

The main components of our OMS include:

- setting forth our goals and policies for our physical operations;
- describing our approach to sound operations;
- setting forth the roles and responsibilities for conducting sound operations;
- establishing a set of processes to be followed in pursuit of our operations;
- incorporating our EHS requirements; and
- providing for periodic changes, audits, and assessments to improve and assess compliance with the OMS.

We routinely evaluate and drive improvements in each business segment's implementation of the OMS, and employees receive annual training on the OMS and our Code of Business Conduct and Ethics.

Through our Code of Business Conduct and Ethics and our OMS, we establish that our employees are expected to share our commitment to the goals of:

- keeping people safe,
- using material and energy efficiently,
- protecting the environment, and
- promoting best practices.

We are constantly looking for opportunities to improve our business. Our employees are expected to help us meet our goals and expectations by:

- following and improving Company and business segment policies and procedures,
- complying with laws and regulations,
- identifying opportunities for improvement,
- operating our assets safely, and
- identifying and addressing risks to people and the environment.

We strive to be a good neighbor and contribute to sustainable development through our systematic approach to EHS management. This approach supports our ability to:

- comply with laws and regulations;
- train employees to be aware of and meet their responsibilities for protection of the environment, health, and safety; and
- achieve continuous performance improvement.

Environmental Training

We create a culture of excellence throughout our operations by seeking skilled employees and contractors with a high degree of competence in terms of education, training, knowledge, and experience. We provide initial training for employees and subsequent recurring training at regular intervals. Under the guidance of our OMS, employees across the organization receive environmental, health and safety training to meet position-specific needs. Our training program promotes continuous improvement and helps us meet objectives for an informed and knowledgeable workforce.

Environmental training is required for employees, based on their job position, and is delivered through:

- computer-based training through our LMS,
- instructor-led classroom training, and
- hands-on training.

Employees receive position-relevant training for environmental topics including:

- environmental awareness;
- waste management procedures;
- spill control procedures;
- environmental sampling procedures; and
- stormwater runoff handling procedures, such as water treatment.

Additional information about our health and safety training can be found in *Section 7.2 Total Recordable Incident Rate, Fatalities, and Average Hours of Health, Safety, and Emergency Response Training*.

For more information, see our OMS webpage at https://www.kindermorgan.com/pages/ehs/ops_mgmt_system.aspx.

We are also participating in other successful management system initiatives.

ACC's Responsible Care® Program

Fourteen of our liquid terminals, including our largest, participate in the ACC's Responsible Care® Program. Responsible Care® is an EHS and security performance initiative that includes a management system framework that drives improvement in key EHS and security operational areas. The program elements include monitoring and reporting our measures for environmental, energy, safety, and accountability performance. As part of the Responsible Care® program, once every three years we

undergo third-party audits of our headquarters and each of the participating facilities to certify our performance.

OSHA's Voluntary Protection Program (VPP)
An example of our dedication to workplace health and safety is our Lomita Ethanol and Rail Terminal in Carson, California. The Lomita Terminal participates in OSHA's VPP and is a designated Cal/VPP STAR site, the highest level in the program.

OSHA's VPP program promotes and recognizes effective workplace safety and health management by partnering with businesses and work-sites that demonstrate a commitment to employee protection beyond the requirements of OSHA standards. As a participant, we have developed and implemented systems to effectively identify, evaluate, prevent, and control occupational hazards to prevent employee injuries and illnesses.

7.1.2 Employee and Contractor Safety

As part of our OMS, our employees are encouraged to improve and build upon our established safety culture by sharing information on incidents, completing training, and participating in periodic safety culture surveys. Our employees are empowered to perform their work in a safe and effective manner, taking into account the safety-related components of each job. We expect our employees to stop work if an activity is not well understood or could lead to potential harm, and we regularly communicate that expectation to them.

Our policies and procedures require the internal reporting and investigation of incidents. Incident reporting and investigation includes identification of incident details, impacts, causes, and corrective actions. We use the incident investigation process to identify immediate and/or root causes that contributed to the incident, to determine the necessary corrective actions, and to provide timely follow-up to check that corrective actions have been completed. We share lessons learned and evolving best practices across our business segments in regular cross-segment operations meetings.

Another feature of our OMS is contractor safety and contractor management. We use a multi-faceted approach to foster a culture of safety among our contractors. Our approach begins with our procurement process, which includes contractor vetting using ISNetworld, a nationally recognized contractor management firm. Additional actions we undertake to integrate a culture of safety with our contractors include:

- facility safety orientations;
- field, project, and desktop audits;
- job evaluations;
- training;
- benchmarking and safety statistical analysis; and
- safety inspector placement and training.

For more information, see our Contractor Environmental/Safety Manual at https://www.kindermorgan.com/content/docs/KMContractorSafetyManual.pdf.

7.2 Total Recordable Incident Rate, Fatalities, and Average Hours of Health, Safety, and Emergency Response Training

(SASB Exploration & Production EM-EP-320a.1, Refining & Marketing EM-RM-320a.1, GRI 403-9)

We strive for continuous improvement in our safety performance. We have two employee safety performance targets. The first is to perform better than annual industry averages, and the second is to be better than our own three-year average. Ultimately, we have a target of zero incidents.

Incident Reporting

As a way to both monitor and maintain progress toward our safety goal, we have developed policies, procedures, and processes to record, report, and manage work-related injuries and illnesses. Our employees and contractors are required to report and document workplace incidents, including illnesses and injuries. These safety performance metrics are used across the organization to analyze causes, identify trends, establish preventative actions, and ultimately help keep our people safe.

Our senior management plays a vital role in establishing a strong safety culture and they value the insights gained from our safety performance metrics and incident investigations. Weekly senior management meetings, chaired by our CEO, include reports and discussions of notable workplace incidents and near misses that may have occurred during the previous week. Our senior management has established detailed safety performance metrics at the business segment level to focus performance on factors related to both safety and operational reliability. We also have a committee of safety and operations personnel who meet monthly to share information related to safety and other incidents. This committee reviews incidents and applies insights learned across our business segment operations.

Health, Safety and Emergency Response Training

Our employees receive initial health, safety, and emergency management training and subsequent recurring training, appropriate for their positions, at regular intervals. Our health, safety, and emergency response training program promotes performance improvement and helps us meet our objectives for an informed and knowledgeable workforce.

We deliver health, safety, and emergency management training to our employees through:

- computer-based training through our LMS,
- instructor-led classroom training, and
- hands-on training.

Our health, safety, and emergency management training covers topics required under the U.S. 29 CFR Part 1910 OSHA standards; Canada Labour Code; and Mexican, state, and provincial equivalent programs, including training on:

- confined spaces,
- crane safety,
- electrical safety,
- emergency response,
- fall protection,
- fire protection,
- hazard communication,
- lockout/tagout,
- personal protective equipment,
- process safety management, and
- respiratory protection.

Employees also receive position-relevant training in other safety topics that are not required under OSHA 1910, such as:

- safe driving, which addresses hazards such as distractions while driving and adverse weather conditions;
- back safety, which explores the factors that lead to back injuries such as physical activity, posture, and load positioning; and
- ergonomics, which explains how various postures and movements affect the body and how to mitigate ergonomic hazards.

We provide emergency management training consistent with USCG, EPA, DOT, CER, and ASEA requirements. We also have an extensive pipeline safety OQ program.

Contractor Safety

We seek to constantly improve our contractor TRIR performance through initiatives to address recent incident trends and new best practices. The following initiatives were undertaken in 2018:

- increased the number of contractor audits;
- increased the number of safety inspectors dedicated to major projects; and
- added staff to provide quality control of incident data entry into our incident management system, to improve incident investigation quality, and to follow-up on corrective actions.

Safety and Training Metrics

The annual employee and contractor incident rates, annual employee incident rate targets, the number of employee and contractor fatalities, and the average number of employee hours spent on health, safety, emergency management, and other safety training topics not required under OSHA 1910 are provided in the table below.

	Year Ended December 31		
	2016	**2017**	**2018**
Total recordable incident rate(a)(b)			
Employees(c)			
Natural Gas Pipelines	1.2	1.2	1.2
Products Pipelines	0.3	0.6	0.8
Terminals	1.6	0.9	1.1
CO_2	1.0	0.7	0.9
Kinder Morgan Canada(d)	0.6	0.5	0.4
Corporate Shared Services	0.2	0.7	0.1
Company-wide	1.1	1.0	1.0
Target - Industry average(e)	2.8	2.8	2.3
Target - Kinder Morgan three-year average(f)	1.2	1.2	1.2
Contractors(g)(h)			
Natural Gas Pipelines	0.6	1.0	0.7
Products Pipelines	0.0	0.9	0.9
Terminals	0.6	0.8	0.4
CO_2	0.0	0.8	0.9
Kinder Morgan Canada(d)	0.0	0.0	0.4
Corporate Shared Services	0.0	0.0	0.0
Company-wide	0.2	0.8	0.7

	Year Ended December 31		
	2016	2017	2018
Fatalities			
Employees	2	0	0
Contractors	0	1	0
Average hours of health, safety, and emergency response training(i)			
Hours per employee			
Natural Gas Pipelines	18	20	21
Products Pipelines	24	28	22
Terminals	12	14	11
CO_2	19	30	27
Kinder Morgan Canada(j)(k)	9	12	12
Corporate Shared Services	5	3	4
Company-wide	15	17	17

(a) TRIR calculation: total number of incidents multiplied by 200,000 divided by the number of employee hours actually worked. The 200,000 represents the hours 100 employees worked per year. 100 employees working 40 hours per week, 50 weeks per year. It is a standard base for calculating incident rates.
(b) For 2018, rates are calculated using incident classifications as of February 27, 2019. For 2017, rates are calculated using incident classifications as of January 15, 2018. For 2016, rates are calculated using incident classifications as of January 15, 2017. Injuries or illnesses may later be reclassified.
(c) Employee rates include regular full-time, regular part-time, and temporary employees.
(d) Represents Kinder Morgan Canada employee TRIR until the date of the TMPL sale, August 31, 2018.
(e) The target industry TRIR is based on the most recent U.S. Bureau of Labor Statistics incident rate data available at the beginning of each year. The Bureau of Labor Statistics typically publishes data in the 4th quarter for the prior calendar year. The rate is established by weighing industry rates based on the North American Industry Classification System codes by prior year employee hours at facilities under each code. Multiple codes are used to determine the industry rates for comparison in 2018, including 4862 pipeline transportation of natural gas, 49319 other warehousing and storage, 48832 marine cargo handling, and others.
(f) Kinder Morgan three-year target is based on the actual TRIR for previous three-year period. For example, the 2018 target is based on the TRIR from 2015 through 2017. The 2017 target is based on the TRIR from 2014 through 2016.
(g) Contractor rates are based on incidents contractors incurred while doing work for Kinder Morgan on a defined major project. This metric may not be inclusive of all major projects. Incidents for the contractor's employees operating our marine tankers are not included in the contractor hours here, but are included in the marine LTIR below.
(h) Contractor TRIR has been updated from our 2017 Report to only include contractor incidents from major projects. Major projects are capital expansion projects that meet a minimum total estimated project cost.
(i) Training time is assigned to the business segment the employee was active under at the end of the year.
(j) Represents Kinder Morgan Canada employee average training time until the date of the TMPL sale, August 31, 2018.
(k) Kinder Morgan Canada average training time has been revised from the previously reported in our 2017 Report for 2016 and 2017 to include more representative course training times.

We experienced two employee fatalities in 2016 and one contractor fatality in 2017. For any fatality, we conduct a root cause investigation. We may establish committees to study similar incidents and near misses, and, where warranted, develop and implement improvements to our policies and procedures. Irrespective of fault, we make adjustments to plans and procedures where appropriate with the goal of eliminating or reducing the chance that a similar incident will happen in the future.

7.3 Marine Lost Time Incident Rate

(SASB Marine Transportation TR-MT-320a.1, GRI 403-9)

As described in *Section 6.4 Marine Spills and Releases to the Environment,* Intrepid Ship Management operates our Jones Act marine transportation vessels. Intrepid's management is actively engaged in monitoring each injury or illness case. Intrepid maintains processes and procedures for reporting,

investigating, and recordkeeping. Intrepid determines the classification for each case. In the event of a marine injury or illness, Intrepid engages contracted medical services, including:

- physician advice at sea,
- maritime telemedicine,
- physician and nurse case management, and
- arrangement and management of shore side medical services.

Intrepid has initiatives and programs for fleet safety officers and quality training focused on the following topics:

- safety leadership,
- sharing best practices, and
- increasing crew training on
    - job safety,
    - work permits, and
    - housekeeping.

Intrepid has also initiated job safety training programs to improve hazard recognition and incident prevention, and to prevent common musculoskeletal injuries.

We do not include Intrepid's incidents or hours worked in our contractor TRIR in *Section 7.2 Total Recordable Incident Rate, Fatalities, and Average Hours of Health, Safety, and Emergency Response Training*. Intrepid's LTIR on our marine transportation vessels are provided below.

	Year Ended December 31		
	2016	**2017**	**2018**
Marine lost time incident rate(a)	2.5	1.1	0.6

(a) Marine lost time incident rate calculation: total number of lost time injuries multiplied by 1,000,000 divided by number of employee hours on-board per Oil Companies International Marine Forum Marine Injury Reporting Guidelines.

8.0 Competitive Behavior

(SASB Midstream EM-MD-520a.1)

Our policies prohibit improper conduct that is intended to impede competition, eliminate a competitor, or control prices or services in a market. We strive to compete fairly and honestly in each phase of our business and to conduct our operations in compliance with federal, state, provincial, and foreign antitrust laws.

Some of our U.S. natural gas, refined petroleum products, and crude oil transmission pipelines are subject to regulation by the FERC under the NGA or ICA. Both the NGA and ICA require that we maintain our tariffs on file with the FERC. Those tariffs set forth the rates we charge for providing transportation and storage services on our FERC regulated pipelines, as well as the rules and regulations governing these services.

The Canadian portions of the Cochin pipeline and Utopia pipeline are regulated under the CER, formerly the National Energy Board of Canada. The CER's responsibilities and authority are established in the Canadian Energy Regulatory Act. The CER regulates the following for pipelines that cross international borders or provincial boundaries:

- construction,

- operation,
- abandonment,
- tolls, and
- tariffs.

Our Mexico assets are regulated by the Mexico Energy Regulatory Commission. The pipeline operates under a permit that establishes certain conditions and specifications, including for maintenance, safety, and economics.

We have policies and procedures that support our ability to comply with and enforce pipeline tariff provisions in a consistent manner and in accordance with the following principles:

- we do not engage in transactions that could be seen as manipulating a market;
- we do not participate in transactions that do not have a legitimate business purpose;
- we do not submit false or misleading price and volume information;
- we do not provide an undue preference to shippers, including an affiliate shipper;
- we do not share, whether directly or through someone else, non-public information about a shipper unless the shipper has given its written consent to do so; and
- we do not make untrue or misleading statements or take actions that would defraud a party.

For more information, see our Code of Business Conduct and Ethics at https://www.kindermorgan.com/content/docs/km_code_of_business_conduct_and_ethics.pdf.

Our monetary losses as a result of legal proceedings associated with federal pipeline and storage, rate, access, and pricing regulations are provided below in millions of U.S. dollars.

	Year Ended December 31		
	2016	2017	2018
Total amount of monetary losses as a result of legal proceedings associated with federal pipeline and storage rate, access, and pricing regulations (millions of U.S. dollars)(a)			
Natural Gas Pipelines	$ 0	$ 10	$ 0
Products Pipelines	$ 0	$ 0	$ 0
Terminals	$ 0	$ 0	$ 0
CO_2	$ 0	$ 0	$ 0
Kinder Morgan Canada(b)	$ 0	$ 0	$ 0
Total	$ 0	$ 10	$ 0

(a) Disclosure includes the amount, excluding legal fees, of fines or settlements associated with the enforcement of federal pipeline and storage regulations, including those related to rates, pipeline access, price gouging, or price fixing by the FERC, CFTC, FTC, or civil actions (e.g., civil judgment, settlements, or regulatory penalties), or criminal actions (e.g., criminal judgment, penalties, or restitutions) asserted by an entity, whether a regulatory agency, business, or individual.

(b) Includes TMPL (Kinder Morgan Canada) data up to date of its sale on August 31, 2018.

The settlement paid in 2017 was for matters that were alleged to have occurred more than a decade prior to our ownership and control of El Paso Corporation and El Paso Marketing L.P. Beginning in 2003, several lawsuits were filed by purchasers of natural gas against El Paso Corporation, El Paso Marketing L.P., and numerous other energy companies. The purchasers claimed the energy companies conspired to manipulate the price of natural gas by providing false price information to industry trade publications that published gas indices. All of the cases have been settled or dismissed, including the last remaining case where a final settlement was approved by the court in 2019.

9.0 Prevention of Corruption and Bribery throughout the Value Chain

(SASB Exploration & Production EM-EP-510a.2, GRI 205-2)

Our policies prohibit us and our employees from engaging in corrupt practices and provide guidelines on acceptable behavior. Our employees, directors, agents, contractors, business partners, and third-party representatives are prohibited from giving or accepting bribes, kickbacks, or other improper payments in conjunction with our business. Employees receive annual training on our Code of Business Conduct and Ethics. While the FCPA contains a narrow exception that allows for small-dollar facilitation payments to be made to a foreign official in order to expedite routine governmental actions that are non-discretionary in nature, our policies do not allow facilitation payments of any kind. Our ethics hotline enables employees and third parties to anonymously report concerns about corruption and bribery.

As part of our management system for preventing corruption and bribery, our internal controls require that transactions be:

- accurately described with an explanation of the purpose of the transaction,
- sufficiently supported by documentation, and
- appropriately approved by the required level of management, based on the dollar value of the transaction, prior to entering into a commitment and again before processing for payment.

Additionally, we have controls regarding the addition of payees to our accounting system. The internal controls require review and approval by an individual(s) higher in the reporting chain than the person approving the payment in our accounting system.

For more information, see our Code of Business Conduct and Ethics at https://www.kindermorgan.com/content/docs/km_code_of_business_conduct_and_ethics.pdf.

10.0 Operational Safety

10.1 Asset Integrity Management

We work to provide safe, reliable, and efficient system operations. Through our OMS, our employees comprehensively assess operational risks related to our assets. We develop programs, policies, and procedures to address those risks. Our primary tools for maintaining safe operations include our asset integrity management programs.

Pipelines

Pipelines are the safest and most efficient method of transporting natural gas and petroleum products.[28,29,30] Pipelines are safer than other modes of transportation such as rail, barge, and truck. While the amount of natural gas and petroleum products being used in the U.S. continues to increase, the

[28]DOT-PHMSA. "General Pipeline FAQs." DOT-PHMSA. 26 Feb. 2019. 2019. <https://www.phmsa.dot.gov/faqs/general-pipeline-faqs>.

[29] Furchtgott-Roth, Diana. "Pipelines are Safest for Transportation of Oil and Gas." Manhattan Institute for Policy Research. 23 (2013). 2019 <https://www.manhattan-institute.org/pdf/ib_23.pdf>.

[30] Hughes, Charles. "The Energy Bottleneck: Why America needs more pipelines." Manhattan Institute for Policy Research. July 2017: 9-12. 2019. <https://www.manhattan-institute.org/download/10472/article.pdf>.

industry's safety performance in recent years has improved significantly and serious accidents are infrequent.[31,32]

We use state-of-the-art technology for maintenance and integrity testing at our transmission pipelines and facilities and liquids terminals facilities. We conduct activities to monitor the integrity of our transmission pipelines and facilities, and liquids terminals, including:

- monitoring transmission pipelines and liquids terminals 24 hours a day, seven days a week by trained personnel using SCADA computer systems;
- visually inspecting pipeline rights-of-way by air and/or ground on a regular basis;
- performing internal transmission pipeline inspections periodically using "smart pigs";
- using cathodic protection to protect our pipelines, storage tanks, and storage wells from external corrosion;
- using our public awareness program, described in greater detail in *Section 13.1.1.1 Public Awareness Program*, to communicate with stakeholders in an effort to prevent third-party damage to our pipelines;
- participating in the Pipeline Safety Management Systems Group to share best practices for safe operations;
- working to develop and improve our business processes, operations procedures, and risk and opportunity assessments;
- maintaining well defined roles and responsibilities;
- providing employee training; and
- executing quality assurance programs such as third-party audits and application of performance metrics.

Underground Natural Gas Storage Facilities

We maintain risk management programs and monitoring systems for well and reservoir integrity and deliverability at each of our underground natural gas storage facilities. Our operations and maintenance procedures are subject to periodic inspections and audits by regulators and our own internal independent auditors. We have procedures in place to maintain the compliance, safety, and reliability of our underground natural gas storage facilities over the long term.

10.2 Damage Prevention

Because one of our greatest operational risks is third-party line strikes, we actively support organizations whose mission is to promote safe digging, including:

- *CGA* - we are a platinum-level sponsor and regularly promote CGA's message to "call 811 before you dig" on our website and social media channels;
- *Pipeline Ag Safety Alliance* - a member-driven organization whose mission is to prevent damage to buried pipelines through education and improved communication with agricultural communities; and
- *Gold Shovel Standard* - a nonprofit organization committed to improving workplace safety, public safety, and buried infrastructure integrity through greater transparency among buried-asset operators, locators, and excavators to drive continuous improvement in damage prevention.

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[31] API-AOPL. "Pipeline Safety Excellence Performance: 2019 Annual Liquids Report." API-AOPL. 08 Apr. 2019: 26-31. 2019. <http://www.aopl.org/wp-content/uploads/2019/04/2019-API-AOPL-Pipeline-Performance-Report.pdf>.

[32] INGAA. "Pipeline Safety & Reliability: Safety and Reliability Metrics." INGAA. 2019. <https://www.ingaa.org/File.aspx?id=28478&v=6dac677e>.

10.3 Emergency Preparedness and Business Continuity Planning

Our ability to respond quickly in an emergency is part of our commitment to the safety of the communities in which we operate. Our plans cover the preparation and recovery of functions for addressing potential business or supply chain disruptions. To manage the risk of potentially disruptive events, we work to continuously improve:

- our planning prior to events,
- procedures for managing unfolding disruptions, and
- our ability to get back to normal operations quickly.

We maintain site-specific emergency response plans that include agency notifications and actions to respond quickly and efficiently in an emergency. We provide our employees and contractors with emergency response training. Our emergency response personnel are trained to respond by:

- securing the safety of the public and employees,
- promptly notifying governmental response organizations and agencies,
- isolating the emergency,
- containment and control,
- coordinating response activities, and
- restoring service.

First Responder Joint Exercises

To practice our emergency response and better prepare personnel, we regularly conduct joint mock emergency exercises with first responders. By conducting these exercises, employees and emergency responders are not only able to test their equipment, personnel, and procedures, but also to meet and work together face-to-face prior to an actual emergency. The more familiar we are with one another and each other's procedures, the more effective our integrated response can be in the event of a real emergency.

Example drill scenarios include, among others, the following:

- pipeline releases;
- line strikes;
- tank failures;
- well blowouts;
- loss of communications;
- severe weather events (e.g. hurricanes, floods, tornadoes, and blizzards);
- security incidents, including physical or cyber-attacks;
- pipeline explosions;
- third-party train derailments; and
- events that test our ability to maintain business continuity with our corporate functions.

Natural Disaster Preparedness and Response

As part of our commitment to emergency preparedness, we plan for and have established procedures for responding to a wide variety of natural disasters. We maintain hazard identifications and risk assessments for our transmission pipelines. The purpose of these risk assessments is to identify potential risks and natural disaster scenarios, and to develop response plans. This planning involves local response officials, other operators and their facilities, and land and right-of-way personnel.

We utilize a variety of tools to forecast and monitor weather-related events, including:

- weather event monitoring through
    - third party meteorological services,

    - local and national weather and news feeds, and
    - internal and external situational reports specific to impacted areas;
- GIS mapping of real time situational data overlaid on our asset maps;
- internal communication processes to provide situational updates to affected personnel, management, and executives as events unfold;
- annual testing of backup work locations that would support critical business functions in the event of natural disasters by checking
    - day-to-day communications capabilities,
    - infrastructure readiness,
    - awareness of the potential for natural events and risks,
    - understanding and accuracy of the disaster response and business continuity plans, and
    - training completions.

When our assets are threatened by a potential hazard, such as a hurricane, we monitor the event and location based on the threat level and projected storm paths in relation to our assets. Situation-specific communications are sent to key personnel at potentially affected facilities and in related corporate functions. These communications provide daily event updates for assets that may be impacted and include notifications tied to our disaster preparedness and response procedures. Using GIS technology, we monitor forecasted paths and impact areas. Our internal GIS platform also allows us to analyze location-specific data, including local supply chain resources that are useful in supporting effective responses.

Emergency Response

To promptly resolve issues and problems created by incidents, we maintain an emergency response notification system to inform internal support personnel. Our process is designed to facilitate real-time communication of emergency events to our personnel with incident response or reporting responsibilities. Our process allows for more timely, effective, and efficient responses in emergency situations and reporting to regulatory agencies.

During an emergency, we seek to respond effectively, contain the situation, and restore customer services as soon as possible. We seek to provide for the well-being and safety of our employees, the public, and the environment, while maintaining or restoring service to our customers. We practice a disciplined, competent, and proactive approach when an event occurs. Once the event has passed, a final notification is sent to the distribution list notifying them to begin the demobilization process and to gather information for the lessons learned phase.

Emergency Response Support

To support our ability to operate under various conditions, we have developed and maintained a reliable supply chain. For planning prior to an emergency, we maintain response and support capabilities to provide significant additional resources to supplement those of our potentially affected local operations. Our supply chain management personnel maintain lists of emergency response contractors, materials and supplies vendors, and transportation and fuel sources. We also maintain a database of our emergency response equipment. We have procedures in place to raise spending limits for affected personnel, to assist affected employees, and to increase security resources.

10.4 Reportable Pipeline Incidents
(SASB Midstream EM-MD-540a.1)

One of our primary goals is to prevent pipeline incidents. Should an incident occur, we investigate the causes and contributing factors in an effort to prevent similar incidents going forward. Despite our prevention efforts, incidents did occur over the reporting period.

The number of reportable pipeline incidents, number of significant reportable pipeline incidents, and percentage of significant reportable pipeline incidents are provided below.

	Year Ended December 31		
	2016	**2017**	**2018**
Number of reportable pipeline incidents(a)(b)(c)			
Natural Gas Pipelines	21	27	22
Products Pipelines	15	10	13
Terminals	11	11	13
CO_2	9	2	5
Kinder Morgan Canada(d)	2	0	0
Total	58	50	53
Number of significant reportable pipeline incidents(c)(e)			
Natural Gas Pipelines(f)	9	14	9
Products Pipelines	5	4	7
Terminals	3	5	5
CO_2	3	0	2
Kinder Morgan Canada(d)	0	0	0
Total	20	23	23
Percentage significant of reportable pipeline incidents			
Natural Gas Pipelines	43%	52%	41%
Products Pipelines	33%	40%	54%
Terminals	27%	45%	38%
CO_2	33%	0%	40%
Kinder Morgan Canada(d)	0%	0%	0%
Company-wide	34%	46%	43%

(a) Reportable hazardous liquid pipeline incidents include explosions or fires, release of five gallons or more (excluding releases less than five bbls associated with pipeline maintenance activities), a fatality, an injury necessitating hospitalization, or estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding $50,000. Where relevant, prior years data have been updated from our 2017 Report to reflect improvements in data quality over time.

(b) Reportable gas gathering, transmission, storage, and distribution incidents include: i) an event that involves a release of gas from a pipeline or of LNG, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences: death or personal injury necessitating in-patient hospitalization; estimated property damage of $50,000 U.S. dollars or more, including loss to the operator and others, or both, but excluding cost of gas lost; or unintentional estimated gas loss of three million cubic feet or more; ii) an event that results in an emergency shutdown of an LNG facility. Activation of an emergency shutdown system for reasons other than an actual emergency does not constitute an incident; iii) an event that is significant in the judgment of the operator, even though it did not meet the criteria of the above paragraphs of this definition.

(c) The number of pipeline incidents and significant incidents reported for 2016, 2017, and 2018 uses data as of July 2019.

(d) Includes TMPL (Kinder Morgan Canada) data up to date of its sale on August 31, 2018.

(e) Significant reportable pipeline incidents are defined as an incident that includes one of the following conditions: a liquid release volume greater than or equal to 50 bbls, a highly volatile liquid release greater than five bbls, a fatality, an injury

necessitating hospitalization; or total cost that exceeds $50,000 in 1984 dollars. PHMSA combines the unintentional and intentional release volumes to determine if the incident meets the 50 bbl liquid release significant threshold.

(f) We have updated the number of significant incidents for 2016 and 2017 from our 2017 Report to better align with the PHMSA definition for significant incidents and its methodology for determining total costs in 1984 dollars.

In each year, the most frequent reason the incidents reported were categorized as significant was total costs exceeding the monetary threshold of $50,000 in 1984 dollars.

10.5 Natural Gas and Hazardous Liquid Pipelines Inspection

(SASB Midstream EM-MD-540a.2)

We aim for safe operations and zero pipeline incidents. As described in *Section 10.1 Asset Integrity Management*, we use risk management programs and state-of-the-art technology for maintenance and integrity testing at our transmission pipelines and facilities and liquid terminal facilities. We work to comply with regulatory requirements, to find opportunities to improve, and to apply sound integrity management principles and technologies. To assist in these efforts, we use a robust IMP that incorporates integrity assessment measures including those to:

- identify, analyze, and prioritize potential threats to our pipelines, including incorporating actual and potential precursor events that can result in pipeline incidents;
- use a comprehensive and integrated means for examining, prioritizing, and comparing the spectrum of risks and risk reduction activities available;
- implement structured and easily communicated means for selecting and implementing risk reduction activities including integrity assessments, remediation, and preventive measures;
- track system performance with the goal of improving performance; and
- communicate emerging needs and new technology application opportunities to top management to provide timely resource allocation.

Annually, we conduct a significant number of pipeline inspections using various methods including:

- in-line inspections,
- non-destructive testing,
- aboveground surveys,
- hydrostatic pressure tests, and
- direct assessments.

These inspections help us determine the physical condition of our pipelines and gather information to assist us in keeping our pipelines operational and safe. The majority of our inspections utilize ILI technology referred to as “smart pigs.” ILI is the preferred method because it provides more detailed data about corrosion and other material defects.

In our ongoing pursuit of operational excellence, we developed KMAP™, a patented innovative pipeline integrity solution designed to search for flaws in longitudinal welds. KMAP™ is a unique analytical process that provides a more comprehensive and efficient analysis of pipelines than traditional ILI tools. We developed KMAP™ as a proactive solution to conduct more thorough inspections of our pipelines, and have been successfully using this technology since 2011. We also provide KMAP™ as a service to other pipeline companies across North America.

The number of inspections varies from year to year depending on our annual integrity program requirements.

The percentage of natural gas pipelines and hazardous liquid pipelines inspected through ILIs, pressure tests, direct assessments, or other technologies is presented in the table below.

	Year Ended December 31		
	2016	2017	2018
Percentage of natural gas pipelines inspected(a)	14%	14%	14%
Percentage of hazardous liquid pipelines inspected(a)(b)	22%	19%	18%

(a) For segments of pipe that are inspected more than once for the same types of anomalies during the same calendar year, the mileage inspected used in this calculation is counted once. In some limited instances where multiple inspections for different types of anomalies are conducted on the same segment in the same year, the mileage for each inspection may be counted separately.

(b) Includes pipeline inspection data from Kinder Morgan Canada until the date of TMPL sale, August 31, 2018.

From 2016 to 2018, over 25,000 miles of our natural gas pipelines and 8,000 miles of hazardous liquid pipelines were assessed using ILIs, hydrostatic testing, or direct assessments.

10.6 Number of FRA Recommended Violation Defects

(SASB Rail Transportation TR-RA-540a.3)

We operate liquids and bulk products rail loading and unloading facilities across our Natural Gas Pipelines, Products Pipelines, and Terminals business segments. As operator of these facilities, we are regulated and regularly inspected by the FRA. We maintain business segment and site-specific procedures for the safe, efficient, and compliant operation of the facilities and loading and/or unloading of rail cars.

The number of FRA recommended violation defects received are provided below.

	Year Ended December 31		
	2016	2017	2018
Number of FRA recommended violation defects			
Natural Gas Pipelines	0	0	0
Products Pipelines	0	0	0
Terminals	9	10	5
Total	9	10	5

The majority of the FRA recommended violation defects followed FRA inspections of rail cars at rail yards not owned or operated by us, many of which are several hundred miles from our facility where a rail car was loaded or unloaded. The FRA recommended violation defects included such matters as loose bolts, valves, or plugs; defective safety equipment, such as gasket or pins; rail car weight; and in some cases vapor releases from loose equipment. Vapor releases were promptly mitigated by personnel at the rail yards where the releases were detected. Defective and loose equipment was promptly corrected after identification.

Although these violations involved less than 0.01% of the total rail cars we processed, we instituted additional cross-check procedures in an effort to eliminate the problems identified in these violations, which has resulted in the improvement reflected in the table above.

11.0 Management of Changes to the Legal & Regulatory Environment

(*SASB Refining & Marketing EM-RM-530a.1, SASB Exploration & Production EM-EP-530a.1)*

Multiple government agencies regulate our business activities, including the EPA, PHMSA, CER, ASEA, OSHA, USCG, and other federal, state, provincial, and local agencies. To identify, assess, and manage new ESG regulatory risks and opportunities, we maintain a process for identifying, communicating, and verifying compliance with changes in applicable regulatory requirements. Dedicated internal regulatory personnel work with internal and third-party subject matter specialists, industry trade groups, and agency personnel to identify changes in the following topics that may affect our operations:

- environmental, personal safety, process safety, and pipeline safety regulatory requirements, interpretations, and guidance;
- industry codes and standards; and
- external incident reports, including:
    - NTSB, TSB, and CSB incident investigations;
    - CER and PHMSA advisory bulletins and failure reports; and
    - ASEA reports.

We distribute a monthly regulatory update internally to personnel with compliance roles and responsibilities. The monthly regulatory update includes both proposed and final publications. Our compliance personnel assess the potential impacts of proposed rules across our business segments. Personnel from our business segments discuss and coordinate potential compliance approaches and evaluate which proposed requirements warrant providing feedback to a proposing agency. We typically work through trade groups to provide feedback. In some instances, we may provide feedback directly to the proposing agency, typically where trade groups do not address specific issues that are important to us or where the potential impact of a proposal is substantial. We brief the Board's EHS Committee on the most significant proposed regulatory changes. We also make the EHS Committee aware of the national trade groups in which we participate at the board or committee level and of other proposed regulations on which we have provided feedback.

Our experience has generally been that it is most effective to take a collaborative approach to identify the most effective means of addressing proposed regulatory changes for our types of assets and operations. We often share data with industry groups and regulatory agencies and engage in discussions with both about potential regulatory and compliance strategies. In some instances, we may have confidence in the likely final form of a proposed regulation and our compliance with the regulation may require substantial upfront work. In some cases, we may start making preparations for compliance prior to a regulation being finalized.

We track final publications identified in our monthly regulatory update in an internal application and database. Through the application, business segment and corporate compliance professionals verify that they have reviewed the updated requirements that may impact their business and completed the necessary compliance activities. The Vice President of Corporate EHS and business segment COOs review progress quarterly. We brief the EHS Committee on the most significant of these regulatory changes and compliance activities.

The number of new regulations, interpretations, and guidance for proposed and final regulations impacting our business segments are provided below.

	Year Ended December 31		
	2016	2017	2018
Number of new regulations, interpretations, and guidance(a)			
Proposed	1,044	1,335	1,301
Final	528	480	501
Total	1,572	1,815	1,802

(a) 2017 amounts have been updated from those reported in our 2017 Report for the number of proposed regulations, interpretations, and guidance to address double counting.

11.1 Corporate Positions Related to Government Regulations

(GRI 415-1)

We do not have corporate-sponsored political action committees. We comment on the formulation of legislative and regulatory policies at the federal, state, provincial, and local levels both as an individual company and, more often, through trade associations.

We do not contribute to political parties or candidates for public office. We encourage employees, contractors, and others affiliated with us to vote and keep informed on political matters and to support, with their own funds and on their own time, the candidates or parties of their choice. We also encourage and support employees who take a role in community affairs in accordance with our Code of Business Conduct and Ethics.

12.0 Employee Relations

12.1 Employees

(SASB Investment Banking & Brokerage FN-IB-330a.1 and GRI 405-1)

We are committed to living out our core values of integrity, accountability, safety, and excellence throughout our operations. We use a strategic approach to continue building a diverse, inclusive, and respectful workplace. Our Human Resources department provides expertise and tools to attract, develop, and retain diverse talent and support our employees' career and development goals.

We offer competitive base salaries in the markets in which we operate. Compensation includes competitive benefits, including retirement plans, opportunities for annual bonuses, and long-term incentives.

Employees in our corporate Houston office are offered a 100% transportation subsidy for local public transportation networks, which helps reduce reliance on individual personal vehicles.

The overall purpose of our Annual Incentive Plan is to foster our executive officers' and our employees' personal stake in our continued success through the possible payment of annual cash bonuses that are dependent on a combination of individual and Company performance. Under the Annual Incentive Plan, a pool of bonus dollars is budgeted at the beginning of each year for annual cash bonuses that may be paid to our executive officers and other employees, depending on the extent to which we meet certain financial performance objectives. The Compensation Committee then establishes the final bonus pool based primarily on the extent to which the financial performance objectives are met. The Compensation Committee may also adjust the budgeted pool of bonus dollars upward or downward based on our overall

performance in other areas, including targets for safety and environmental incident rates, regulatory compliance, and financial measurements.

Our executive compensation program is designed to reward individuals for:

- advancing our business strategies;
- advancing the interests of our investors and other stakeholders;
- incentivizing compliance with our ESG policies, including our Code of Business Conduct and Ethics and our EHS policies; and
- meeting our ESG targets, including our safety and environmental targets.

We believe that an effective executive compensation program should link total compensation to our financial performance and to the attainment of our short-term and long-term strategic, operational, and financial objectives. We believe operational objectives should take into account adherence to and promotion of our Code of Business Conduct and Ethics and our EHS policies.

The composition of our employees' age, female, and minority workforce representation are provided below.

	2018
Total employees(a)(b)	11,171
Age representation	
Average age	46
Percentage under 18 years old	0%
Percentage from 18 through 29 years old	11%
Percentage from 30 through 50 years old	51%
Percentage over 50 years old	39%
Female employee representation	
Number in workforce(c)	1,805
Percentage of workforce	16%
Percentage of management	18%
Percentage of Board of Directors	13%
Minority employee representation(d)	
Number in workforce(c)	3,111
Percentage of workforce	28%
Percentage of management	19%
Percentage of Board of Directors	13%

(a) Includes full-time, part-time, and temporary employees in the U.S., Canada, and Mexico.
(b) U.S. data were queried in November 2018. Canadian and Mexico data were queried in December 2018.
(c) Workforce includes positions in management, professional positions, and remaining positions.
(d) U.S. and Canada diversity data are categorized per the Equal Employment Opportunity (EEO-1) Survey and the Employment Equity Workforce Survey, respectively. Mexico is excluded, as there is no requirement to collect diversity data. Minority includes the number of U.S. employees who classify themselves as Asian, Black or African American, Hispanic or Latino, Native American or Alaska Native, Native Hawaiian or Pacific Islander, and "Two or more races" and the Canada employees who identify themselves as a visible minority (other than Aboriginal peoples) who are non-white in color or non-Caucasian in race, regardless of their place of birth or citizenship.

12.2 Diversity and Inclusion
(*GRI 405-1*)

We consider employee diversity an asset and support equal opportunity employment. We take affirmative action to employ and advance in employment all persons without regard to their race/ethnicity, sex, veteran status, disability, or other protected categories, and base employment decisions solely on valid job requirements.

We prohibit discrimination or harassment against any employee or applicant on the basis of race/ethnicity, sex, or other protected categories listed within our Code of Business Conduct and Ethics. We are committed to a harassment free workplace, supported with online and face-to-face workplace harassment and discrimination prevention training for our leaders and employees.

We seek to engage with a broad range of candidates for open positions and undertake initiatives such as active participation in veteran and other jobs fairs aimed at increasing diversity and fostering inclusion.

Diverse, Multi-Generational Workforce
We are committed to fostering an inclusive work environment where our diverse, multi-generational workforce can succeed. For example, we offer family-friendly, flexible work schedules for many job functions, where we can without interfering with business requirements, including a 9/80 schedule, half-day Fridays, and flexible time to begin and end the workday. These flexible work schedules help to manage work commutes and address the needs of four generations in the workplace by balancing work and life commitments.

Job Openings Posted on Diversity Sites
We use the services of a major job posting board with over 1,000 diversity partners including companies and organizations that specifically target and attract women, minorities, veterans, and individuals with disabilities.

We also partner with a job-delivery company to post job openings with local employment offices and community-based organizations that focus on women, minorities, veterans, and individuals with disabilities. Some of the websites for these organizations include *Hire a Hero*, *Job Opportunities for Disabled American Veterans*, *RecruitABILITY,* and *U.S. Diversity*.

Military Benefits and Recruiting
Military veterans have tools and skills that translate into what we do every day. We value the leadership, drive, discipline, and strong work ethic that is developed in the military. We are committed to providing opportunities to veterans and do so by building partnerships with military-focused recruiting companies and attending job fairs that focus on placing veterans. Further, we value our employees who are uniformed service members and want them to feel supported when called to active military duty. When actively deployed, we provide employees the difference between their Kinder Morgan pay and their active military pay for up to two years.

Genesys Works Program
We are a partner with the Genesys Works program in Houston, Texas. Genesys Works is a non-profit organization that provides meaningful corporate internships to local high school students from underserved communities, primarily serving minority students. We currently have nine motivated and high-potential students from the Genesys Works program engaged in an internship with us. During their

internships, students are able to develop their business skills, gain professional work experience, and create a plan for a successful future.

Cristo Rey Work Study Program
We are a partner with the Cristo Rey Jesuit Work-Study Program. Cristo Rey Jesuit is a private high school offering a rigorous college preparatory education to young people of limited economic resources who live in Houston. 95% of Cristo Rey students are racial minorities. The program places students in Houston businesses where they earn up to 50% of the cost of their education and develop and hone social and technical skills in the workplace. In 2018, we had eight students participating in this work-study program.

College Internship Program
Building Opportunities through Learning Together (BOLT) is a successful paid internship program for college students. This 11 to 12-week program provides our interns with an opportunity to use their newly-gained skills on a challenging project. Each student is assigned a Kinder Morgan mentor and supervisor who guides them throughout their internship. Supervisors are responsible for determining project scope and conducting periodic evaluations of their intern's progress. At the end of the program, interns make presentations to their business segment management, peers, and HR.

12.3 Human Capital Development Programs
(GRI 404-1 and 404-2)

Our employees are an integral part of our success and we value their health, safety, and development. We encourage and support professional development and learning for our employees by offering workforce training, tuition reimbursement, and other development programs. These programs help improve recruitment, development, and retention.

In an effort to promote an open feedback culture, we engage with our employees through cross business segment teams, focus groups, and a third party administered, confidential survey. Results from this feedback give us insight into employee satisfaction and help us develop strategies to more effectively engage with our team members. As an example, the results led us to develop updated vision and mission statements in 2019 to reaffirm our direction as a company and what we want to accomplish.

Our employees have access to a LMS, a training tool used Company-wide. Through the LMS our employees can take online courses covering technical development, leadership, safety topics, and corporate policies, including our OMS and Code of Business Conduct and Ethics. In 2018, Kinder Morgan employees completed over 193,000 hours of health, safety, and emergency response training through our LMS with each employee taking an average of 17 hours of training. This equates to a roughly $10 million dollar investment in training for health, safety, and emergency response.

We support our employees' ongoing career goals and development through several programs. These programs help maximize our employees' potential and give them the skills they need to further enhance their careers.

New Employee On-boarding Orientation Program
We understand that developing our employees' skills starts from day one. New employees participate in an orientation program designed to help them:

- learn more about our company,
- understand processes and goals for their new positions, and

- locate the internal resources available to help them succeed.

Performance Review Program
Employee performance reviews are conducted to maximize employee productivity and provide development feedback. Our performance review program allows employees to receive a timely and objective review of their job performance at least once a year.

New Supervisor Training - Core Leadership
Our Core Leadership Training program is for newly promoted or hired leaders to successfully make the transition from an individual contributor to a first-time leader. This leadership development course takes a blended approach to learning, including:
- online learning activities,
- monthly virtual conference call roundtables to reinforce desired behaviors, and
- follow-up by participants' leaders.

The program focuses on the knowledge and skills we believe are core to being an effective leader and takes approximately six months to complete, with a time commitment of two to four hours per month.

High-Potential Employee Training - Emerging Leaders Institute
Our Emerging Leaders Institute is an internal two-year leadership-development training program designed to develop leadership bench strength. Employees who are nominated to participate in this program develop leadership skills, business acumen, and advanced presentation skills.

The Next Level Training Program
The Next Level program is based on the foundation of leaders developing leaders and is provided to employees transitioning from director-level roles to vice presidents. This program focuses on the skills needed to transition between these roles and its content includes:
- discussions with senior leadership,
- self-assessments, and
- development planning.

Tuition Reimbursement
We offer our full-time employees a tuition reimbursement program that provides employees with the opportunity to complete college level courses that encourage and support career growth.

Relocation Assistance
We provide relocation assistance to eligible employees to provide career development opportunities that may become available at our other locations.

13.0 Community Relations

13.1 Processes to Manage Risks and Opportunities Associated with Community Rights and Interests *(SASB Exploration & Production EM-EP-210b.1, GRI 413-1)*

Our neighbors, governments, and communities play an important role in how we conduct our business. We live, work, and play in these communities. Our policies are designed to facilitate our building trust and fostering collaboration within the communities in which we operate, including our commitment to:
- community engagement,

- respect,
- transparency and responsiveness,
- negotiate in good faith,
- training,
- fairness, and
- responsible construction.

We continually engage our leadership and resources to effectively fulfill these requirements. Our internal Corporate Communications and Public Affairs employees help develop and implement our community relations strategies to reach a variety of stakeholders identified through our stakeholder mapping. In addition, project-specific team members help fulfill our commitment to communicate and work with communities in an effort to build trust and foster collaboration.

Our internal guidelines recognize that it is important to identify project stakeholders, determine their needs and expectations, and then monitor and work with them on meeting those needs and/or expectations as appropriate.

As described in *Section 6.1 Environmental Management Policies and Practices for Active Operations*, we take our local stakeholders' concerns and feedback into consideration during the development of our growth projects. This process helps address potential issues prior to the start of construction. During construction we also consult with stakeholders directly affected by our operations. This dialogue is intended to help us resolve issues as they arise or, better still, prevent issues from arising in the first place. The following *Section 13.1.1 Stakeholder Engagement and Consultation Mechanisms* describes additional ways we engage with stakeholders.

We participate in industry trade associations to further communicate the benefits of our customers' products and our services. We serve on communications committees where we assist in the development of communication materials that address topics such as:

- safety,
- construction,
- restoration activities,
- environmental considerations, and
- the social and economic benefits of the industry.

We share messages through a variety of delivery methods, such as:

- social media,
- our website,
- our employee ambassador program,
- targeted print advertising, and
- media statements.

For more information, see our Community Relations Policy at https://www.kindermorgan.com/content/docs/Community_Relations_Policy.pdf.

13.1.1 Stakeholder Engagement and Consultation Mechanisms

We strive to build and maintain healthy relationships throughout the areas where we operate. Many of our Community Relations Policy commitments are accomplished through ongoing stakeholder engagement and consultation.

We have helped develop, establish, and promote industry best practices for stakeholder engagement. We are committed to making stakeholder engagement a priority on our projects. In 2015, we participated in a working group to provide input to the FERC's *Suggested Best Practices for Industry Outreach Programs to Stakeholders*.[33] This guidance provides an overview of common practices and highlights how to effectively engage stakeholders during the application process for siting, construction, and operation of interstate natural gas facilities and LNG terminals, such as conducting open houses and presenting at community meetings.

For new projects, our Public Affairs department develops a project-specific outreach and stakeholder engagement plan and timeline to notify stakeholders early about the project and to open and establish lines of communication. We respond to stakeholder feedback on each project and incorporate that feedback into the project planning process, including community engagement and community development planning.

We offer stakeholders a variety of ways to contact us about major growth projects, such as project specific:

- toll-free phone numbers,
- email addresses,
- websites,
- public meetings, and
- in-person meetings.

Throughout a project's timeline, our personnel may interact with a wide array of stakeholders, such as:

- elected officials,
- media outlets,
- landowners,
- local citizens groups,
- protesters, and
- other members of the public.

We have systems in place for communicating with these different interests and training in place for project employees and contractors to prepare them for interactions with varying audiences. Initial project briefings and training sessions educate employees and contractors on communication procedures and resources. This training also provides:

- an overview of our Company,
- an overview of the project, and
- the project's purpose and benefits.

The training reiterates the importance of being a good neighbor in the communities where the project is located. We also provide instructions for accessing relevant project personnel when needed to respond to specific stakeholder questions.

The following table summarizes examples of ways we regularly engage and consult with stakeholders, including in the early stages before, during, and after the construction of projects.

[33] FERC Office of Energy Projects. "Suggested Best Practices for Industry Outreach Programs to Stakeholders." FERC. July 2015. 2019. <https://www.ferc.gov/industries/gas/enviro/guidelines/stakeholder-brochure.pdf>.

Landowners	Community Members	Emergency Responders	Government and Regulators
Town halls and open houses	Town halls and open houses	In-person meetings	Delivering and managing regulatory compliance
In-person meetings	In-person meetings	On-line emergency responder training	Public policy and legislative issue engagement
Home and site visits	Project websites	Facility tours	Industry group involvement
Project websites	Social media	Emergency response tabletops and exercises	Facility tours
Social media	Community investment programs	The Responder E-newsletter	In-person meetings
Public awareness communications	Employee volunteer projects	Emergency Response Plans	
	Partnerships with local and regional organizations	Public awareness communications	

Our website, www.kindermorgan.com, includes information about our current key growth projects and provides the following types of project information:

- overview descriptions,
- fact sheets,
- maps,
- contacts, and
- other background information.

For our largest projects, we often also create project-specific websites. We provide contact information on our webpage where stakeholders can obtain further information if they have a question or concern about a projects' development or operation.

13.1.1.1 Public Awareness Program

Keeping our communities safe is of utmost importance and we keep local stakeholders informed about pipeline safety through our Public Awareness Program.

Our Public Awareness Program is designed to:

- create public awareness about pipelines in the areas where we operate,
- provide important safety information to people living and working near our pipelines,
- increase knowledge of the regulations for working around pipelines,
- prevent damage to our pipelines,
- educate first responders and the public on our emergency preparedness response activities, and
- enhance public safety.

Our program was developed under federal pipeline safety regulation consultation guidelines.[34] Our program is an example of our ongoing stakeholder consultations in which we engage with, provide information to, and receive feedback from our stakeholders.

We target communications with the following stakeholder groups as part of our outreach plans:

- residents,
- business owners,

[34] DOT-PHMSA. "Public Awareness Programs: API RP 1162." DOT-PHMSA. Dec. 2003. 2019. <https://primis.phmsa.dot.gov/comm/PublicAwareness/PARPI1162.htm>.

- farmers and ranchers,
- schools,
- contractors, and
- government officials.

Our program advocates pipeline safety and safe digging practices to the public through multiple avenues, including:

- brochures;
- newsletters;
- newspaper, magazine, radio, and television advertisements;
- direct contact; and
- our website at https://www.kindermorgan.com/pages/public_awareness.

The type, language, and formatting of the communication is selected based on the target audience and message to be delivered.

To more effectively manage our program's engagement strategy, we maintain a Public Awareness Program evaluation plan that includes the measures for tracking performance. We track our stakeholder engagement interactions and our responses to comments on a monthly basis. To evaluate the effectiveness of our program, we conduct baseline and supplemental public awareness surveys. We assess progress on the following measures to evaluate whether our public awareness actions are achieving the following intended goals and objectives:

- information is reaching the intended stakeholder audiences;
- recipient audiences understand the messages being delivered;
- recipients are motivated to respond appropriately in alignment with the information provided; and
- the program is impacting the underlying intended results, such as reduction in the number of incidents caused by third-party damage.

We also conduct audits to assess the program and identify improvements for the program design or implementation.

We place a high value on public safety and seek to educate the public to increase not only their understanding of pipeline locations and potential hazards, but also how to identify and respond to a potential leak.

In addition to our Public Awareness Program, our project-specific emergency response plans detail how to communicate with external stakeholders to more effectively resolve potential concerns quickly and safely.

For more information about our Public Awareness Program, see our website at https://www.kindermorgan.com/pages/public_awareness/residents/default.aspx.

For more information about our Responder E-newsletter, see our website at https://www.kindermorgan.com/pages/public_awareness/The_Responder/default.aspx.

13.2 Social Investment Programs

We are committed to giving back to the communities in which we operate. We actively look for opportunities for our employees to get involved in community programs and strengthen their relationships with our stakeholders.

Connect.Inspire.Give
We launched a redesigned volunteer program in 2018 that includes additional volunteer opportunities in the local community, including drives for school supplies, toys, pet food, and other community needs.

Our volunteer program schedule includes many diverse events such as:

- fun runs benefiting non-profits,
- repairing homes for the elderly and disadvantaged,
- working at a food pantry,
- restoring parks and trails,
- feeding the homeless community, and
- working with Special Olympics athletes.

The goal of our program is to enable employees to connect with each other and the community while working toward a common goal. We hope that the organizations we support through these efforts inspire employees to give their time, talent, and donations. The program provides our employees an opportunity to connect with other employees in various departments and learn more about their community, improve morale, and develop new skills while improving peoples' lives.

Business Segment Community Investments
We are committed to investing in the communities in which we operate. We budget funds annually to distribute to community organizations and initiatives across our business segments and operating regions. The community organizations receiving these contributions typically fit into one of the following categories:

- public safety and emergency response,
- children's educational or athletic programs, or
- environmental sustainability and education.

Contributions are also made to local organizations supporting recovery efforts from natural disasters.

Below are some of the local organizations to which we contributed in 2018:

- Tucson Clean and Beautiful in Tucson, AZ - Trees for Tucson Campaign
- The North Valley Community Foundation in Chico, CA - Camp Wildfire Relief Fund
- Cortez Parks Department in Cortez, CO - Community Garden Program
- Elk Grove Community Council in Elk Grove, CA - Tree Planting Program

Project Community Investments
In addition to the community investments made on behalf of the business segments, we also make community investments in areas where major growth projects are proposed or under construction. These contributions are targeted toward local organizations that focus on children's programs, either in academics or athletics, local public safety and emergency response, or environmental sustainability. Recipient organizations are identified in coordination with local stakeholders in the project area including elected officials and local NGOs.

Some examples of these projects include:

- Madison Parish Sheriff's Department in Tallulah, LA - Bulletproof Vest Program
- The Lake Pontchartrain Basin Foundation in Metairie, LA - "Save our Lake" Campaign
- Waynedale High School in Waynedale, OH - Athletics Program
- Caldwell County Junior Livestock Show in Lockhart, TX

Kinder Morgan Foundation
The Kinder Morgan Foundation's mission is to provide today's youth with opportunities to learn and grow in order to become tomorrow's leaders. The Kinder Morgan Foundation's goal is to help today's science, math and music students become the engineers, educators, and musicians who will support our diverse communities for many years to come. To accomplish this goal, the Kinder Morgan Foundation funds programs that promote the academic and artistic interests of young people in select cities and towns where we operate across North America. The Kinder Morgan Foundation's goal is to donate more than $1 million to qualifying 501(c)(3) organizations in the U.S. and Canada each year.

In 2018, the Kinder Morgan Foundation's activities donated to 614 organizations that provide educational, arts, and cultural programs serving approximately 4.7 million students. The Kinder Morgan Foundation requires that organizations submit applications for consideration and, once accepted, provide reports detailing both the results of the program throughout the year and the level of community development achieved as a result of the funding they received.

The Kinder Morgan Foundation provided disaster relief assistance to organizations, such as the Red Cross and Salvation Army, in 2016, 2017, and 2018 when natural disasters significantly impacted our operations or employees. These funds were awarded based on the size and scale of the disaster and determined based on needs assessed by local operations.

The Kinder Morgan Foundation also funded our Employee Matching Gift Program. This program matches gifts made to university foundations, K through 12 education foundations, and non-profits that support arts and culture. Our full-time employees are each eligible to receive an employee matching grant of up to $2,000 per calendar year to a qualifying organization.

14.0 Human Rights and Rights of Indigenous Peoples

14.1 Human Rights
(SASB Exploration & Production EM-EP-210a.3, GRI 103-2, GRI 408-1, GRI 409-1)

Our business is driven by our core values of:
- integrity,
- accountability,
- safety, and
- excellence.

We expect our employees and representatives to:
- act with integrity,
- do the right thing, and
- treat everyone with respect.

We consider compliance with laws and support of fundamental human rights to be basic responsibilities in conducting our business. We support the United Nations Global Compact Human Rights Principles, derived from the United Nations Universal Declaration of Human Rights, which are:
- Principle 1: businesses should support and respect the protection of internationally proclaimed human rights; and
- Principle 2: business should make sure they are not complicit in human rights abuses.

We prohibit the use of child labor or forced labor in our operations in the U.S., Canada, and Mexico. Our employees and contractors, with the exception of some interns, must be at least 18 years of age.

We also recognize and respect our employees' right to join associations for the purpose of collective bargaining in a manner that is consistent with applicable laws, rules, regulations and customs.

Our employees, consultants, contractors, suppliers, vendors, and business partners are expected to:

- treat people with dignity and respect with respect to human rights,
- adhere to standards of conduct consistent with our Code of Business Conduct and Ethics when conducting Company-related business activities, and
- adhere to our Human Rights Statement.

In the event anyone witnesses or learns of an incident that may involve an ethics, compliance or human rights violation, they can it report it to the Kinder Morgan Ethics Hotline. Our ethics hotline allows the report to be made confidentially and anonymously.

Within the areas of our activity and influence, we are committed to:

- being attentive to concerns raised by stakeholders,
- working with stakeholders to support human rights, and
- providing remedies to correct negative human rights impacts.

For more information, see our Human Rights Statement at https://www.kindermorgan.com/content/docs/Human_Rights_Statement.pdf.

14.2 Rights of Indigenous Peoples

(SASB Exploration & Production EM-EP-210a.3, GRI 103-2)

We respect the diversity of culture and unique history of Indigenous Peoples. We strive to build long-term relationships and commercial partnerships with Indigenous Peoples through meaningful engagement based on mutual respect. In the course of our projects and operations, we conduct business with Indigenous Peoples consistent with our Code of Business Conduct and Ethics and our Indigenous Peoples Policy. We engage in good faith with community members while communicating and cooperating with affected Indigenous Peoples. We are committed to:

- participating in good faith engagement;
- continuing to partner with community members in suitable employment opportunities, as well as education, commercial, and community development opportunities;
- identifying opportunities to support youth, education, culture, and the environment; and
- negotiating in good faith with indigenous and government entities.

For more information, see our Indigenous Peoples Policy at https://www.kindermorgan.com/content/docs/Indigenous_Peoples_Policy.pdf.

In June 2017, the Financial Stability Board's TCFD published its recommended climate-related financial disclosures structured around the four thematic areas shown below. Our disclosure follows the TCFD structure.

Core Elements of TCFD's Recommended Climate-Related Financial Disclosures[35]

Governance
The organization's governance around climate-related risks and opportunities

Strategy
The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning

Risk Management
The processes used by the organization to identify, assess, and manage climate-related risks

Metrics and Targets
The metrics and targets used to assess and manage relevant climate-related risks and opportunities

In this our second TCFD Report, we have updated our disclosure after considering the feedback we received from investors and other stakeholders, additional published guidance, and TCFD reports issued by our customers and other energy companies. The TCFD defines a 2°C scenario as one that lays out a pathway and an emissions trajectory consistent with holding the increase in the global average temperature to well below 2°C above pre-industrial levels.[34] In 2019, we conducted an assessment of our business strategy under the 2°C scenario, which is discussed in *Section 2.0 Strategy* below. By 2021, we expect to have in place the processes, controls, and systems necessary to report our Company-wide Scope 1 and 2 greenhouse gas emissions.

We regularly identify, assess, and manage the risks, opportunities, and financial information that the TCFD identifies to be "climate-related." We do not regularly use the term "climate-related" in our internal discussions. Consequently, when this report refers to climate discussions or considerations in connection with our reviews, reporting, planning, and decision making, we are using the broader TCFD meaning.

[35] "Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures." Task Force on Climate-related Financial Disclosures. 15 June 2017: 27. 2019. <https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-2017-TCFD-Report-11052018.pdf>.

1.0 Governance

1.1 Board Oversight
(CDP CC1.1)

Our Board is responsible to our stockholders for the oversight of our Company. We recognize that effective governance is critical to achieving our performance goals while maintaining the trust and confidence of our various stakeholders, including our:

- investors,
- lenders,
- customers,
- employees,
- business partners,
- regulatory agencies,
- underwriters, and
- other stakeholders.

As part of its responsibilities, our Board oversees the assessment of our major business risks and opportunities, and the measures we take to mitigate and address such risks and opportunities. Our Board is briefed regularly by our CEO, President, CFO, CSO, and General Counsel, and periodically by each business segment president, on the following areas:

- business strategies,
- business risks and opportunities,
- major plans of action,
- annual budgets,
- business plans,
- capital expenditures for major expansion, and
- acquisitions and divestitures.

In reviewing and providing guidance in each of these areas, our Board assesses our assets and long-term business strategy for resilience and adaptability to risks and opportunities.

While our Board is ultimately responsible for risk and opportunity oversight, various Board committees assist our Board in fulfilling its responsibilities by considering the risks and opportunities within their respective areas of expertise. Our Board has delegated to the EHS Committee oversight of EHS risk and opportunity management, which may include climate-related risks and opportunities. The EHS Committee consists of independent directors appointed by the Board. Board members with experience in EHS and regulatory matters assist in confirming that we are operating consistent with best practices and that environmental and safety matters are properly considered in Board decisions. In 2019, an additional independent Board member was added to the EHS Committee, increasing its membership from three directors to four. The EHS Committee meets at least semi-annually and reviews reports on EHS issues from our Vice President of Corporate EHS. Any Board member may elect to attend the EHS Committee meetings. Our CEO, President, and other Board members, with few exceptions, attend and participate in the regularly scheduled EHS Committee meetings.

Through the EHS Committee, the Board also provides direction to management about ESG disclosure in conjunction with the ESG Disclosure Committee, which consists of the CEO, President, CFO, Business Segment Presidents, General Counsel, Treasurer and Vice President of Investor Relations, and Vice

President of Corporate EHS. In 2018 and 2019, the EHS Committee reviewed the progress and results of the scenario analysis conducted to test the resilience of our business strategy. Through the EHS Committee, the Board provided direction to the Vice President of Corporate EHS on EHS, sustainability, and climate-related issues. It also established performance expectations with the CEO, President, and Vice President of Corporate EHS for the management of these issues.

1.2 Management's Role
(CDP CC1.2)

Our CEO and President assign to our business segment presidents, corporate function heads, and subject matter personnel the responsibility for assessing and managing actual and potential risks and opportunities, including those related to climate. These individuals, in turn, use various management systems to assist them with their responsibilities.

Our Vice President of Corporate EHS is responsible for providing strategic leadership for EHS matters, including matters related to climate. Our Vice President of Corporate EHS is responsible for engaging with investors, lenders, customers, regulators, and employees on ESG-related matters, including our risks and opportunities. Our Vice President of Corporate EHS is also responsible for implementing procedures and controls to track the data necessary for the preparation of our Report, and for sharing our results with other senior management and our Board's EHS Committee.

Our CEO and President use a series of regularly scheduled meetings to engage with our business segment presidents, corporate function heads, and subject matter personnel on issues related to our business. We use those meetings to monitor progress and performance and to discuss risks and opportunities, including, where appropriate, climate-related risks and opportunities and plans to address such risks and opportunities. The frequency of these meetings creates a cycle of ongoing assessment and improvement, as action plans are initiated and adjusted based on new information and past experience. The regular cadence and varied length of the meetings, from a few hours to most of a business day, permits extended discussion and regular follow-up on a wide range of action items. The meetings are typically scheduled one year in advance and include:

- Weekly financial and operational review meetings - CEO and President meet two hours each week to review with business segment presidents and corporate function heads:
    - financial performance of business for the week, month, quarter and year,
    - EHS incidents,
    - capital project progress, and
    - near-term business development opportunities and risks;
- Monthly earnings meetings - CEO and President review actual financial results for the month and the quarter;
- Quarterly business reviews - Respective business segment presidents, COOs, and function heads provide the CEO and President with a "state of the business" presentation, including medium- to longer-term:
    - strategies,
    - market trends,
    - business risks and opportunities, and
    - regulatory and litigation updates;

  Once or twice a year these reviews may also include a long-range outlook financial projection;
- Quarterly operations meetings - business segment COOs and the Vice President of Corporate EHS share knowledge and best practices across business segments and review progress on actions taken to improve safety and performance;

- Annual budget reviews - CEO and President review with business segment presidents and corporate function heads annual budgets prepared by each and establish financial targets and operational metrics against which to evaluate performance in the coming year; and
- Major project reviews (occur monthly to quarterly) - For projects with capital budgets greater than $10 million, the CEO or President reviews with business segment presidents and project management personnel:
    - project progress,
    - risks and opportunities,
    - completion dates, and
    - performance vs. budget.

A wide range of professionals in our organization typically attend these recurring meetings. Participants include employees with subject matter knowledge applicable to managing risks and opportunities, including:

- technology development;
- business administration;
- strategic management;
- finance and accounting;
- environmental and energy policy, law, and compliance;
- engineering and earth sciences;
- business continuity planning;
- energy markets and marketing;
- legal;
- insurance; and
- public relations.

For more detail on these regularly scheduled, recurring meetings, please see *Section 3.0 Risk and Opportunity Management* below.

These meetings focus senior management's attention on near-, medium-, and long-term business risks and opportunities with substantial input from subject matter personnel. In addition, senior management engages in ad hoc meetings on an as-needed basis to:

- review and approve new projects and acquisitions,
- review with industry consultants and other experts long-term trends (e.g., demand and supply) for the products we transport and handle, and
- identify and understand disruptive technologies or emerging policies.

The knowledge and information senior management gains from these meetings are presented to the Board regularly. The Board, in turn, uses the work done at the management level to inform its decisions about the Company's future direction.

2.0 Strategy

The fundamental principles of our business strategy are to:

- focus on stable, fee-based energy transportation and storage assets that are central to the energy infrastructure of growing North American domestic and export markets;
- increase utilization of our existing assets while controlling costs, operating safely, and employing environmentally sound operating practices;

- leverage economies of scale from incremental acquisitions and expansions of assets that fit within our strategy and are accretive to cash flow; and
- maintain a healthy financial profile and return value to our stockholders.

Our forward-looking strategies and financial decisions are driven primarily by market opportunities and corporate objectives and responsibilities. We make long-term strategic decisions with the intention of creating sustainable competitive advantages. To sustain and improve upon our market position, we project and plan for reasonably foreseeable changes, including changes to governmental regulations, which could potentially impact our business and the markets in which we operate. We respond to such changes as they occur. Market and policy responses to climate change have been and can be a factor in our forward-looking strategic and financial decision-making.

We modify our strategy as necessary to reflect changing economic conditions and other circumstances, including, among other factors, those related to identified or reasonably anticipated impacts of climate change. We invest in our assets to operate them safely and to protect our employees, the environment, and the communities in which we operate. We work collaboratively within our industry and with governments, environmental groups, Indigenous Peoples, and communities to build our understanding of the issues around climate change and seek potential solutions. We contribute to and embrace responsible changes in government policy and regulations in North America and implement them as they emerge.

Our understanding of and planning for climate-related impacts potentially affecting our business are increasingly important because our business model is designed to support two principal objectives:
- helping customers by providing safe and reliable natural gas, liquids products and bulk commodity transportation, storage and distribution services; and
- creating long-term value for our shareholders.

2.1 Potential Climate-Related Risks, Opportunities, and Impacts
(CDP CC2.1)

Our customers include major oil and natural gas companies, energy producers and shippers, local distribution companies, and businesses across many industries. In most of our businesses, we operate like a giant toll road and receive a fee for our services, generally avoiding commodity price risk. In our CO_2 business, where we are exposed to commodity price risk, we employ a hedging strategy to partially mitigate that risk. Because our customers generally own the commodities we transport, the impact of climate-related risks and opportunities on us are often derivative of the impact on our customers.

Our management system integrates the identification, assessment, and management of risks and opportunities across various time horizons, including climate-related risks and opportunities where appropriate. As discussed in *Section 1.2 Management's Role* above, we use a series of meetings to monitor the performance of our businesses and to identify and address opportunities and risks over a variety of time horizons, including:
- Near-term - immediate to one year
    - Management process:
        - weekly, monthly, and quarterly financial and operational reviews
        - annual budget reviews
    - Examples of climate risks and opportunities that are considered:
        - legislative and regulatory proposals and changes that are likely to affect our business or that of our customers
        - extreme weather event identification, preparation, and recovery

        - energy efficiency and alternative sources of energy
        - emission controls
        - compliance costs
- Medium-term - one to five years
    - Management process:
        - quarterly business reviews
        - long-range outlook
        - project approval meetings
    - Examples of climate risks and opportunities that are considered:
        - changes in demand for services or changes in customer preferences
        - potential production capacity increases and efficiency gains
        - change in our ability to obtain permits or other regulatory approvals
        - public opposition due to climate concerns
- Long-term - five to 30 plus years
    - Management process:
        - quarterly business reviews
        - ad hoc meetings with experts
    - Examples of climate risks and opportunities that are considered:
        - changes in long-term demand for the products we transport and store
        - potential lower emission product options or product replacements
        - changes in public policy that may affect growth opportunities in our traditional lines of business
        - CO_2 sequestration opportunities

The TCFD divides climate-related risks into two categories: transitional and physical. Transitional risks are those risks related to the transition to a lower-carbon economy, such as policy constraints on emissions, carbon taxes, and shifts in market demand and supply. The TCFD groups transitional risks into four categories:

- policy and legal risk,
- technological risk,
- market risk, and
- reputational risk.

Physical risks are those associated with physical impacts from climate change that could affect assets and operations. Physical risks include the disruption of operations and/or destruction of property. The TCFD divides physical risk into acute and chronic risks. Acute risks include physical damage from variations in weather patterns, such as severe storms, floods, and drought. Chronic risks include sea-level rise and desertification.

Both transitional and physical climate-related risks may affect our business. As such, we seek to include reasonably anticipated regulations and policy decisions into our business models and project planning.

Expanding our existing assets and constructing new assets is part of our growth strategy. A variety of factors outside of our control can cause delays in our construction projects. Some examples of these factors include difficulties in obtaining rights-of-way, permits, other regulatory approvals, or public opposition. Inclement weather and natural disasters can increase costs or cause construction delays. Significant cost overruns or lengthy delays can have a material adverse effect on our return on investment, results of operations, and cash flows. These factors can result in project cancellations or limit our ability to pursue other growth opportunities.

Some of our assets are located in areas susceptible to natural disasters, such as:

- hurricanes,
- earthquakes,
- forest fires,
- tornadoes,
- flooding, and
- other natural disasters.

Our shipping vessels operate in areas with similar risks.

Natural disasters can damage or destroy our assets or disrupt the supply of the products we transport or store. In the third quarter of 2017, Hurricane Harvey caused disruptions in our operations near the Texas Gulf Coast requiring approximately $45 million in repair costs, approximately $10 million of which was not recoverable through insurance. Natural disasters can similarly affect our customers' facilities. Circumstances could arise in which our losses could so exceed our insurance coverage that those losses result in a material adverse impact to our assets, financial condition, and operating results.

The two tables below contain a list of potential transitional and physical risks, as well as the following:

- potential financial impacts related to such risks,
- available strategy and mitigation measures for such risks, and
- page numbers where the topics are discussed in our Report.

Potential Transitional Risks

Potential Climate-Related Risk	Potential Financial Impact	Available Strategy and Mitigation Measures	Page
Policy & Legal			
– Increased climate change-related regulation and policies resulting in: ◦ higher emission fees and carbon taxes ◦ higher fuel prices ◦ additional emission reporting obligations ◦ mandates on and regulation of customers' products or our services	– Increased compliance costs – Increased fuel costs – Reduced demand for our traditional services	– Engaging with regulators, industry organizations, and NGOs – Systematic monitoring of regulatory proposals and implementation of compliance programs – Offsetting, reducing, and managing emissions – Managing energy use and improving efficiency – Developing new services	– p 10 – p 67 – p 14 – p 12 – p 67

Potential Transitional Risks

Potential Climate-Related Risk	Potential Financial Impact	Available Strategy and Mitigation Measures	Page
Technology			
– Substitution of customers' existing products with lower emission options – Lower potential demand for existing products due to greater energy efficiencies	– Reduced demand for our traditional services – Increased write-offs and earlier retirement of existing assets – Increased customer credit risk, including bankruptcies	– Negotiating contracts with longer terms, with higher per-unit pricing, and for a greater percentage of our available capacity – Adjusting investment evaluation assumptions to assume lower uncontracted cash flows and terminal values – Continued discipline in accounts receivable management and customer credit protections – Developing new services	– p 65 – p 65 – p 65 – p 66
Market			
– Changing consumer behavior reducing demand for customers' products – Uncertainty in market signals – Increased cost of raw materials	– Reduced demand for our traditional services – Increased production costs due to higher energy prices – Abrupt and unexpected shifts in energy prices and costs – Repricing of oil field reserves	– Negotiating contracts with longer terms, higher per-unit pricing and for a greater percentage of our available capacity – Managing energy use and improving efficiency – Risk management and hedging programs	– p 65 – p 12 – p 65
Reputation			
– Stigmatization of sector – Increased stakeholder concern or negative stakeholder feedback	– Increased cost of capital – Increased cost of public relations – Decreased access to public capital markets	– Adjusting ESG disclosure to target the financial sector by reporting per SASB, TCFD, and other reporting frameworks – Reducing need to access capital markets, increased internal funding – Working to reduce our carbon footprint	– p 1 – p 65 – p 7

Potential Physical Risks

Potential Climate-Related Risk	Potential Financial Impact	Available Strategy and Mitigation Measures	Page
Acute			
– More frequent and severe weather events (e.g., hurricanes, floods, extreme heat, extreme cold, droughts, extreme snow and ice) leading to business interruption and damage across operations and supply chain	– Reduced revenue as a result of business interruption – Increased write-offs and costs for damaged property – Increased insurance costs	– Business continuity planning – Environmental assessments and management plans – Maintaining the necessary types and amounts of insurance	– p 35 – p 19 – p 65
Chronic			
– Long-term shifts in climate patterns, possibly resulting in new storm patterns, coastal flooding, and chronic heat waves	– Increased costs for damaged property and adaptation improvements	– Business continuity planning	– p 35

The TCFD recognizes that an organization's efforts to mitigate and adapt to climate change may also produce opportunities for the organization. The TCFD groups those opportunities into five categories:

- resource efficiency,
- energy source,
- products and services,
- markets, and
- resilience.

As an energy infrastructure company, we recognize and expect that future energy demand will continue to be met in part by a growing proportion of renewable energy sources. Today, the world still relies on coal, oil, and natural gas for the majority of its energy needs. While delivering access to the secure energy the world needs, we pursue opportunities that also benefit the global effort to address climate change. Specifically, we are:

- expanding our natural gas transmission business, making access to lower carbon energy more feasible;
- pursuing opportunities internally and within the industry to increase efficiency along our and our customers' value chains;
- making economic energy efficiency improvements in our operations; and
- exploring new low-carbon technologies and business models.

The following table contains a brief listing of:

- potential opportunities,
- potential financial impacts,
- our strategy and enhancement measures, and
- page numbers where the topics are discussed in our Report.

Potential Opportunities

Climate-related Opportunities	Potential Financial Impact	Available Strategy and Enhancement Measures	Page
Resource Efficiency			
– Using more efficient equipment – Using more efficient production and distribution processes	– Reduced operating costs through efficiency gains and cost reductions – Increased production capacity, resulting in increased revenues	– Increase utilization of our existing assets – Leverage economies of scale from incremental acquisitions and expansions of assets	– p 58
Energy Source			
– Using lower-emission sources of energy – Using supportive policy incentives – Using new technologies – Participation in the carbon markets – Shifting toward decentralized energy generation	– Higher returns on investment in low-emission technology – Increased capital availability as more investors favor lower-emissions products – Reputational benefits resulting in increased demand for services – Increased value of fixed assets	– Largest portion of capital allocation is to lower-carbon natural gas infrastructure – Develop new services	– p 65
Products and Services			
– Developing and/or expanding low emission goods and services – Diversifying business activities – Responding to shifting consumer preferences	– Increased revenue through demand for lower emissions products and services – Better competitive position to reflect shifting consumer preferences, resulting in increased revenues	– Largest portion of capital allocation is to lower-carbon natural gas infrastructure – Develop new services	– p 65
Markets			
– Increased demand for natural gas services – Use of public-sector incentives for carbon sequestration – Increased demand for reliable fuel for power generation	– Increased revenue from increased demand for natural gas gathering, processing, transportation, storage, and distribution – Increased revenues through access to new and emerging carbon sequestration markets	– Largest portion of capital allocation is to lower-carbon natural gas infrastructure – Pursuit of carbon sequestration opportunities – Develop new services focused on deliverability	– p 65
Resilience			
– Participation in renewable energy programs and adoption of energy efficiency measures	– Increased market valuation through resilience planning – Increased reliability of supply chain and ability to operate under various conditions	– Business continuity planning	– p 35

2.2 Financial Planning Considerations

We identify and develop plans for managing a variety of risks and opportunities when allocating capital to our assets, establishing capital project and operating budgets, and developing our long-range outlook. Climate-related risks and opportunities typically manifest themselves indirectly through fundamental financial considerations. For example, embedded in the supply and demand projections we use are the expected effects of climate-related factors such as changing consumer behavior, energy efficiencies, and competing products and services. Where relevant and available, operating and capital project budgets include expected costs for climate-related expenses, such as environmental permitting, emission monitoring, emission reporting, emission fees, emission offsets, carbon taxes, business continuity planning, and insurance. When we anticipate increased opposition to our capital projects, including climate-related opposition, we adjust our project schedules and budget for community relations activities. Our annual budgets may include budget targets based on reduced energy consumption, which results in fewer Scope 2 emissions. These targets are achieved through our activities described in *Section 3.3.4 Energy Management* and are part of our strategy to manage our Scope 2 emissions.

We prioritize risks and opportunities based upon likelihood and significance. We typically give highest priority to potential risks and opportunities we consider more probable and most significant. When we assess capital allocation decisions, we may adjust required levels and thresholds in the following criteria:

- rates of return on capital;
- payback periods;
- market demand projections;
- projected operating costs, including compliance costs;
- terminal value projections;
- customer contract durations;
- customer and equity partner creditworthiness and protections;
- customer and equity partner concentration;
- per-unit pricing;
- percentage of contracted capacity; and/or
- level of equity participation and partnership.

When potential climate-related risks are more likely, such as reduced demand for our customers' products as a result of changing consumer behavior, we may reduce estimated or projected revenue after initial contract expiration and/or adjust terminal value. For example, when evaluating expansion projects on our refined product pipelines, in some instances we have reduced estimated or projected revenue after expiration of the initial contract term and/or used a zero terminal value at the end of the period over which our customers have contracted for the additional services provided by the expansion.

When we are less certain of a project's risks or opportunities, we adjust our financial model to, for example, increase the hurdle rate for investment in the project. In addition to higher returns, our preference is for higher quality cash flow, meaning stable, more certain cash flows backstopped by long-term contracts from credit-worthy customers. We prioritize our expansion capital investments to projects where we have contracts with credit-worthy customers that allow us to recover our capital within the length of the contracts' terms. We accept that our disciplined focus on these types of opportunities sometimes restrains our pursuit of higher-risk projects. This approach reduces our exposure to medium and long-term market risks, including climate-related risks.

We have a systematic, disciplined approach to managing counterparty credit risk through a weekly review of accounts receivable, customer credit-worthiness, and required credit protections. We also have developed and continue to improve our culture of thoughtful cost control.

2.3 Resilience of Our Strategy

To better assess the resiliency of our business strategy under a 2°C scenario, in 2019 we established a multi-disciplinary working group with employees from each of our business segments and several of our shared services departments. The working group is comprised of individuals who understand our business and assets, including related opportunities and risks. The working group includes employees with expertise in various disciplines, including finance, legal, operations, engineering, forecasting, business development, supply chain management, energy policy, government relations, and public affairs.

To perform our resiliency assessment, we used the scenarios contemplated in the IEA's 2018 World Energy Outlook, and we considered these scenarios relative to our existing asset base. The IEA's scenarios consider the future projected energy demand and supply mix from a variety of perspectives, including:

- electricity generation sources and availability,
- transportation fuels,
- GHG emissions, and
- required investment.

We believe the IEA's scenarios are not a prediction of the future, but rather provide a common framework for analyzing the potential future global energy demand and supply mix. The assumptions underpinning the IEA's scenarios may change over time as new information becomes available. Some of the primary underlying assumptions and indicators currently in the IEA's scenarios are included in *Appendix G – Summary of Scenarios and their Underlying Assumptions and Indicators*. There can be no assurance that any of the scenario assessments we perform relative to our businesses and assets are a reliable indicator of any actual impact of climate change on our businesses and assets.

The IEA's three main scenarios include:

- Current Policies Scenario – based on existing climate-related laws and regulations in place as of mid-2018;
- New Policies Scenario – based on existing climate-related government policies, the continued evolution of known technologies, and policy ambitions announced as of August 2018; and
- Sustainable Development Scenario – based on an energy mix the IEA projects would result in holding the increase in the global average temperature to well below 2°C above pre-industrial levels, as well as advancing progress toward certain of the United Nation's Sustainable Development Goals, including achieving universal access to electricity and reducing the consequences of energy-related air pollution.

Under both the IEA's Current Policies Scenario and the IEA's New Policies Scenario, the global demand for crude oil, NGL, and natural gas is projected to grow through 2040. Given present perspectives and climate concerns, we believe it is unlikely that current policies will continue unchanged. Our current view of the North American energy mix for the foreseeable future most closely aligns with the IEA's New Policies Scenario.

For our 2° C scenario analysis, we used the IEA's Sustainable Development Scenario. Under the IEA's Sustainable Development Scenario:

- crude oil, NGL, and natural gas remain a significant portion of the global energy mix at 48% in 2040, but down from 54% in 2017;
- North American exports of oil and NGL grow from 2017 to 2040, even as world oil and NGL demand decreases by 26%; and
- worldwide demand for natural gas grows from 2017 through 2030 then gradually declines by just 3% from 2030 through 2040.

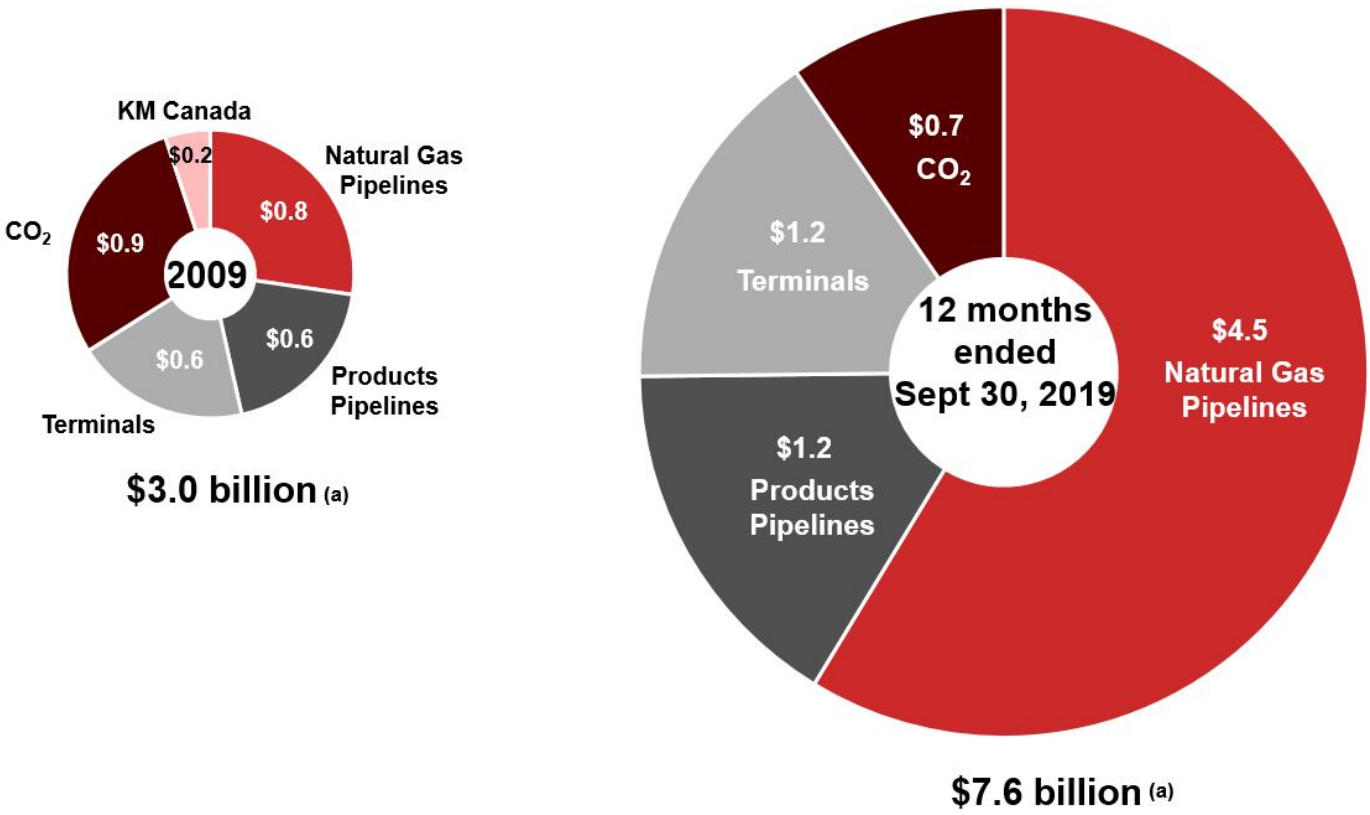
Some key assumptions and indicators of the IEA's Sustainable Development Scenario include:

- global population grows by over 1.6 billion people from 2017 to 2040, while global energy demand declines by 2% during the same period,
- global energy intensity, the ratio of primary energy supply to gross domestic product, declines by more than 50% from 2017 to 2040,
- electric passenger light-duty vehicles increase to over 930 million vehicles by 2040 from approximately three million vehicles in 2017,
- global biofuels demand expands by nearly 300% from 2017 to 2040,
- average annual investment in nuclear power is more than 3.5 times 2017 levels, and
- facilities fitted with CCUS technologies account for more than 40% of investment in fossil-fueled power plants, up from less than 2%.

2.3.1 Resiliency Assessment Results

As noted above, our business strategy is to focus on stable fee-based energy transportation and storage assets and to operate them safely and in an environmentally sound manner. We allocate capital to our assets in a disciplined manner and typically operate under multi-year contracts with our customers. We seek to be proactive in adapting to changing circumstances. Thus far, our business strategy is proving relatively effective in adapting to climate-related risks and opportunities.

Our business is divided into four business segments: Natural Gas Pipelines, Products Pipelines, Terminals, and CO_2. The majority of our growth capital expenditures have been and are expected to continue to be allocated to our Natural Gas Pipelines business segment. As a result of organic growth and acquisitions, our Natural Gas Pipelines business segment has grown dramatically since 2009 and now comprises approximately 59% of our segment earnings, up significantly from approximately 27% in 2009, as reflected by "Segment EBDA before Certain Items." Contributions by each of our business segments are presented in the following charts.



(a) For additional information regarding our use of and calculation for "Segment EBDA before Certain Items," a non-GAAP financial measure, see Part II, Item 7 included in our 2018 Form 10-K annual report, which is available through the SEC's EDGAR system at www.sec.gov and on our website at ir.kindermorgan.com.

Natural gas in North America is plentiful, inexpensive, and clean-burning relative to other fossil fuels. In the IEA's Sustainable Development Scenario, natural gas is the only fossil fuel for which projected worldwide demand in 2040 is expected to be higher than it is today.

As mentioned in *Section 3.3 Strategy to Manage Gross Global Scope 1 and 2 Emissions*, primarily as a result of using natural gas instead of coal for electricity generation, CO_2 emissions from U.S. electricity generation are nearly the same as 1988 levels despite a 33% increase in population. As the rate of renewables penetration increases, natural gas is currently expected to continue to be the fuel used to provide peaking and balancing power to meet the variable load demand requirements of electric generation.[36] This need becomes even more acute under the IEA's Sustainable Development Scenario as capacity additions of renewables accelerate to meet the goals of the Paris Climate Agreement.

Because the majority of our assets and growth projects are dedicated to natural gas, we expect to be able to maintain a sustainable economic position even in a carbon-constrained economy. We expect our expansive natural gas pipeline and storage footprint to afford us continuing opportunities to provide customer-driven solutions in a lower carbon world. Growth in renewable-firming pipeline services and infrastructure, such as market-area gas storage, is increasingly needed to supplement the variable power supply from renewable generation.[37] Greater natural gas pipeline deliverability, properly contracted and nominated, is expected to be critical to improving the reliability of electricity generated from renewable

[36] Black and Veatch, comp. "The Role of Natural Gas in the Transition to a Lower-Carbon Economy." INGAA. 07 May 2019: 2-4. 2019. <https://www.ingaa.org/Flagship2019.aspx>.
[37] Black and Veatch, comp. "The Role of Natural Gas in the Transition to a Lower-Carbon Economy." INGAA. 07 May 2019: 12. 2019. <https://www.ingaa.org/Flagship2019.aspx>.

wind and solar sources. We are expanding our service offerings to address these market needs. For example, we are putting more emphasis on marketing the deliverability and reliability of natural gas from our transportation and storage network as a complement to renewable energy.

Under the IEA's Sustainable Development Scenario, global trade in LNG is expected to increase by over 60% by 2025 and nearly double 2017 levels by 2040. Over the same time period, North American natural gas production is expected to outstrip domestic demand by approximately 9 to 12 billion cubic feet per day, making excess supply available for export to overseas markets. Our substantial natural gas transportation and storage infrastructure is connected to most major supply basins and demand markets in the U.S., including multiple LNG export facilities. As such, we believe there will be continued opportunities to use our assets to support this trade.

While natural gas has many advantages, other hydrocarbon fuels are generally affordable, dependable, plentiful, and, as a result of advancements in technology, increasingly more efficient. Hydrocarbon fuels are supported by an enormous, sophisticated, worldwide network of infrastructure. We believe it will take decades and a substantial investment of resources for another technology to supplant the existing hydrocarbon network. We anticipate the transition to lower demand for fossil fuels under the IEA's Sustainable Development Scenario would be gradual occurring over several decades. Accordingly, we plan to continue to operate, develop, and acquire diversified energy infrastructure assets in each of our business segments, consistent with our commitment to deliver energy to improve the standard of living and create a better world. While the current use of some of our assets may be challenged as a result of a transition, those same assets may be used to transport, store, or handle transition-driven products, such as biofuels and bulk mineral concentrates.

Our Products Pipelines and Terminals business segments are major transporters or handlers of gasoline, jet fuel, and other distillate products. If, as a result of the increased efficiency of gasoline powered vehicles and continued EV penetration as contemplated in IEA's Sustainable Development Scenario, there is less gasoline flowing through our liquids pipelines and stored at our liquid terminals, we would attempt to transport and store more biofuels and other replacement fuels instead. We would also expect our natural gas pipeline and storage assets to benefit from the incremental electricity production required for EVs.

Jet fuel demand growth has comfortably exceeded 4% in the last two years in a refined product market that has been growing at 1.3% overall.[38] Jet fuel remains one of few liquid products expected to show consistent gains in IEA's Sustainable Development Scenario where growth is expected to average growth of 1.4% per year over the forecast period. We anticipate a continued demand for jet fuel even in a lower carbon economy. If traditional jet fuel were to be replaced by bio-jet fuel, we would attempt to transition toward transporting bio-jet fuel in our liquid pipelines and storing it in our terminals.

We also believe the increased need for CCUS technologies under the IEA's Sustainable Development Scenario could be another future opportunity for us. Our CO_2 business segment's expertise in processing, transporting, injecting, and managing CO_2 and our extensive CO_2 assets should make us a sought after partner for CCUS. Rising demand for carbon capture and geologic sequestration may provide both incremental CO_2 transportation revenues and downstream EOR and sequestration opportunities.

Even as we continue to execute on our business strategy, given the potentially reduced role of hydrocarbons in the energy mix, to increase our resiliency, we have, where warranted, incorporated

[38] Vertz, Louise, and Sayal, Sandeep. "Refining and Marketing Insight - Behind the data: Outlooks from our Annual Strategic Workbook." IHS Markit 57 (2018): 1. 2019. <https://cdn.ihs.com/www/pdf/Long-Term-Jet-Fuel-Outlook-2018.pdf>.

additional sensitivity analysis into our financial models that we use to assess investments in potential projects. This sensitivity analysis includes a reduction in uncontracted cash flows and reduced or, in some cases, zero terminal value assumptions. We also seek to re-purpose our existing underutilized assets to provide solutions for our customers at attractive returns with reduced risk and less investment.

In anticipation of a transition to a lower-carbon economy, in addition to directing more of our capital investment toward our growing Natural Gas Pipelines business, we are continually working to monitor and improve our processes and our perspectives on policies, activities, and trends related to the transition to a lower-carbon economy and on the long-term supply and demand for the products we handle. As a result of our 2° C scenario analysis and our ESG reporting initiative, where appropriate, we:

- evaluate our longer-term views in light of the IEA's Sustainable Development Scenario;
- improve coordination of energy market analysis across our business segments;
- increase our monitoring of key climate-related market indicators, such as:
    - climate-related policy proposals and regulatory changes;
    - natural gas and renewable penetration into the power markets;
    - EV adoption rates, vehicle efficiency standards, and average miles driven;
    - biofuels markets;
    - technological advancements and price signals for CCUS;
- improve the systematic analysis of the optimal uses of our assets; and
- discuss these topics with our Board and its EHS Committee.

Further, in anticipation of transitioning to a lower-carbon economy, we also seek opportunities to:

- continue to develop our expertise in CCUS;
- store and transport biofuels;
- repurpose our assets;
- modify existing assets or develop assets for LNG export opportunities; and
- expand our natural gas deliverability.

We present and discuss these opportunities with our Board.

While we performed our resiliency assessment by considering the IEA scenarios relative to our existing asset base, if IEA's Sustainable Development Scenario were to become reality, we could undertake strategies that result in shifts in our asset base. For example, we could enter into new lines of businesses. Shifts in our asset base may occur incrementally, as we adapt to changes in circumstances, or the shifts could occur quickly through acquisitions and divestitures. An acquisition or sale of material businesses or assets may be significant in size relative to our existing assets or operations.

It bears repeating that factors could cause actual results to differ significantly from those expressed in or implied by our forward-looking statements. Please see the "*Important Information about Policies, Procedures, Practices, and Forward-Looking Statements*" for additional information. It is impossible to predict with certainty the timing, magnitude, and direction of climate-related risks and opportunities. As a result, it is impossible to predict how resilient we will be to climate-related changes.

3.0 Risk and Opportunity Management

Our management system is designed to help us monitor and assess various types of risks and opportunities, including those related to climate. We identify and evaluate risks and opportunities based on both actual and potential likelihood and significance. Depending on the nature of the risk or opportunity being considered, we evaluate consequences based on a variety of attributes such as:

- health and safety,
- financial,
- operational, and
- environmental.

Our management system promotes continuous improvement and adjustment to changing conditions, including actual and potential risks and opportunities in the near-, medium-, and long-term. This integrated and comprehensive approach helps facilitate a resiliency in our assets and business strategy.

Our management system establishes intentional, routine risk and opportunity management activities that are designed to achieve the following objectives:

- maintain financial and operational discipline;
- reveal and manage risks and opportunities, including increasingly climate-related risks and opportunities; and
- continually improve our performance and culture.

Our management system processes and procedures are effected through regular meetings, processes, and reports that establish a rhythm for our business as outlined in the following table.

Meeting and Topics Covered Each topic is covered as warranted and is not covered at every meeting. Other topics which are not listed below are also periodically covered. There are also additional regular meetings not listed below.	**Personnel Involved in Process**
Weekly	
Monday Management Meeting – Financial performance vs. budget for the following: – demand for our services – costs of compliance, fuel, energy, production, and public relations – General business risks and opportunities – EHS and pipeline encroachment incidents – Customer credit risk changes and accounts receivable activity for non-investment grade customers – Impacts on business from weather, natural disasters, and other incidents	– CEO, President, CSO, Business Segment and Operating Company Presidents, CFO, General Counsel, Corporate Department Management

Meeting and Topics Covered Each topic is covered as warranted and is not covered at every meeting. Other topics which are not listed below are also periodically covered. There are also additional regular meetings not listed below.	Personnel Involved in Process
Monthly	
Business Segment Operations Meeting – Progress toward reducing risk of high consequence assets and operations – Internal and external incidents, near misses and lessons learned – Process improvements, efficiency and productivity improvements – Progress on expanding systems to more assets and operations, more operations goals, and more regulatory and other requirements – Leading indicators and their meanings – Significant results of internal and external audits, evaluations, and assessments, including status of corrective actions – Stakeholder feedback – Other key performance indicators	– Business Segment and Operating Company Presidents, COOs, Operations and EHS Vice Presidents and Directors
Major Project Review for each business segment – Environmental and other permits and related compliance activities – Projected capital expenditures – Projected in service date – Remaining risks and opportunities for project costs or schedule – Projected EBITDA – Returns – Safety – Quality – Regulation – Project opposition – Impacts from weather, natural disasters, and other incidents – Supply chains	– CEO, President, Business Segment and Operating Company Presidents, CFO, General Counsel, Project Management, Corporate Department Management
Quarterly	
Quarterly Business Review for each business segment – Financial performance – Near-, medium-, and long-term business drivers and market dynamics, including risks and opportunities – Commercial discussions – Strategy – Progress and plans with respect to reducing risk of potential high consequence assets and operation – Operational performance – Expansion project updates – The status and effectiveness of corrective actions resulting from previous management reviews	– CEO, President, Business Segment and Operating Company Presidents, CFO, General Counsel, CSO, Corporate Department Management, COO, Department Vice Presidents and Directors

Meeting and Topics Covered Each topic is covered as warranted and is not covered at every meeting. Other topics which are not listed below are also periodically covered. There are also additional regular meetings not listed below.	**Personnel Involved in Process**
Operations Group Meeting – Proposed best practices for consideration across business segments – Conflicts in interpretations of regulatory requirements identified by the EHS or legal departments – Proposed modifications to the OMS – Updates from operations working groups – Internal and external incident and near miss trends and lessons learned	– Vice President Corporate EHS, Business Segment COOs, Working Group Leads
Operations Working Group Meetings – Operational considerations and regulatory risks – Incident Review – Pipeline Integrity – Operations Management System – Security – Disaster Preparation, Response and Recovery – Regulatory Compliance	– Subject Matter Professionals
Periodically	
Long-Range Outlook Update – Five-year projections of: – Revenue – Capital expenditures, – Operating expenses, – EBDA – Adjust budget for projects, contract changes, etc. – Translated to an annual plan	– CEO, President, Business Segment and Operating Company Presidents, Business Segment COOs, CFO, General Counsel, CSO, Corporate and Business Segment Financial Planning
Annually	
Budget – Staffing, assets, systems, and other resources needed for business segments to operate in a safe, environmentally sound and efficient manner – revenue impacts – compliance costs – fuel costs – insurance costs – public relations costs – production costs – Capital expenditures, operating expenditures, and margins – Commercial developments, such as contract rate and volumetric changes – Translated to a monthly plan	– Manager level and above

To address specific risks, in addition to our management system, we maintain other risk management programs and processes, such as:

- Energy commodity price risk,
- Process Safety Management/Risk Management Plans,
- IMP,
- Responsible Care®,
- Cyber Threat Response Plan, and
- Critical Facility Security Plans.

4.0 Metrics and Targets

4.1 Climate-Related Metrics

The following tables include metrics to measure climate-related risk and opportunities.

	Year Ended December 31		
	2016	**2017**	**2018**
KML gross global Scope 1 & 2 emissions (metric tons CO_2e)			
KML gross global Scope 1 emissions from continuing operations	9,869	16,375	16,033
KML gross global Scope 2 emissions from continuing operations	68,898	79,924	68,201
KML combined gross global Scope 1 and 2 emissions from continuing operations	**78,767**	**96,299**	**84,234**
Percentage covered under emissions-limiting regulations from continuing operations	0%	0%	0%
Percentage methane from continuing operations	2%	1%	1%

	Year Ended December 31		
	2016	**2017**	**2018**
GHG Reductions			
Voluntary GHG emission reductions (metric tons CO_2e)	1,284,945	2,209,674	1,926,589

We anticipate publicly reporting our Company-wide GHG Scope 1 and Scope 2 emissions beginning in 2021. Our current U.S. GHG emissions reporting infrastructure is designed primarily to meet the requirements of the EPA GHGRP, Natural Gas STAR Program, and Methane Challenge Program. We are currently developing the additional processes, procedures, information technology systems, personnel, and controls necessary to expand our emissions reporting infrastructure to meet the SASB Midstream Standard. Before reporting publicly, we plan to conduct pre-assurance readiness testing using the standards of the American Institute of Certified Public Accountants. We intend to address observations and significant recommendations resulting from the pre-assurance readiness testing before issuing our public report.

4.2 Climate-Related Targets

(CDP CC4.1)

Through ONE Future, we have committed to achieving a methane emission intensity target for our natural gas transmission and storage operations by 2025. Our target is the ONE Future methane emission intensity commitment for the natural gas transmission and storage segment, which is methane emissions per volume of throughput of 0.31%.

Our methane emission intensity rates and targets are included below.

	Year Ended December 31	
	2017	2018
Methane emission intensity rate target	0.31%	0.31%
Methane emission intensity rate(a)	0.04%	0.02%

(a) The emission intensity rate is calculated by dividing our natural gas transmission and storage total methane emissions by our natural gas transmission and storage throughput. Methane emissions are calculated using 40 CFR 98 Subpart W procedures.

In 2017 and 2018, we performed better than our transmission and storage methane emission intensity target of 0.31%.

In November 2018, the first ONE Future Methane Emission Intensity Report was released. The results showed a methane intensity rate across member companies of 0.6% for 2017, surpassing the goal of 1.0% by year 2025.

We aim to perpetually improve our methane management approach by:

- looking for new ways to reduce emissions,
- providing training to our operations personnel, and
- communicating policies detailing program requirements.

Since the inception of the EPA GHGRP, our annual methane leak surveys have included natural gas processing plants and transmission and storage compressor stations subject to the EPA GHGRP. In 2017, we voluntarily began increasing the number of leak surveys conducted at natural gas transmission and storage compressor stations not subject to the EPA GHGRP. Our target is to increase the number of leak surveys conducted at these facilities by 20% each year from 2017 to 2021. We committed to these additional leak surveys as part of our implementation plan to meet the ONE Future emission intensity commitment under EPA's Natural Gas STAR Methane Challenge Program, which we successfully reached ahead of schedule in 2017.

The number of leak surveys conducted at our natural gas transmission and storage compressor stations and our leak survey targets are included below.

	Year Ended December 31	
	2017	2018
Targeted number of natural gas transmission and storage compressor stations to survey(a)	182	217
Actual number of natural gas transmission and storage compressor stations surveyed	242	279

(a) In 2017 and 2018, targets were calculated by adding an incremental 20% of the transmission and storage facilities that were not required to perform a leak survey under a regulatory program to the 147 facilities required to conduct a leak survey in 2016.

In 2017 and 2018, we performed better than our target number of leak surveys at natural gas transmission and storage compressor stations. In addition, we completed leak surveys at 18 of our natural gas processing plants in 2018.

We have set a 2019 GHG reduction target of 2 Bcf of methane, which is equivalent to 1.1 million metric tons CO_2e or the annual energy usage from approximately 132,000 homes.

Appendix A – Sustainability Disclosure Topics & Sustainability Accounting Metrics

	Unit	Year Ended December 31 2016	2017	2018
Kinder Morgan Inc.				
GHG emission offsets purchased				
Purchased offsets	Metric tons CO_2e	118,609	75,923	66,581
Average price per metric ton CO_2e	U.S. dollars	$ 0.85	$ 0.99	$ 1.75
GHG Reductions				
Voluntary GHG emissions reductions	metric tons CO_2e	1,284,945	2,209,674	1,926,589
Methane emission intensity rate target	%		0.31%	0.31%
Methane emission intensity rate	%		0.04%	0.02%
Number of refineries in or near areas of dense population	#	1	1	1
Ecological impacts				
Percentage of land owned, leased, and/or operated within or near areas of protected conservation status or endangered species habitat	%			33%
Hydrocarbon spills				
Number of hydrocarbon spills	#	55	39	37
Aggregate volume released	Bbl	1,233	578	11,530
Aggregate volume recovered	Bbl	930	352	7,332
Marine spills and releases to the environment				
Number of marine spills and releases to the environment	#	0	1	1
Aggregate volume of marine spills and releases to the environment	cubic meters	0	<0.0001	0.0002
Employee and contractor health and safety				
Total recordable incident rate				
Employees	# recordable incidents/ 100 full-time workers	1.1	1.0	1.0
Target - Industry average		2.8	2.8	2.3
Target - Kinder Morgan three-year average		1.2	1.2	1.2
Contractors	# recordable incidents/ 100 full-time workers	0.2	0.8	0.7
Fatalities				
Employees	#	2	0	0
Contractors	#	0	1	0
Average hours of employee health, safety, and emergency response training	hours/ employee	15	17	17
Marine lost time incident rate	# lost time incidents/ 1,000,000 hours worked	2.5	1.1	0.6

	Unit	Year Ended December 31 2016	2017	2018
Kinder Morgan Inc.				
Competitive behavior and pricing integrity and transparency				
Total amount of monetary losses associated with federal pipeline and storage, rate, access, and pricing regulations	Million U.S. dollars	$ 0	$ 10	$ 0
Reportable pipeline incidents				
Number of reportable pipeline incidents	#	58	50	53
Percentage significant of reportable pipeline incidents	%	34%	46%	43%
Natural gas and hazardous liquid pipelines inspection				
Percentage of natural gas pipelines inspected	%	14%	14%	14%
Percentage of hazardous liquid pipelines inspected	%	22%	19%	18%
Number of FRA recommended violation defects	#	9	10	5
Age representation				
Average age	#			46
Percentage under 18 years old	%			0%
Percentage from 18 through 29 years old	%			11%
Percentage from 30 through 50 years old	%			51%
Percentage over 50 years old	%			39%
Female employee representation				
Number in workforce	#			1,805
Percentage of workforce	%			16%
Percentage of management	%			18%
Percentage of Board of Directors	%			13%
Minority employee representation				
Number in workforce	#			3,111
Percentage of workforce	%			28%
Percentage of management	%			19%
Percentage of Board of Directors	%			13%

Our Canadian operations have the processes, procedures, personnel, and controls necessary to report GHG Scope 1 and Scope 2 emissions, so we are providing these metrics here.

	Unit	Year Ended December 31 2016	2017	2018
Kinder Morgan Canada Ltd.				
KML gross global Scope 1 & 2 emissions (Metric tons CO_2e)				
KML gross global Scope 1 emissions from continuing operations	metric tons CO_2e	9,869	16,375	16,033
KML gross global Scope 2 emissions from continuing operations	metric tons CO_2e	68,898	79,924	68,201
KML combined gross global Scope 1 and 2 emissions from continuing operations	metric tons CO_2e	78,767	96,299	84,234
Percentage covered under emissions-limiting regulations from continuing operations	%	0%	0%	0%
Percentage methane from continuing operations	%	2%	1%	1%

		Year Ended December 31		
	Unit	2016	2017	2018
Kinder Morgan Canada Ltd.				
KML air emissions for the following pollutants:				
NO_x (excluding N_2O)	metric tons	—	—	—
SO_x	metric tons	—	—	—
VOCs	metric tons	12	12	32
PM_{10}	metric tons	10	17	15
KML total air emissions from continuing operations	metric tons	22	29	47

Appendix B – Activity Metrics

		Year Ended December 31		
	Unit	2016	2017	2018
Number of employees (TR-RA-000.E)(a)	#	11,121	10,897	11,165
Natural Gas Pipelines				
Natural gas transport volumes(b)	BBtu/d	28,095	29,108	32,821
Natural gas sales volumes	BBtu/d	2,335	2,341	2,472
Natural gas gathering volumes(b)	BBtu/d	2,963	2,647	2,972
Crude/condensate gathering volumes	MBbl/d	292	273	307
Products Pipelines				
Gasoline(c)	MBbl/d	1,025	1,038	1,038
Diesel fuel	MBbl/d	342	351	372
Jet fuel	MBbl/d	288	297	302
Total refined product volumes(d)	MBbl/d	1,655	1,686	1,712
NGL	MBbl/d	109	112	114
Crude and condensate(d)	MBbl/d	324	327	345
Total delivery volumes(d)	MBbl/d	2,088	2,125	2,171
Ethanol(e)	MBbl/d	115	117	126
Biodiesel	MBbl/d	8	6	7
Terminals				
Bulk transload tonnage	MMton	54.8	59.5	64.2
Liquids tankage capacity available for service	MMBbl	84.4	87.6	90.1
Liquids utilization(f)	%	94.7	93.6	93.5
Ethanol(g)	MBbl/d	172.6	172.6	157.3
Biodiesel	MBbl/d	10.2	14	11.7
CO_2				
CO2 production (gross)(h)	Bcf/d	1.2	1.3	1.2
CO2 production (net)(h)	Bcf/d	0.6	0.6	0.6
CO_2 production terrestrial sites	#	89	91	93
Oil production (gross)(i)	MBbl/d	54.7	53.3	54.2
Oil production (net)(j)	MBbl/d	38.5	37.8	38.8
NGL sales volumes (net)(j)	MBbl/d	10.3	9.9	10
KM Canada				
Transport volumes(k)	MBbl/d	316	308	291

	Unit	Year Ended December 31 2016	2017	2018
Oil & Gas Midstream				
Quantity transported (by mode of transportation) (EM-MD-000.A)				
Pipelines				
1) Natural gas	Bcf	13,000	13,300	14,800
2) Crude oil and petroleum products by business segment				
2a) Products Pipelines	Bn-bbl miles	629	631	648
2b) Terminals(l)	Bn-bbl miles	19	22	20
2c) CO_2	Bn-bbl miles	108	111	102
2d) KM Canada	Bn-bbl miles	87	85	49
Total	Bn-bbl miles	843	849	819
Oil & Gas Exploration & Production				
Production of oil (EM-EP-000.A)	MBbl/d	55	54	56
Number of offshore sites (EM-EP-000.B)(m)	#	0	0	0
Number of terrestrial sites (EM-EP-000.C)(m)	#	1,136	1,124	1,146
Oil & Gas Refining & Marketing				
Refining throughput of crude oil and other feedstocks (EM-RM-000.A)	BOE	16,604,000	24,797,000	24,963,000
Refining operating capacity (EM-RM-000.B)	MMBbl/d	0.1	0.1	0.1
Rail Transportation				
Number of carloads transported (TR-RA-000.A)(n)				
Natural Gas Pipelines	thousands	6	6	7
Products Pipelines	thousands	11	8	15
Terminals(o)	thousands	104	145	142
Total	thousands	121	159	164
Terminals rail loading facilities bulk throughput	MMton	3.7	5.5	5.5
Terminals rail loading facilities liquids throughput (p)	MMBbl	29	43	46
Number of intermodal units transported (TR-RA-000.B)	#	N/A	N/A	N/A
Track miles (TR-RA-000.C)	miles	N/A	N/A	N/A
Revenue ton miles (RTM) (TR-RA-000.D)	RTM	N/A	N/A	N/A

		Year Ended December 31		
	Unit	2016	2017	2018
Marine Transportation				
Number of shipboard employees (TR-MT-000.A)	#	410	518	594
Total distance traveled by vessels (TR-MT-000.B) (q)	nautical miles	464,475	330,970	781,105
Operating days (TR-MT-000.C)(r)	days	3,318	4,884	5,781
Barrels transported(s)	MMBbl	167	236	268
Number of vessels in total shipping fleet (TR-MT-000.E)	#	12	16	16
Number of vessel port calls (TR-MT-000.F)	#	628	486	994
Twenty-foot equivalent unit (TEU) capacity (TR-MT-000.G)(t)	TEU	N/A	N/A	N/A

(a) The number of employees reported in the KMI Form 10-K for calendar year 2018, excluded the KML employees.
(b) Joint venture throughput is reported at our ownership share.
(c) Volumes include ethanol pipeline volumes.
(d) Joint Venture throughput is reported at our ownership share.
(e) Represents total ethanol volumes, including ethanol pipeline volumes included in gasoline volumes above.
(f) The ratio of our tankage capacity in service to tankage capacity available for service.
(g) Excludes biodiesel volumes. The Terminals' business segment ethanol value reported in the KMI 2018 Form 10-K includes both ethanol and biodiesel volumes and is reported as MMbbl of throughput for the annual reporting period.
(h) Includes McElmo Dome and Doe Canyon sales volumes.
(i) Represents 100% of the production from the field. We own an approximately 97% working interest in the SACROC unit, an approximately 50% working interest in the Yates unit, an approximately 99% working interest in the Katz unit, a 99% working interest in the Goldsmith Landreth unit, and a 100% working interest in the Tall Cotton field.
(j) Net after royalties and outside working interests.
(k) Represents TMPL average daily volumes reported until date of sale, August 31, 2018.
(l) Amounts for 2016 and 2017 Terminals business segment quantity of transported crude oil and petroleum products have been updated from those reported in our 2017 Report to include additional barrel miles moved.
(m) Represents number of active and operated oil wells.
(n) Unless otherwise noted, represents the number of rail cars loaded and unloaded.
(o) Number of rail cars were calculated using average weight and volume per rail car of 100 tons and 821 bbls respectively.
(p) Units of measure have been updated from those reported in our 2017 Report to reflect units of liquids throughput in MMbbl.
(q) The increase in nautical miles between 2017 and 2018 is due to an increase in vessel operating days and changes in vessel trade patterns.
(r) Amounts for 2016 and 2017 marine transportation operating days have been updated from those reported in our 2017 Report to include additional days operated.
(s) Represents the cargo barrels transported.
(t) Twenty-foot equivalent unit capacity is a unit of cargo used to measure a ship's container carrying capacity. We do not operate marine vessels capable of carrying cargo containers.

Appendix C – Sustainability Disclosure Topics & Sustainability Accounting Metrics Reporting Criteria

Topic	Sustainability Accounting Metric	SASB(a)	GRI (Core)(b)	CDP(c)	Section Page
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage methane, percentage covered under emissions-limiting regulations	EM-MD-110a.1 EM-EP-110a.1 EM-RM-110a.1	305-1	C6.1 C6.3 C7.3 C7.6 C7.9 C8.1-8.2f	4
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	EM-MD-110a.2 EM-EP-110a.3 EM-RM-110a.2	- -	C3.1	7
	Energy management	- -	- -	C8.2	12
	GHG offsets	- -	- -	C4.3 C11.2	14
	GHG reductions	- -	305-5	C4.3	14
	GHG targets	- -	- -	C4.1	15
Air Quality	Air emissions for the following pollutants: NO_x (excluding N_2O), SO_x, volatile organic compounds (VOCs) and particulate matter (PM_{10})	EM-MD-120a.1 EM-EP-120a.1 EM-RM-120a.1	305-7	- -	17
	Number of refineries in or near areas of dense population	EM-RM-120a.2	- -	- -	18
Water Management	Discussion of (1) importance of water quantity to the success of our business; (2) organization water policy; and (3) how organization minimizes the adverse impacts on water ecosystems or human health of potential water pollutants	- -	- -	W1.1, W1.2 W6.1 W-OG3.1a	19
Ecological Impacts	Description of environmental management policies and practices for active operations	EM-MD-160a.1 EM-EP-160a.1	103-2	- -	19
	Percentage of land owned, leased, and/or operated within areas of protected conservation status or endangered species habitat	EM-MD-160a.2	304-1	- -	24
	Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume in Unusually Sensitive Areas (USAs), and volume recovered	EM-MD-160a.4 EM-EP-160a.2	306-3	- -	25
	(1) Number and (2) aggregate volume of marine spills and releases to the environment	TR-MT-160a.3	306-3	- -	26
Employee Health & Safety	Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout project life cycles	EM-MD-540a.4 EM-EP-320a.2 EM-RM-320a.2	103-2 403-1 403-4	- -	27
	(1) Total Recordable Incident Rate (TRIR); (2) Fatality Count; (3) Average hours of Health, Safety, and Emergency Response Training for: (a) Employees, (b) Contractors, and (c) short-service employees	EM-EP-320a.1 EM-RM-320a.1	403-9	- -	30
Marine Accidents & Safety Management	Lost time incident rate (LTIR)	TR-MT-320a.1	403-9	- -	32
Competitive Behavior	Total amount of monetary losses as a result of legal proceedings associated with federal pipeline and storage regulations	EM-MD-520a.1	- -	- -	33
Business Ethics	Description of the management system for prevention of corruption and bribery throughout the value chain	EM-EP-510a.2	205-2	- -	35
Operational Safety, Emergency Preparedness, and Response	Number of reportable pipeline incidents, percentage significant	EM-MD-540a.1	- -	- -	39
	Percentage of (1) natural gas and (2) hazardous liquid pipelines inspected	EM-MD-540a.2	- -	- -	40

Topic	Sustainability Accounting Metric	SASB(a)	GRI (Core)(b)	CDP(c)	Section Page
Rail Accidents & Safety Management	Number of Federal Rail Administration (FRA) Recommended Violation Defects	TR-RA-540a.3	- -	- -	41
Management of the Legal & Regulatory Environment	Discussion of the corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	EM-EP-530a.1 EM-RM-530a.1	- -	- -	42
	Political contributions	- -	415-1	- -	43
Employee Diversity & Inclusion	Percentage of gender and racial/ethnic group representation for (1) executive management, (2) non-executive management, (3) professionals, and (4) all other employees	FN-IB-330a.1	405-1	- -	45
Employee Training & Development	Discussion of (1) average hours of training per year per employee (2) programs for upgrading employee skills and transition assistance programs (3) percentage of employees receiving regular performance and career development reviews	- -	404-1 404-2	- -	46
Community Relations	Discussion of process to manage risks and opportunities associated with community rights and interests	EM-EP-210b.1	413-1	- -	47
Security, Human Rights, and Rights of Indigenous Peoples	Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict	EM-EP-210a.3	103-2 408-1 409-1	- -	53

TCFD Core Elements	TCFD Core Element Description	Recommended Disclosure	SASB(a)	GRI (Core) (b)	CDP(c)	Section Page
Governance	Disclose the organization's governance around climate-related risks and opportunities	Describe the board's oversight of climate-related risk and opportunities	EM-RM-110a.2 EM-MD-110a.2 TR-RA-110a.2 EM-EP-110a.3 TR-MT-110a.2	102-18 102-19 102-20 102-26 102-27 102-29 102-31 102-32	C1.1b	56
		Describe management's role in assessing and managing climate related risks and opportunities	EM-RM-110a.2 EM-MD-110a.2 TR-RA-110a.2 EM-EP-110a.3 TR-MT-110a.2	102-29 102-31 102-32	C1.2 C1.2a	57
Strategy	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	- -	102-15	C2.1 C2.3 C2.3a C2.4 C2.4a	59
		Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	- -	- -	C2.2d C2.3a C3.1 C3.1c C3.1d C2.4a C2.5	65
		Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	EM-RM-110a.2 EM-MD-110a.2 TR-RA-110a.2 EM-EP-110a.3 TR-MT-110a.2	- -	C3.1a C3.1d	66

TCFD Core Elements	TCFD Core Element Description	Recommended Disclosure	SASB(a)	GRI (Core) (b)	CDP(c)	Section Page
Risk Management	Disclose how the organization identifies, assess, and manages climate-related risks	Describe the organization's processes for identifying and assessing climate-related risks	- -	201-2	- -	71
		Describe the organization's processes for managing climate-related risks	EM-RM-110a.2 EM-MD-110a.2 TR-RA-110a.2 EM-EP-110a.3 TR-MT-110a.2	- -	- -	71
		Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	EM-RM-110a.2 EM-MD-110a.2 TR-RA-110a.2 EM-EP-110a.3 TR-MT-110a.2	- -	C2.2	71
Metrics and Targets	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	- -	102-30	C4.2 C9.1	74
		Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	EM-RM-110a.1 EM-MD-110a.1 TR-RA-110a.1 EM-EP-110a.1 TR-MT-110a.1	102-29 102-30 201-2	C6.1 C6.2 C6.3 C6.5	74
		Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	- -	- -	C4.1 C4.1a C4.1b C4.2	74

(a) Version 2018-10: SASB Extractives & Minerals Processing Sector Oil & Gas Midstream Standard EM-MD, SASB Extractives & Minerals Processing Sector Exploration & Production Standard EM-EP, SASB Extractives & Minerals Processing Sector Refining & Marketing Standard EM-RM, SASB Transportation Sector Marine Transportation Standard TR-MT, and SASB Transportation Sector Rail Transportation standard TR-RA.

(b) GRI 102 General Disclosures 2016, GRI 103 Management Approach 2016, GRI 201 Economic Performance 2016, GRI 205 Anti-Corruption 2016, GRI 304 Biodiversity 2016, GRI 305 Emissions 2016, GRI 306 Effluents and Waste 2016, GRI 403 Occupational Health and Safety 2016, GRI 404 Training and Education 2016, GRI 405 Diversity and Equal Opportunity 2016, GRI 408 Child Labor 2016, GRI 409 Forced or Compulsory Labor 2016, GRI 413 Local Communities 2016, and GRI 415 Public Policy 2016.

(c) CDP C1 Governance, CDP C2 Risks and Opportunities, CDP C3 Business Strategy, CDP C4 Targets and Performance, CDP C6 Emissions Data, CDP C7 Emissions Breakdown, CDP C8 Energy, CDP C9 Additional Metrics, CDP C11 Carbon Pricing, CDP W1 Current State, CDP W6 Governance.

At the time our 2017 Report was prepared, the SASB standards were provisional. Our 2017 Report was based on the SASB's October 2017 exposure draft redlines to the provisional standards of June 2014, as updated with the standard changes presented at the July 11, 2018, SASB Board Meeting. Our Report, as compared to the 2017 Report, includes the updated final SASB metric standards as specified in SASB's October 2018 updates.

The following ESG metrics included in our Report were modified to the 2018 Final Standards:

I. Midstream Standard (EM-MD, Version 2018-10)

- *Revision EM-MD:02- Greenhouse Gas & Other Air Emissions - Revise Metric:* The SASB revised metric NR0102-01 from "Gross global Scope 1 emissions, percentage covered under a regulatory program," to "Gross global Scope 1 emissions, percentage methane, percentage covered under emissions-limiting regulations."
- *Revision EM-MD:05 - Operational Safety, Emergency Preparedness, and Response - Add Metric:* The SASB added a metric to the Operational Safety, Emergency Preparedness, and Response topic describing, "Percentage of (1) natural gas and (2) hazardous liquid pipelines inspected."
- *Revision: Competitive Behavior - Revise Metric:* The SASB revised metric NR0102-08 from "Amount of legal and regulatory fines and settlements associated with federal and pipeline storage regulations" to "Total amount of monetary losses associated with federal pipeline and storage regulations."

II. Exploration & Production Standard (EM-EP, Version 2018-10)

- *Revision EM-EP:01 - Activity Metrics - Revise Metric:* The SASB revised activity metric NR0101-A from "Wellhead production of (1) conventional oil, (2) unconventional oil, (3) conventional gas, and (4) unconventional gas" to "Production of: (1) oil (2) natural gas (3) synthetic oil, and (4) synthetic gas."
- *Revision EM-EP:02 - Greenhouse Gas Emissions - Revise Metric:* The SASB revised metric NR0101-01 from "Gross global Scope 1 emissions, percentage covered under a regulatory program, percentage by hydrocarbon resource" to "Gross global Scope 1 emissions, percentage methane, percentage covered under emissions-limiting regulations."
- *Revision EM-EP:03 - Greenhouse Gas Emissions - Revise Metric:* The SASB revised metric NR0101-02 from, "Amount of gross global Scope 1 emissions from: (1) combustion, (2) flared hydrocarbons, (3) process emissions, (4) directly vented releases, and (5) fugitive emissions/leaks" to "Amount of gross global Scope 1 emission from: (1) flared hydrocarbons, (2) other combustion, (3) process emissions, (4) other vented emissions, and (5) fugitive emissions."
- *Revision: Air Quality - Revise Metric:* The SASB revised metric NR0102-03 from "Air emissions for the following pollutants: NOx (excluding N_2O), SOx, volatile organic compounds (VOCs), and particulate matter (PM)" to "Air emissions of the following pollutants: (1) NOx (excluding N_2O), (2) SOx, (3) volatile organic compounds (VOCs), and (4) particulate matter (PM_{10})." The provisional metric reported particulate matter (PM) as the sum of PM_{10} and $PM_{2.5}$, or all particulates less than 10 micrometers in diameter. The final metric reports particulate matter emissions of 10 micrometers or less in diameter (PM_{10}), defined as any airborne finely divided solid or liquid material with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- *Revision EM-EP:07 - Biodiversity Impacts - Revise Metric:* The SASB revised metric NR0101-10 from "Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume near

shorelines with ESI rankings 8-10, volume recovered" to "Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume impacting shorelines with ESI rankings 8-10, and volume recovered."

- *Revision EM-EP:13 - Health, Safety & Emergency Management - Revise Metric:* The SASB revised metric NR0101-17 from "(1) Total Recordable Incident Rate (TRIR), (2) Fatality Rate, and (3) Near Miss Frequency Rate for (a) full-time employees, (b) contract employees, and (c) short-service employees," to "(1) Total recordable incident rate (TRIR), (2) fatality rate, (3) near miss frequency rate (NMFR), and (4) average hours of health, safety, and emergency response training for (a) full-time employees, (b) contract employees, and (c) short-service employees."
- *Revision EM-EP:14 - Health, Safety & Emergency Management - Revise Metric:* The SASB revised metric NR0101-19 from, "Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout the exploration and production lifecycle," to "Discussion of management systems used to integrate a culture of safety throughout the exploration and production lifecycle."
- *Revision EM-EP:21 - Management of the Legal & Regulatory Environment - Revise Metrics:* The SASB replaced the two quantitative metrics associated with the Management of the Legal and Regulatory Environment topic:
    - NR0101-25 - Amount of political campaign spending, lobbying expenditures, and contributions to tax exempt groups including trade associations
    - NR0101-26 - Five largest political, lobbying, or tax-exempt group expenditures

  With the following qualitative metric:
    - Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry

III. Refining & Marketing Standard

- *Revision: Greenhouse Gas Emissions - Revise Metric:* The SASB revised metric NR0103-01 from "Gross global Scope 1 emissions, percentage covered under a regulatory program" to "Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations."
- *Revision: Pricing Integrity & Transparency - Revise Metric:* The SASB revised metric NR0103-15 from "Amount of legal and regulatory fines and settlements associated with price fixing or price manipulation" to "Total amount of monetary losses as a result of legal proceedings associated with price fixing or price manipulation."
- *Revision EM-RM:05 - Management of the Legal & Regulatory Environment - Revise Metrics:* The SASB replaced the two quantitative provisional metrics associated with the Management of the Legal and Regulatory Environment topic:
    - NR0101-16 - Amount of political campaign spending, lobbying expenditures, and contributions to tax-exempt groups including trade associations
    - NR0101-17 - Five largest political, lobbying, or tax-exempt group expenditures

  With the following qualitative metric:
    - Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry
- *Revision: Activity Metric - Remove Metric:* The SASB removed the Solomon UEDC metric from the required activity metrics for this section.

IV. Rail Transportation Standard

- *Revision: Activity Metrics - Revised Metric:* The SASB revised metric TR0401-A from "Number of carloads originated" to "Number of carloads transported."

Report of Independent Accountants

To the Board of Directors of Kinder Morgan, Inc.

We have reviewed the accompanying Kinder Morgan, Inc. ("Kinder Morgan") management assertion, that the sustainability metrics identified below, for the year ended December 31, 2018 (unless stated otherwise), are presented in conformity with the assessment criteria set forth in management's assertion (the "assessment criteria").

- Kinder Morgan Canada Limited (KML) gross global Scope 1 emissions including discontinued operations (MT CO_2e)
- KML gross global Scope 2 emissions including discontinued operations (MT CO_2e)
- KML combined gross global Scope 1 and 2 emissions from continuing operations (MT CO_2e)
- KML Scope 1 percentage methane from continuing operations (%)
- KML Scope 1 percentage CO_2e covered under emissions-limiting regulations (%)
- Total GHG reductions (MT CO_2e)
- Total methane emission reductions (Mcf)
- KML total air emissions from continuing operations (MT)
- KML total air emissions from discontinued operations (MT)
- KML MT of the following pollutants from continuing operations: (1) NOx (excluding N2O) (MT), (2) SOx (MT), (3) volatile organic compounds (VOCs) (MT), (4) particulate matter (PM10) (MT)
- Number of refineries (#) as of December 31, 2018
- Number of reportable pipeline incidents (#)
- Number of significant reportable pipeline incidents (#)
- Percentage of significant reportable pipeline incidents (%)
- Percentage of natural gas pipelines inspected (%)
- Percentage of hazardous liquid pipelines inspected (%)
- Total amount of fines or settlements, excluding legal fees associated with federal pipeline and storage regulations, including rate, access, and pricing regulations (millions of U.S. Dollars)
- Employee total recordable incident rate (TRIR) (#)
- Employee fatality count (#) as of December 31, 2018
- Employee average training time (# hours per employee)
- Number of marine spills and releases to the environment (#)
- Aggregate volume of marine spills and releases to the environment (cubic meters)
- Percentage of land operated within or near areas of protected conservation status or endangered species habitat inside or near designated areas (%)
- Number of hydrocarbon spills (#)
- Aggregate volume of hydrocarbon spills (barrels)
- Volume of hydrocarbon spills recovered (barrels)
- Marine lost time incident rate (LTIR) (#)

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- Number of Federal Rail Administration (FRA) recommended violation defects (#)

Kinder Morgan's management is responsible for its assertion and for the selection of the criteria, which management believes provide an objective basis for measuring and reporting on the sustainability metrics. Our responsibility is to express a conclusion on management's assertion based on our review.

Our review was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants ("AICPA") in AT-C section 105, *Concepts Common to All Attestation Engagements,* and AT-C section 210, *Review Engagements*. Those standards require that we plan and perform the review to obtain limited assurance about whether any material modifications should be made to management's assertion in order to be fairly stated. A review is substantially less in scope than an examination, the objective of which is to obtain reasonable assurance about whether management's assertion is fairly stated, in all material respects, in order to express an opinion. Accordingly, we do not express such an opinion. We believe that our review provides a reasonable basis for our conclusion.

In performing our review, we have complied with the independence and other ethical requirements of the Code of Professional Conduct issued by the AICPA.

We applied the Statements on Quality Control Standards established by the AICPA and, accordingly, maintain a comprehensive system of quality control.

GHG emissions quantification is subject to inherent measurement uncertainty because of such things as GHG emission factors that are used in mathematical models to calculate GHG emissions and the inability of those models, due to incomplete scientific knowledge and other factors, to accurately measure under all circumstances the relationship between various inputs and the resultant GHG emissions. Environmental and energy use data used in GHG emissions calculations are subject to inherent limitations, given the nature and the methods used for measuring such data. The selection by management of different but acceptable measurement techniques could result in materially different amounts or metrics being reported.

The preparation of the other sustainability metrics requires management to establish the criteria, make determinations as to the relevancy of information to be included, and make assumptions that affect reported information. The selection by management of different but acceptable measurement techniques could result in materially different amounts or metrics being reported.

As discussed in management's assertion, Kinder Morgan has estimated GHG emissions for certain emission sources for which no primary usage data is available.

Based on our review, we are not aware of any material modifications that should be made to management's assertion referred to above in order for it to be fairly stated.

PricewaterhouseCoopers LLP

October 23, 2019

Kinder Morgan, Inc.'s Management Assertion
Year Ended December 31, 2018

Kinder Morgan, Inc. is responsible for the completeness, accuracy, and validity of the accompanying metrics reported in the Sustainability Accounting Standards Board (SASB) portion of the Environmental, Social and Governance (ESG) Report (also known as the "Sustainability Report") for the year ended December 31, 2018. Management of Kinder Morgan, Inc. has used the SASB Accounting Standards as an input to its consideration of what metrics and other sustainability disclosures to report, however, neither the Sustainability Report nor this management assertion related to certain metrics assert that Kinder Morgan has complied with the SASB Accounting Standards.

Data presented in the Sustainability Report includes Kinder Morgan, Inc. and its operated subsidiaries and its operated investees (hereinafter, "KMI"). The Sustainability Report also provides certain stand-alone sustainability metrics for Kinder Morgan US (KMI US) and Kinder Morgan Canada Limited (KML) locations and activities.

With respect to the metrics reported in the table below, which are also included in the Sustainability Report, management of Kinder Morgan, Inc. asserts that such sustainability metrics are presented in conformity with the assessment criteria set forth below. The metrics included in the table below have been rounded to the nearest whole number unless otherwise indicated. Management of Kinder Morgan, Inc. is responsible for the selection or development of the criteria, which management believes provide an objective basis for measuring and reporting on the selected sustainability metrics.

SASB Topic, *SASB Sustainability Accounting Standard*, and SASB Metric	**Kinder Morgan, Inc. Metric and scope**	**Definition of Kinder Morgan, Inc. Metric and Assessment Criteria**	**Kinder Morgan, Inc. Metric Quantity As of or for the year ended December 31, 2018**
Greenhouse Gas Emissions *Extractives & Minerals Processing Sector: Oil & Gas - Midstream* Gross global Scope 1 emissions, percentage methane, percentage covered under emissions-limiting regulations	GHG Gross Scope 1 and Scope 2 emissions, percentage methane, percentage covered under emissions-limiting regulations (KML only)	The quantity in metric tons ("MT") of carbon dioxide equivalent ("CO_2e") greenhouse gas emissions for KML. The percentage of methane emissions is calculated as the methane emissions in MT CO_2e divided by the gross global Scope 1 GHG emissions in MT CO_2e. The percentage of emissions covered under an emissions-limiting regulation is calculated as the CO_2e emissions covered under regulations divided by the gross global Scope 1 GHG emissions in MT CO_2e. The Scope 2 emissions for location-based and market-based are calculated as the same amount, as we do not have specific emissions factors for suppliers. Refer to the GHG Emissions section below, including Organizational Boundary, Exclusions, Calculations, Estimations, and Uncertainty, for	KML gross global Scope 1 emissions including discontinued operations: 22,036 MT CO_2e KML gross global Scope 2 emissions including discontinued operations: 157,895 MT CO_2e KML combined gross global Scope 1 and 2 emissions from continuing operations: 84,234 MT CO_2e KML Scope 1 percentage methane from continuing operations: 1% KML Scope 1 percentage CO_2e covered under emissions-limiting regulations: 0.0%

		additional information.	
Greenhouse Gas Emissions *Extractives & Minerals Processing Sector: Oil & Gas - Midstream* Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Scope 1 GHG emission reductions	The quantity in MT CO_2e of voluntary GHG emissions reductions. The four emission reduction activities included in this metric are: (1) compressor station component leaks, (2) alternative pipeline repair technology that preclude need for a pipeline blowdown (e.g., installing sleeves), (3) pipeline segment gas loss minimization projects (pressure drawdowns), and (4) EPA Natural Gas STAR program new and recurring reduction (from installing electric motors and gas turbines). The reported value in MT CO_2e is based on the calculation from the Code of Federal Regulations Part 98.233, applying a GWP of 25, which assumes the methane were directly emitted to the atmosphere (GHGRP Subpart W, IPCC 2007). KMI reports GHG reduction metrics as specified in the 2018 Carbon Disclosure Project (CDP) Climate Change Reporting Guidance: • C4.3a Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO_2e savings. • Report estimated annual CO_2e savings (MT CO_2e).	Total GHG reductions: 1,926,589 MT CO_2e Total methane emission reductions: 4,013,727 Mcf
Air Quality *Extractives & Minerals Processing Sector: Oil & Gas - Midstream* Air emissions of the following pollutants: (1)NOx (excluding N2O), (2) SOx, (3) volatile organic compounds (VOCs), and (4) particulate matter (PM10)	Reportable criteria emissions (KML only)	KML total air emissions in MT, from (1) NOx (excluding N2O), (2) SOx, (3) volatile organic compounds (VOCs), and (4) particulate matter (PM10) for sites that reported air emissions data to the Canadian National Pollutant Release Inventory (NPRI). Locations are required to report publicly to the Canadian NPRI database if the location met reporting requirements and thresholds as specified by NPRI.	KML MT of the following pollutants from continuing operations: (1)NOx (excluding N2O): 0 MT (2) SOx: 0 MT (3) volatile organic compounds (VOCs): 32 MT (4) particulate matter (PM10): 15 MT KML total air emissions from continuing operations: 47 MT KML total air emissions from discontinued operations: 113 MT
Air Quality *Extractives & Minerals Processing Sector: Oil and Gas Refining and Marketing* Number of refineries in or near areas of dense population	Number of refineries in or near areas of dense population	The number of owned and operated refineries in or near areas of dense population as regulated by the EPA as a refinery. For purposes of this assertion: • "Refinery" is defined as an industrial process plant where crude oil is processed and refined by complex chemical engineering processes, into more useful products (e.g., heating oil, kerosene, gasoline, diesel fuel) • "In or near" is defined as within 49 kilometers from the refinery (measured as a circle with a radius of 49 kilometers) • "Areas of dense population" is defined as urbanized areas according to U.S. Census Bureau definitions. Generally, urbanized	KMI number of refineries: 1 Reported data is as of December 31, 2018

		areas include those with a population greater than 50,000	
Operational Safety, Emergency Preparedness, & Response *Extractives & Minerals Processing Sector: Oil & Gas - Midstream* Number of reportable pipeline incidents, percentage significant	Number of reportable pipeline incidents, percentage significant	The number of reportable pipeline incidents and significant reportable pipeline incidents reported for the year ended December 31, 2018 are based on data reported to Pipeline and Hazardous Materials Safety Administration (PHMSA) relating to the year ended December 31, 2018 as of July 2019. The information is reported to PHMSA as follows: • Reportable liquid pipeline incidents are those that resulted in: explosions or fires, release of five gallons or more (excluding releases less than five barrels (bbls) associated with pipeline maintenance activities), a fatality, an injury necessitating in-patient hospitalization, or estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding $50,000. • Reportable gas pipeline gathering, transmission, storage, and distribution incidents include i) an event that involves a release of gas from a pipeline, or of liquefied natural gas (LNG), liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences: death or personal injury necessitating in-patient hospitalization; estimated property damage of $50,000 or more, including loss to the operator and others, or both but excluding the cost of gas lost; or unintentional estimated gas loss of three million cubic feet or more; ii) or an event that results in an emergency shutdown of an LNG facility; intentional activation of an emergency shutdown system for reasons other than an actual emergency does not constitute an incident (an incident is deemed by KMI as an undesired event that could result in a loss); and iii) an event that is significant in the judgment of KM, even though it didn't meet the criteria above. • Significant reportable pipeline incidents are defined as an incident that includes one or more of the following conditions: a liquid release volume greater than or equal to 50 bbls, a highly volatile liquid release greater than five bbls, a fatality, an injury necessitating hospitalization; or total cost that exceeds $50,000 in 1984 dollars. The unintentional and intentional release volumes are combined to determine if the incident meets the 50 bbl liquid release significant threshold. The population of reportable incidents is obtained from Kinder Morgan's internal incident reporting system.	Number of reportable pipeline incidents: 53 Number of significant reportable pipeline incidents: 23 Percentage of significant reportable pipeline incidents: 43%
Operational Safety, Emergency Preparedness, & Response *Extractives & Minerals*	Percentage of (1) natural gas and (2) hazardous liquid pipelines inspected	The percentage of natural gas pipelines and hazardous liquid pipelines inspected through in-line inspections, pressure tests, direct assessments, or other technologies. For segments of pipe that are inspected more than once for the same types of anomalies during the same calendar year, the mileage inspected	Percentage of natural gas pipelines inspected: 14% Percentage of hazardous liquid pipelines inspected: 18%

Processing Sector: Oil & Gas - Midstream Percentage of (1) natural gas and (2) hazardous liquid pipelines inspected		used in this calculation is counted once. In some limited instances where multiple inspections for different types of anomalies are conducted on the same segment in the same year, the mileage for each inspection is counted separately.	
Competitive Behavior *Extractives & Minerals Processing Sector: Oil & Gas - Midstream* Total amount of monetary losses as a result of legal proceedings associated with federal pipeline and storage regulations	Total amount of monetary losses as a result of legal proceedings associated with federal pipeline and storage, rate, access, and pricing regulations (millions of U.S. dollars)	Disclosure includes the amount, excluding legal fees, fines or settlements associated with the regulator's enforcement of federal pipeline and storage regulations, including those related to rates, pipeline access, price gouging, or price fixing by the U.S. Federal Energy Regulatory Commission, U.S. Commodity Futures Trading Commission, U.S. Federal Trade Commission or civil actions (e.g., civil judgment, settlements, or regulatory penalties), or criminal actions (e.g., criminal judgment, penalties, or restitutions) asserted by an entity whether a regulatory agency, business, or individual.	Total amount of fines or settlements, excluding legal fees, associated with federal pipeline and storage regulations, including rate, access, and pricing regulations (millions of U.S. Dollars): $0
Workforce Health & Safety *Extractives & Minerals Processing Sector: Oil & Gas – Exploration & Production* (1) Total recordable incident rate (TRIR), (2) fatality rate, (3) near miss frequency rate (NMFR) for (a) full-time employees, (b) contract employees, and (c) short-service employees	Total Recordable Incident Rate (TRIR) and Fatality Count for full-time employees, regular part time, and temporary employees	TRIR was calculated following the OSHA methodology as follows: total number of incidents multiplied by 200,000 divided by the number of employee hours actually worked. The 200,000 represents an estimate of the total hours 100 employees worked per year. 100 employees working 40 hours per week, 50 weeks per year. • For 2018, rates are calculated using incident classifications as of February 27, 2019. Injuries or illnesses may later be reclassified based on diagnosis. • Employee rates do not include contractors which are reported in a separate metric. Employee rates include regular full-time, regular part-time, and short-service (temporary) employees. Kinder Morgan reports fatality count, and not fatality rate, and does not report NMFR.	Employee TRIR: 1.0 Employee Fatality count: 0
Workforce Health & Safety *Extractives & Minerals Processing Sector: Oil & Gas – Exploration & Production* (4) average hours of health, safety, and emergency response training for (a) full-time employees,	Average hours of Health, Safety, and Emergency Response Training for full-time employees	The average number of employee hours spent on health, safety, emergency response, and other safety training topics not required under OSHA 1910, such as: • safe driving, which addresses hazards such as distractions while driving and adverse weather conditions; • back safety, which explores the factors that lead to back injuries such as physical activity, posture, and load positioning; • ergonomics, which explains how various postures and movements affect the body and how to mitigate ergonomic hazards Training time is assigned to the business segment the employee was active under at the end of the year.	Employee average training time: 17 hours

(b) contract employees, and (c) short-service employees		Kinder Morgan estimates the average training hours per employee using the median training time per course multiplied by the number of course completions. Employee rates do not include contractors. Employee rates include regular full-time, regular part-time, and short-service (temporary) employees.	
Ecological Impacts *Transportation Sector: Marine Transportation* Number and aggregate volume of spills and releases to the environment	Marine spills and releases to the environment	The number of marine spills and releases to the environment. Metric includes the number of spills to water (any quantity) and the aggregate volume (measured in cubic meters).	Number of marine spills and releases to the environment: 1 Aggregate volume of marine spills and releases to the environment: 0.0002 cubic meters
Ecological Impacts *Extractives & Minerals Processing Sector: Oil & Gas - Midstream* Percentage of land owned, leased, and/or operated within areas of protected conservation status or endangered species habitat	Percentage of land owned, leased, and/or operated within or near areas of protected conservation status or endangered species habitat	The percentage of land operated within or near designated areas of protected conservation status or endangered species habitat. For the purposes of this assertion, "near designated areas" is defined as operated land within five kilometers of the boundary of a protected conservation area or endangered species habitat, and "within designated areas" is defined as operated land within the boundary of protected conservation area or endangered species habitat. The total acreage of land used in this metric is 446,662, which represents the total Acreage of KMI assets including pipeline corridors & facilities, which is based on acreage KMI operates, which is most of the land they own and lease. There may be additional land that is owned and leased, but not operated, which is not included in this analysis. This excluded owned or leased land is immaterial and is not operated by KMI. Acreage operated for pipelines includes land within the 50-foot corridor of a pipeline's centerline, and excludes gathering lines in the CO_2 business segment. Acreage operated for a facility includes land within the facility's security fence line for the Natural Gas Pipelines, CO_2, and Terminals business segments and acreage owned by KMI for the Products Pipelines business segment, which can include land both inside and outside the security fence line. The Products Pipelines, Terminals, and CO_2 business segments included abandoned lines in the metric calculation. The Natural Gas Pipelines business segment excludes abandoned lines from the metric. This excluded land is immaterial and is not operated by KMI. The areas characterized as protected conservation areas are determined	Percentage of land operated within or near areas of protected conservation status or endangered species habitat inside or near designated areas: 33%

		by the World Database on Protected Areas (WDPA). The areas characterized as endangered species habitats are determined by the International Union for Conservation of Nature (IUCN) designations of "critically endangered" and "endangered" species for KMI's Canada and Mexico operations. This analysis deviated from the SASB standard for U.S. operations and used the U.S. Fish and Wildlife Service (USFWS) designated areas for "endangered species" as this dataset better reflects the biodiversity risk for KMI's operations. The WDPA and IUCN datasets were acquired in the first quarter of 2019 from the Integrated Biodiversity Assessment Tool (IBAT) alliance. The USFWS dataset was acquired in the third quarter of 2019 from the USFWS website. Analysis was completed using KMI's asset GIS datasets as of the first quarter 2019.	
Ecological Impacts *Extractives & Minerals Processing Sector: Oil & Gas - Midstream* Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume in Unusually Sensitive Areas (USAs), and volume recovered	Hydrocarbon number of spills and volume, and volume recovered	KMI number of hydrocarbon spills: A spill is defined as greater than one barrel (bbl), excluding spills contained within impermeable secondary containment. KMI volume recovered: The volume of spills recovered is the amount of spilled hydrocarbons (in bbls) removed from the environment through short-term spill response activities, excluding: amounts that were recovered during longer-term remediation at spill sites and amounts that evaporated, burned, or were dispersed. The volume recovered is reported for the year the associated spill occurred. KMI did not determine the volume of spills in Unusually Sensitive Areas (USAs) as identified by the National Pipeline Mapping System of the Office of Pipeline Safety.	Number of hydrocarbon spills: 37 Aggregate volume of hydrocarbon spills (bbls): 11,530 Volume of hydrocarbon spills recovered (bbls): 7,332
Employee Health & Safety *Transportation Sector: Marine Transportation* Lost time incident rate (LTIR)	Lost time incident rate reported by marine contractor	Marine lost time incident rate was calculated following the Oil Companies International Marine Forum Marine Injury Reporting Guidelines as follows: total number of lost time injuries multiplied by 1,000,000 divided by number of employee hours on-board.	Marine LTIR: 0.6
Accidents & Safety Management *Transportation Sector: Rail Transportation* Number of Federal Rail Administration (FRA) Recommended Violation Defects	Number of Federal Rail Administration (FRA) Recommended Violation Defects	The number of FRA recommended violation defects. The scope of disclosure includes, but is not limited to, violation defects that both did and did not result in civil penalties.	FRA recommended violation defects: 5

Exclusions

For the year ended December 31, 2018, KM only reported on GHG and Air emissions for KML. KMI does not yet report on KMI US's GHG and Air emissions. GHG and Air emissions data included in scope for calendar year 2018 only included assets during the time they were under KML operational control. KMI divested Kinder Morgan Canada Inc., Trans Mountain Pipeline (TMPL) and Puget Sound pipeline system on August 31, 2018.

GHG Emissions

Organizational boundary

In conformance with the SASB Oil & Gas - Midstream Standard (2018-10), and *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard*, KMI reported Scope 1 (direct) and Scope 2 (indirect) GHG emissions represent 100% of KML Gross Global emissions from the facilities where Kinder Morgan has operational control. Note: data for the year ended December 31, 2018 only included assets during the time they were under KML operational control. KML divested Kinder Morgan Canada (i.e., Trans Mountain Pipeline, Puget Sound and Kinder Morgan Canada Inc. locations) on August 31, 2018.

Calculations

GHG emissions for carbon dioxide equivalents, including methane, are calculated using the methodologies outlined in *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard*. Carbon dioxide emissions and equivalents have been determined on the basis of measured or estimated fuel and electricity usage, multiplied by relevant, published carbon emission factors (as summarized in the table in the "Estimations" section), which are updated annually. Base data utilized in the calculation of consolidated Scope 1 (direct) and Scope 2 (indirect) GHG emissions is obtained from direct measurements, and third-party invoices or estimates. Carbon dioxide equivalent emissions utilize Global Warming Potentials ("GWPs") sourced from the Intergovernmental Panel on Climate Change Fifth Assessment Report (Assessment Report 5 – 100 year). Refer to the table below for emission factors and calculation assumptions used by fuel type. Kinder Morgan is reporting location and market-based Scope 2 emissions. Other gases included in CO2e (N2O and HFC) are immaterial and have not been separately disclosed.

Estimations

Estimates are used for Scope 1 and Scope 2 emissions where measurement data is not readily available as noted in the table below. These estimates account for approximately 6% of the scope 1 and 2% of scope 2 GHG emissions.

Activity	Source Type	Emission Factor Source	Calculation Estimations and Assumptions
Combustion Equipment (Stationary) - Scope 1	Emissions from general stationary combustion of fuel or waste with production of useful energy, emissions from the combustion of waste gas, emissions from general stationary	Alberta - CCIR November 2018 Canada (except Alberta) - WCI 2011	1. It was assumed that stationary combustion equipment was operated at 100% of the rated capacity for the runtimes provided by KML and the thermal efficiency of 34% was applied for diesel-fired combustion equipment (CAPP

	combustion for production of useful energy, and emissions from the combustion of natural gas and propane to support the heating value of the waste gas combustion.	US - eGRID 2016 Default emission factors were used for each fuel type is no site-specific emissions information was available.	2007). 2. In the event that stationary combustion equipment details were provided on an annual basis (i.e., runtimes or fuel consumption data), a ratio of 8/12 months were applied to the data in order to recognize the Trans Mountain and Puget Sound facilities that were divested on August 31, 2018. These emissions are considered to be estimated. 3. An external gas analysis performed in 2015 for the VCU emissions was reviewed and assumed to be still applicable in 2018. Based on this assumption, emissions from waste gas are considered actual emissions since the volume of gas was known.
Combustion Equipment (Mobile) - Scope 1	Emissions from onsite mobile equipment required for operations, and on-road mobile equipment used by KML personnel. Typically, mobile equipment is used off-site.	Canada - National Inventory Report 1990- 2017 (ECCC 2019)	1. The fuel efficiency of a portion of the TransMountain mobile units were unknown for 2018, therefore, fuel efficiencies from either NRCan (https://fcr-ccc.nrcan-rncan.gc.ca/en/) or Fuelly (http://www.fuelly.com/car) were applied against the 2018 Trans Mountain mileage data to determine fuel volumes. Emissions calculated from these vehicles are considered to be estimated.
Fugitive - Scope 1	Involuntary release of a mixture of gases (including refrigerants) containing GHGs.	The calculation of a combined combustion CO_2 emission factor has been derived using CAPP (2003) Calculating Greenhouse Gas Emissions.	1. For some AC units there was no refrigerant charge, refrigerant type, or leak rate provided. Therefore the industry norm of 1kg charge / 1 ton AC unit size, refrigerant type of R410A, and a leak rate of 5% were assumed. When AC unit sizes were unknown it was assumed that building rooftop units were 5 ton units and small window units were 2 tons. The refrigerant charge at the Calgary head office was unknown, therefore a 100 ton unit with refrigerant type of R410A, and a leak rate of 5% was assumed. 2. For every 20 employees in offices spaces, it was assumed that 1 refrigerator would be available. For refrigerators a 0.275kg charge, refrigerant type of HFC-134a, and a leak rate of 5% were assumed. 3. Fleet truck refrigerant charges were not provided. Therefore, 1.1 kg charge of R134a was assumed to be in fleet trucks older than 2017 and 1.1kg of R1234yf charge in trucks newer than 2017. Fleet trucks were assumed to have a charge leak rate of 20% per year (API Compendium 2009.) 4. Based on the information above, all emissions from refrigerants are considered to be estimated.
Vent - Scope 1	Voluntary release of a mixture of gases containing GHGs. Typically, vent emissions are known sources and are part of operations. Kinder Morgan's operations include pig launching and receiving procedures at the	Kinder Morgan site specific emission factors applied	1. Pigs in standby will expose trace hydrocarbons to the atmosphere during the entire standby duration. Industry standard of 30 min standby time was accepted in 2015 by KML. A low wind speed of 5m/s recommended by the Spills Equation was used for each standby. These were

	Edmonton Rail Car Terminal.		maintained in 2018. 2. Because the number of pigging events was known, the above items are considered to be assumptions used to calculate actual emissions.
Indirect Emissions - Scope 2	Emissions related to electricity generation associated with grid electricity.	Canada - National Inventory Report 1990- 2017 (ECCC 2019) US - eGRID 2016	1. Indirect GHG quantification from leased office space was based on leased space area not actual electricity consumption. A leased space to energy conversion of 1.12 Gj/m2 (Climate Registry 2018) was used to estimate energy consumption. 2. The Grid Factor for 2018 was not available, therefore the average of 2015-2017 was used for Canada emissions; this approach is consistent with previous GHG data used to determine the 2017 Grid Factor.

Uncertainty

GHG quantification is subject to inherent measurement uncertainty because of such things as GHG emissions factors that are used in mathematical models to calculate GHG emissions and the inability of these models, due to incomplete scientific knowledge and other factors, to accurately measure under all circumstances the relationship between various inputs and the resultant GHG emissions. Environmental and energy usage data used in GHG emissions calculations are subject to inherent limitations, given the nature and the methods used for measuring such data. The selection of different but acceptable measurement techniques could result in materially different amounts of metrics being reported.

Other Estimations

The preparation of the other sustainability metrics requires management to establish the criteria, make determinations as to the relevancy of information to be included, and make assumptions that affect reported information. The selection by management of different but acceptable measurement techniques could result in materially different amounts or metrics being reported.

Air Quality

When site specific information was not available, the use of methodologies/approaches or emissions factors from publicly available guidance documents (i.e., Canadian Association of Petroleum Producers [CAPP 2004, CAPP 2014, US EPA AP 42]) were used.

1526 Cole Boulevard
Building 3, Suite 150
Lakewood, CO 80401

303.792.5555 PHONE
303.792.0122 FAX

www.trcsolutions.com

Kinder Morgan (KM) – Kinder Morgan Canada Limited (KML)

Verification Statement **September 2018**

Name:	Kinder Morgan Canada Limited (KML)
Prepared By:	Daryl J. Whitt, P.E. Sr. Project Manager
Signature:	

Emissions Inventory:

The verification of the Kinder Morgan Limited (KML) greenhouse gas emissions assertion for 2015, 2016, and 2017 included consideration of 65 facilities and fleet transportation. These facilities and sources are considered to be representative of the whole of KML Operations due to the size, types of operations, and geographic distribution of these facilities. The facilities are as follows:

ALBERTA CRUDE TERMINAL, AB	FORT SASKATCHEWAN DELIVERY, AB
ALBREDA PUMP STATION, BC	GAINFORD PUMP STATION, AB
ANACORTES METER STATION, WA	HAYTER, AB
ATHABASCA PROF BUILDING, AB	HINTON PUMP STATION, AB
BASE LINE TERMINAL, AB	HOPE PIPELINE MAINTENANCE SHOP, BC
BLACKPOOL ADMIN OFFICE, BC	JASPER PUMP STATION, AB
BLACKPOOL PUMP STATION, BC	JET FUEL SYSTEM - TME OFFICE, BC
BLUE RIVER PUMP STATION, BC	KAMLOOPS HELICOPTER HANGER, BC
BROADMOOR PLAZA B, AB	KAMLOOPS STATION, BC
BURLINGTON TRAP STATION, WA	KERROBERT, SK
BURNABY SECURITY GATE, BC	KILOMETER POST 966, BC
BURNABY TECHNICAL SECURITY GATE, BC	KINGSVALE PUMP STATION, BC
BURNABY TERMINAL TANK FARM, BC	LAUREL PUMP STATION, WA
CALGARY HEAD OFFICE, AB	MCMURPHY STATION, BC
CHAPPEL PUMP STATION, BC	NITON STATION, AB
CHIP PUMP STATION, AB	NORTH 40, AB
ALAMEDA, SK	NORTH THOMPSON OFFICE, BC
REGINA MAINTENANCE YARD, SK	PORT KELLS PUMP STATION, BC
ROSETOWN, SK	REARGUARD PUMP STATION, BC
WAINWRIGHT, AB	REGINA LIQUID TERMINAL, SK
CREELMAN, SK	AIRPORT TERMINAL, BC
DARFIELD PUMP STATION, BC	SOVEREIGN, SK
EDMONTON REGIONAL OFFICE, AB	STONY PLAIN PUMP STATION, AB
EDMONTON SOUTH RAIL TERMINAL (ERT), AB	STUMP PUMP STATION, BC
EDMONTON SOUTH TERMINAL, AB	SUMAS, BC
EDMONTON TERMINAL, AB	TMEP PROJECT OFFICE, BC
EDSON PUMP STATION, AB	TRANS MOUNTAIN (BURNABY), BC
ELBOW, SK	VANCOUVER WHARVES, BC
ESTLIN, SK	VEGREVILLE, AB
FABYAN, AB	WAHLEACH PUMP STATION, BC
FERNDALE METER STATION, WA	WESTRIDGE TERMINAL, BC
FINDLATER, SK	WOLF LAKE PUMP STATION, AB
FINN PUMP STATION, BC	

These 65 facilities are representative of the GHG emissions inventory for KML, comprising of: Scope 1 direct emissions from fuel combustion, VOC control combustion, mobile, and fugitive sources of GHGs; Scope 2 indirect emissions from total purchased electricity. TRC has verified approximately 80% of the total KML GHG emissions from a representative sampling of sources at these 65 facilities for 2015, 2016, and 2017, including 95% of Scope 1 emissions and 79% of Scope 2 emissions.

The organizational boundary for these GHG inventories is KML which operates pipeline systems and terminals in Western Canada and in Washington State, USA. Boundaries include facilities, which KML exhibits operational control. Emissions include CO2, CH4, and N2O from direct combustion and CO2 and CH4 from fugitive sources, and CO2e emissions from indirect electricity generation. The KML Operations have no SF6, PFC or NF3 emissions.

Greenhouse Gas Management:

KML follows the Sustainability Accounting Standards Board (SASB) Oil and Gas Midstream Standard (2017), and the ISO 14064-1: Greenhouse Gases - Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals, with a centralized approach, to quantify GHG emissions. Primary fuel, energy and production data are collected by local representatives at each facility through standardized data request forms. A third party aggregated the data into a central spreadsheet for emissions calculations, reporting, and verification (calc_2017_KM_GHG_IPCC5 (08-02-2018) for client.xlsx, with updates provided in calc_2017_KM_GHG_IPCC5 (09-12-2018)_client.xlsx). The spreadsheet uses published fuel-based emission factors and process-specific measured emission factors to calculate Scope 1 GHG emissions from fuel combustion, equipment operation run-time, waste incineration, mobile combustion emissions, fugitive emissions, and venting emissions. Scope 2 CO2e emissions are calculated using emission factors taken from the National Inventory Report for Canada (ECCC 2018) for Indirect Emissions, Emission Factors.

Verification Level of Assurance:

Limited Assurance: A "Limited Assurance," following the ISO 14064-3 Greenhouse Gases - Specification with guidance for the validation and verification of greenhouse gas assertions, is appropriate for basic GHG reporting and for voluntary reduction efforts where there are no imminent requirements or compliance obligations associated with GHG reductions. This is the case for KML, as direct GHG emissions from the KML facilities are not covered by existing (or pending) regulatory requirements for GHG emissions limitations. A Limited Assurance is intended to establish the basis for stakeholder reporting and external communications; support claims of carbon neutrality, and for credit for early action; and to enable assessments of performance of GHG reduction initiatives towards voluntary targets. Given the status of the KML emissions inventory and management system, a Limited Assurance, as defined in the ISO 14064-3 Standard is appropriate for this project. This verification covers the calendar years 2015, 2016, and 2017 GHG emissions inventories for the facilities listed above.

Summary:

KML's 2015 assertion of GHG emissions from Scope 1 direct and Scope 2 indirect sources is a total of 193,100 tonnes of CO2e emissions. KML's 2016 assertion of GHG emissions from Scope 1 direct and Scope 2 indirect sources is a total of 198,469 tonnes of CO2e emissions. KML's 2017 assertion of GHG emissions from Scope 1 direct and Scope 2 indirect sources is a total of 216,804 tonnes of CO2e emissions. Based on its review of KML's 2015, 2016, and 2017 GHG emissions inventory for the 65 GHG emitting facilities, including fleet operations, as identified above, TRC has found minor clerical and transcription errors, which do not significantly affect the reported results. TRC has found no evidence that the GHG assertion is not materially correct, and no evidence that KML's assertion is not a fair and accurate representation of KML's actual GHG emissions, with a "Limited" level of assurance, according to the ISO 14064-3 Standard.

Verifier Qualifications:

TRC was retained by KM to provide third-party verification of GHG reporting for Inventory Years 2015, 2016, and 2017 for submittals in 2018. TRC's GHG experts are qualified and experienced in performing both "Reasonable" and "Limited" assurance engagements, and have familiarity and expertise in GHG programs, reporting platforms and protocols, including; CDP, WRI/WBCSD GHG Protocol, and ISO 14064-3 Specification with Guidance for the Validation and Verification of Greenhouse Gas Assertions Standard.

The lead verifier and project manager for this engagement is Daryl J. Whitt, P.E. Mr. Whitt is a Professional Engineer with 25 years of environmental management experience in industry and consulting. He has developed GHG inventories for individual facilities, multi-national corporations, and product life cycles for a variety of industries, and by a variety of protocols. He is experienced in performing and leading GHG verifications, based on the ISO 14064-3 Standard.

Appendix F – Natural Gas STAR Summary Report

This report includes methane reductions that were reported to EPA's Natural Gas STAR program. This report does not include reduction data for EPA's Natural Gas STAR Methane Challenge program.

EPA United States Environmental Protection Agency

NaturalGas EPA POLLUTION PREVENTER

Natural Gas STAR Summary Report (Filtered)

Partner(s)

Colorado Interstate Gas Company, El Paso Natural Gas Company, Kinder Morgan, Natural Gas Pipeline Company of America, Southern Natural Gas Company, Tennessee Gas Pipeline Company

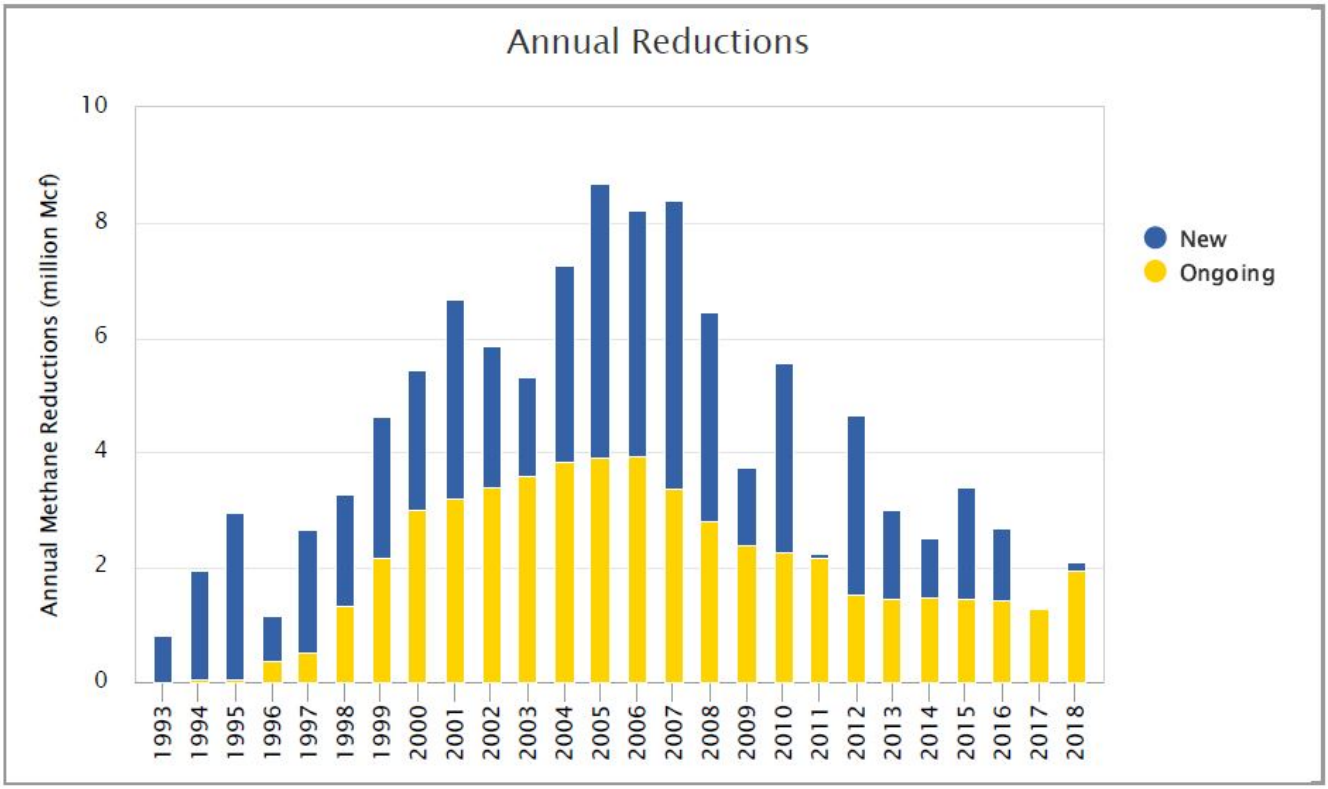
Segment(s)

Distribution, Gathering and Processing, Production, Transmission

Year(s)

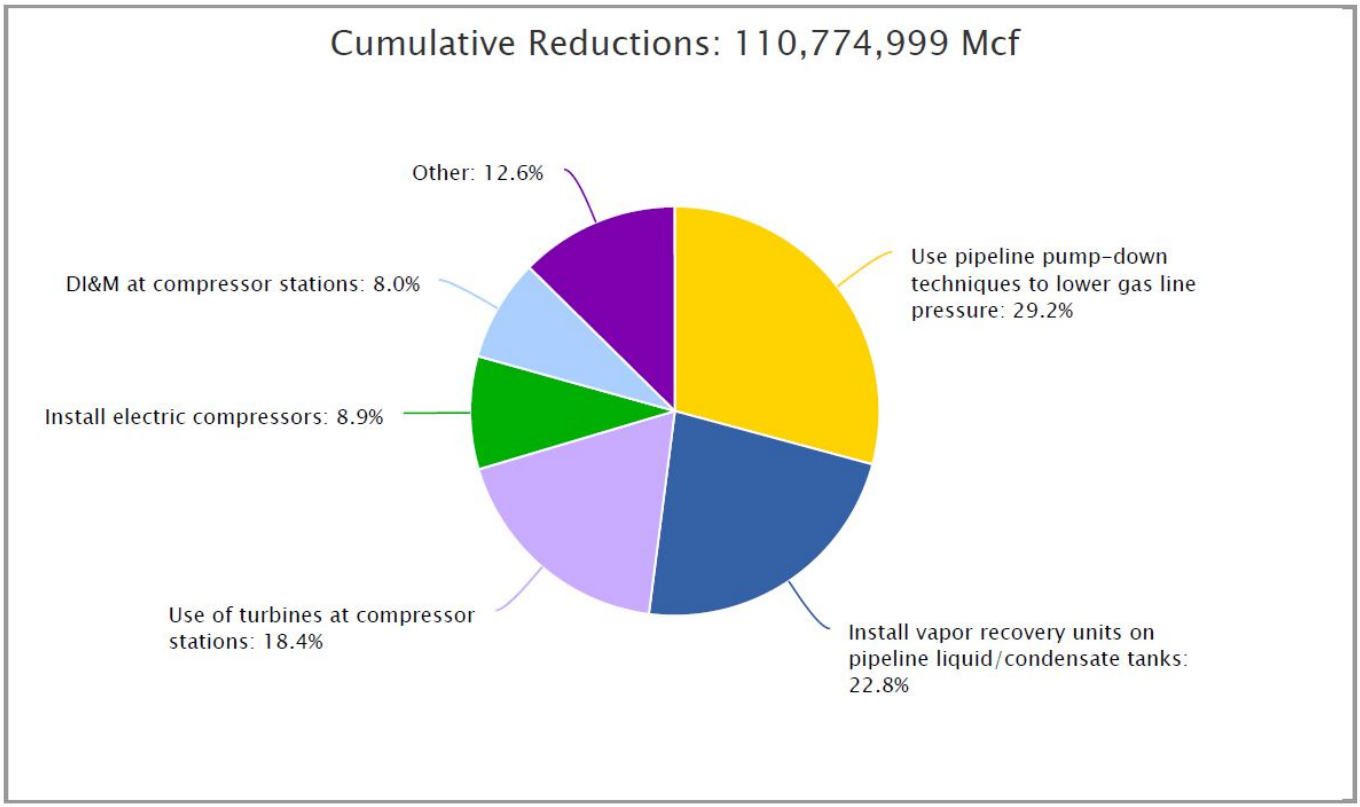
2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990

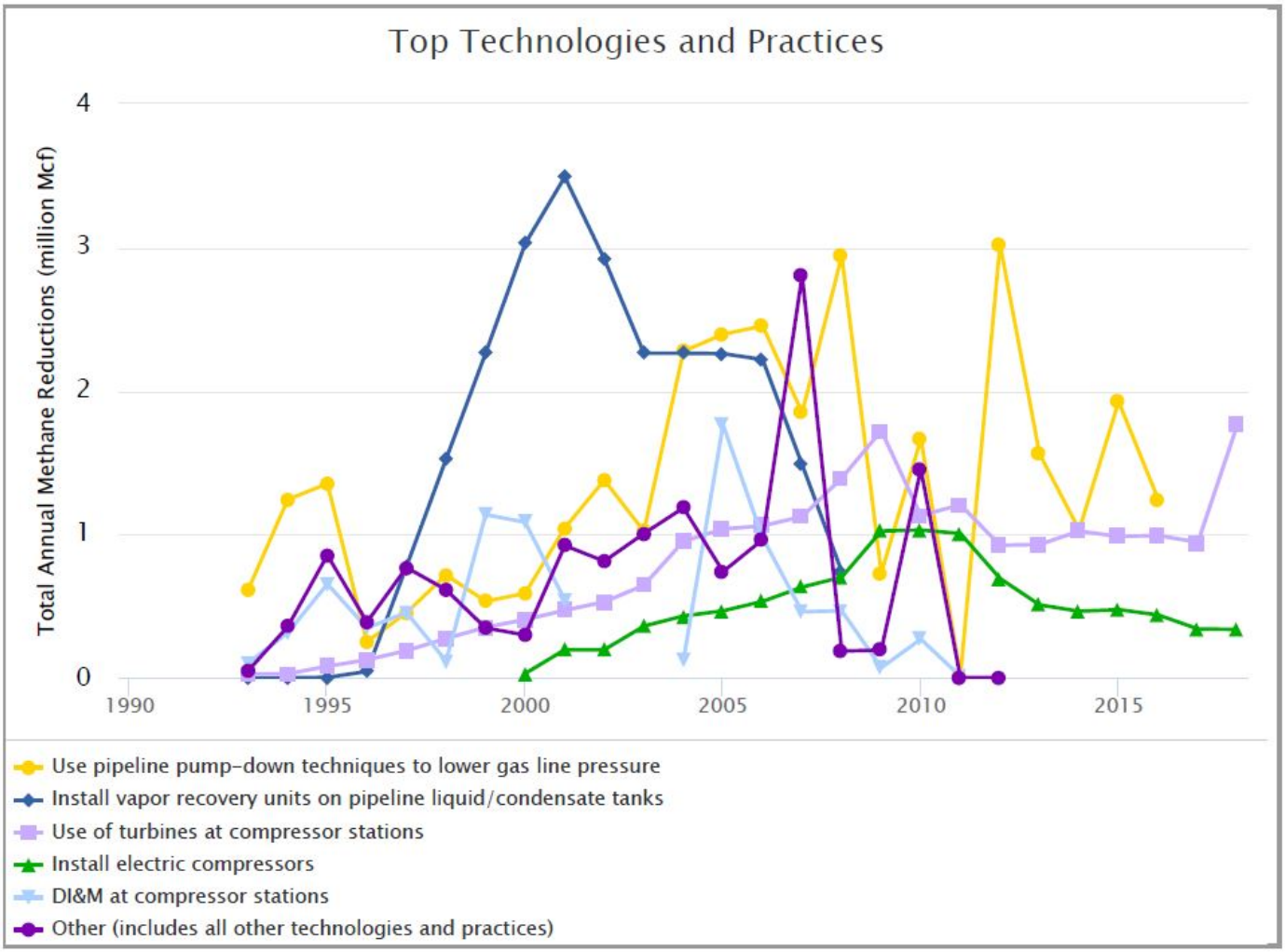
This report summarizes the voluntary methane emissions reductions achieved under the EPA Natural Gas STAR Program.



2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990	Cumulative
New: 57,737,407 Mcf Ongoing: 53,037,593 Mcf	**110,774,999 Mcf**

Methane Emission Reduction Equivalencies as of December 2018 See EPA's Greenhouse Gas Equivalencies Calculator for additional equivalencies and details about the conversion units.	**Cumulative (110,774,999 Mcf)**
Metric tons (MT) CO_2 equivalent	53,171,787 $MTCO_2e$
CO_2 emissions from the energy used by this many homes in one year	5,742,094 homes
Carbon sequestered from this many acres of U.S. forests in one year	62,555,043 acres
Value of methane saved (at $3 per Mcf)	$332,324,998




Top Technologies and Practices
Total Annual Methane Reductions (million Mcf)
4
3
2
1
0
1990
1995
2000
2005
2010
2015
Use pipeline pump-down techniques to lower gas line pressure
Install vapor recovery units on pipeline liquid/condensate tanks
Use of turbines at compressor stations
Install electric compressors
DI&M at compressor stations
Other (includes all other technologies and practices)

Appendix G – Summary of Scenarios and their Underlying Assumptions and Indicators

World Energy Outlook (WEO) 2018 IEA World Energy Model (WEM)

IEA's Current Policies Scenario	IEA's New Policies Scenario	IEA's Sustainable Development Scenario
Underlying Assumption: Policies		
- Based solely on existing laws and regulations as of mid-2018, and therefore excludes the ambitions and targets that have been declared by governments around the world. (WEO, p. 29) - Where existing policies target a range of outcomes, it is assumed that the lower end of the range is achieved. (WEO p. 597) - Provides a baseline for the WEO analysis. (WEO p. 29)	- Includes policy ambitions that have been announced as of August 2018 and incorporates the commitments made in the Nationally Determined Contributions under the Paris Agreement, but does not speculate as to further evolution of these positions. (WEO p. 29) - Where commitments are aspirational, this scenario makes a judgment as to the likelihood of those commitments being met in full. (WEO p. 29)	- Fully aligned with the goal of the Paris Agreement to hold the increase in global temperature to well below 2°C. (WEO p. 29) - Sets out the major changes that would be required to deliver the UN Sustainable Development Goals (SDGs), providing an energy sector pathway that achieves: - universal access to affordable, reliable and modern energy services by 2030 (SDG 7.1); - substantial reduction in air pollution (SDG 3.9); and - effective action to combat climate change (SDG 13). (WEO p. 597)
Underlying Assumption: Population		
- Population growth slows over the projection period, in line with past trends: from 1.2% per year in 2000-2017 to 1.0% in 2017-2025. (WEO p. 598) - World population is projected to grow by 0.9% per year on average, from 7.5 billion in 2017 to 9.2 billion in 2040. (WEO p. 598)	- Population growth slows over the projection period, in line with past trends: from 1.2% per year in 2000-2017 to 1.0% in 2017-2025. (WEO p. 598) - World population is projected to grow by 0.9% per year on average, from 7.5 billion in 2017 to 9.2 billion in 2040. (WEO p. 598)	- Population growth slows over the projection period, in line with past trends: from 1.2% per year in 2000-2017 to 1.0% in 2017-2025. (WEO p. 598) - World population is projected to grow by 0.9% per year on average, from 7.5 billion in 2017 to 9.2 billion in 2040. (WEO p. 598)
Underlying Assumption: Economics		
- World GDP is expected to grow on average by 3.4% per year over the projection period. (WEO p. 599) - Annual average growth is assumed to drop from 3.7% over 2017-2025 to 3.3% over 2025-2040. (WEO p. 599)	- World GDP is expected to grow on average by 3.4% per year over the projection period. (WEO p. 599) - Annual average growth is assumed to drop from 3.7% over 2017-2025 to 3.3% over 2025-2040. (WEO p. 599)	- World GDP is expected to grow on average by 3.4% per year over the projection period. (WEO p. 599) - Annual average growth is assumed to drop from 3.7% over 2017-2025 to 3.3% over 2025-2040. (WEO p. 599)
Details: Timeframe		
- 2017-2040	- 2017-2040	- 2017-2040

Comparison of Relevant Parameters and Signposts within Transition Scenarios

IEA's Current Policies Scenario	IEA's New Policies Scenario	IEA's Sustainable Development Scenario
	Policy & Demand	
Energy Efficiency		
- In the absence of existing and announced efficiency measures, global energy consumption in 2040 would be almost 3,400 MMton oil equivalent higher than projected in the New Policies Scenario. (WEO p. 246)	- Energy efficiency investment increases in all end-use sectors, especially in transport and buildings. (WEO p. 252) - Energy intensity declines by 2.3% a year through 2040. (WEO p. 246)	- Energy intensity declines by 3.4% a year through 2040. (WEO p. 246) - By 2040, cars that rely solely on gasoline and diesel are 40% more efficient than today. (WEO p. 137)
CO_2 Price		
- Takes into consideration emissions trading schemes and carbon taxes already in place or under development as of mid-2018. (WEM p. 15)	- Extending the $50/ton price on CO_2 already applied by many international oil companies when screening projects across the oil and gas supply chains could yield reductions of >1,000 MMton CO_2 by 2040. (WEO p. 478)	- Assumes that CO_2 pricing is established in all OECD countries and that CO_2 prices in these markets start to converge from 2025, reaching $140/ton CO_2 in most OECD countries in 2040. (WEM p. 15) - Several non-OECD countries are assumed to put in place cap-and-trade schemes to limit CO_2 emissions. (WEM p. 15)
Renewables - including biofuels		
- Continued cost reductions and policy support drive sustained uptake of wind power and solar PV across the world. (WEO p. 298) - Biofuel promotion policies currently in place in 68 countries are maintained. The U.S. is the only country that has set absolute consumption targets through its Renewable Fuel Standard II, with an overall target of 73 billion liters in 2018 and 136 billion liters in 2022. (WEO p. 266)	- Support provided to renewables-based electricity generation peaks at around $300 billion in 2035 and then declines to about $280 billion by 2040. (WEO p. 255) - From 2017 to 2025, worldwide biofuels use in the transport sector increases 5% per year, before slowing to 3.5% per year 2025-2040. (WEO p. 268) - Road vehicles powered by renewables account for almost 15% of the total distance driven in 2040. (WEO p. 269)	-Use of biofuels in transport expands by 308% from 2017 to 2040. (WEO p. 91) - Producing a barrel of advanced biodiesel costs around $140/barrel today. Assuming that this results in no net CO_2 emissions, a carbon tax above $150 per ton of CO_2 would be required for such a biodiesel to be cost-competitive with diesel refined from crude oil. (WEO p. 265)

Comparison of Relevant Parameters and Signposts within Transition Scenarios

IEA's Current Policies Scenario	IEA's New Policies Scenario	IEA's Sustainable Development Scenario
General Energy Demand		
- Global energy demand grows on average by 1.4% per year; in 2040, demand is 38% up from 2017. (WEO p. 92)	- Global energy demand grows on average by 1.0% per year; in 2040, demand is 27% up from 2017. (WEO p. 92) - World demand experiences a major shift from advanced to developing economies, with demand growing fastest in India where it more than doubles by 2040. China's energy demand also grows strongly. U.S. demand remains flat 2017-2040, while European Union and Japan energy demand declines. (WEO. p. 35)	- Global energy demand declines on average by 0.1% per year; in 2040, demand is 2% down from 2017. (WEO p. 92)
Oil Demand		
- Global oil demand rises by around 1.1 MMBbl/d on average every year and shows no discernible slowdown to 2040, with gasoline and diesel remaining dominant in the road transport sector. (WEO p. 136) - 25.7% growth in global oil demand from 2017-2040. (WEO p. 138)	- 11.5% growth in global oil demand from 2017-2040. (WEO p. 138) - Oil use in cars peaks in the 2020s due to advances in fuel efficiency and an increased use of biofuels and electricity. However, trucks, aviation, shipping, and petrochemicals continue to push up overall oil use. (WEO p. 39) - Global oil demand grows by around 1 MMBbl/d on average each year to 2025 driven by developing countries; thereafter, average annual demand growth slows to around 0.25 MMBbl/d, but global demand does not peak before 2040. Demand in advanced economies drops by over 0.4 MMBbl/d on average each year to 2040. (WEO p. 133)	- 24.9% decrease in global oil demand from 2017-2040. (WEO p. 138) - Demand falls by a total of 25 MMBbl/d between 2017 and 2040. (WEO p. 134) - Demand peaks in nearly all countries before 2030, except India and sub-Saharan Africa. (WEO p. 137)

Comparison of Relevant Parameters and Signposts within Transition Scenarios

IEA's Current Policies Scenario	IEA's New Policies Scenario	IEA's Sustainable Development Scenario
Natural Gas Demand		
- Global gas demand rises by 1.9% per year, resulting in almost 60% more demand in 2040 than today. (WEO p. 174) -The largest growth comes from the power sector, where unconventional gas resources are increasingly called upon. (WEO p. 174)	- Natural gas demand increases by 0.7% per year; from 767 bcm in 2017 to 869 bcm in 2030 and 907 bcm in 2040. (WEO p. 176) - Demand in China grows rapidly reflecting strong policy efforts to improve air quality; developing economies in Asia account for half the total demand growth to 2040. (WEO p. 175)	- Global gas demand continues to grow to 2025 before flattening out at around 4.2 tcm per year. (WEO p. 175) - Gas is the only fossil fuel for which demand in 2040 is higher than today, and it becomes the largest fuel in the global energy mix; in North America, gas grows from 31% to 36% of the energy mix 2017 to 2040. (WEO p. 175 and 177, and related backup Excel data) - Global LNG trade is expected to increase by over 60% by 2025 and nearly double by 2040 from 2017 levels. (WEO p. 174) - In more carbon-intensive systems where there is ample scope to displace coal, such as India, gas demand is higher than in the New Policies Scenario. In Europe and North America, demand remains stable to 2025, but declines after that reflecting improved efficiency in buildings and industry, and more rapid decarbonization of power. (WEO p. 177)

Comparison of Relevant Parameters and Signposts within Transition Scenarios

IEA's Current Policies Scenario	IEA's New Policies Scenario	IEA's Sustainable Development Scenario
Coal Demand		
- Coal demand increases at 1% per year over the outlook period, but coal still falls behind gas by 2040. (WEO p. 219)	- Overall coal consumption remains flat from 2017 through 2040 and does not regain the peak seen in 2014. (WEO p. 218) - Share of coal in global primary energy demand declines from 27% today to 22% in 2040, falling behind gas in the late 2020s. (WEO p. 219) - Strong regional variations exist, with many advanced economies considering how to phase out coal use in power generation to reduce CO_2 emissions, while many developing economies view coal as important to their economic development with demand in India and southeast Asia more than doubling from 2017 to 2040. (WEO p. 220)	- Coal consumption decreases steeply (-3.6% per year) and coal's share in primary energy falls below 12% by 2040. (WEO p. 219)
	Emerging Technologies	
Solar PV Deployment		
- By 2040, global annual average investment in solar PV power generation declines to ~60% of the level spent in 2017. (WEO p. 254) - By 2040, solar PV represents 16% of global power generation capacity, increasing by 7.2% per year on average 2017-2040. (WEO p. 529)	- Widespread policy support and falling costs raise solar PV's share of generation from about 2% in 2017 to above 9% by 2040, on a par with nuclear. (WEO p. 342) - Costs are projected to fall by more than 40% to 2040, underpinning a nine-fold growth in solar PV generation, mainly in China, India, and the U.S. (WEO p. 44) - By 2040, solar PV represents 20% of global power generation capacity, increasing by 8.4% per year on average 2017-2040. (WEO p. 529)	- Biggest growth in power generation; increases by factor of sixteen by 2040. (WEO p. 93) - By 2040, solar PV represents 29% of global power generation capacity, increasing by 10.8% per year on average 2017-2040. (WEO p. 529)

Comparison of Relevant Parameters and Signposts within Transition Scenarios		
IEA's Current Policies Scenario	**IEA's New Policies Scenario**	**IEA's Sustainable Development Scenario**
Energy Storage		
	- Battery storage capacity reaches 220 gigawatts by 2040, up from 4 GW in 2017. (WEO p. 364) -Pumped storage hydropower, which currently accounts for 97% of global storage capacity, also continues to expand, albeit at a slower rate than battery storage. Nevertheless, the very rapid growth in battery storage means that batteries account for almost as much capacity as pumped hydro by 2040. (WEO p. 364) - In India, battery storage becomes competitive soon after 2020. In the U.S., batteries close in on gas turbines towards 2030. (WEO p. 365)	
EV Deployment		
	- Electric car fleet amounts to more than 40 million cars by 2025, and one-out-of-five cars sold in the world is electric by 2040, compared with just over 1% today. (WEO p. 339) - With a growth rate of 14% per year, electricity use in road transport overtakes railways to become the largest source of transport electricity demand by around 2030, led by developing economies. (WEO p. 338) - Regional differences in EV share of car sales: - In China, one-out-of-three cars sold by 2040 is electric. - In European Union electric car sales share is about 40% by 2040. - In the U.S. the market of electric cars reaches around 15% by 2040. (WEO p. 339)	- By 2040, electricity is powering more than 900 million electric cars worldwide, accounting for over 50% of the fleet. (WEO p. 91) - Three quarters of cars sold in 2040 are electric. (WEO p. 416)

Comparison of Relevant Parameters and Signposts within Transition Scenarios

IEA's Current Policies Scenario	IEA's New Policies Scenario	IEA's Sustainable Development Scenario
CCUS Deployment		
- The U.S. passed legislation (the Future Act) that expands tax credits for the capture of CO_2 from power plants or industrial facilities, up to \$50/ton CO_2. The tax credit could also spur investment in CO_2 capture for natural gas processing and refining. Positive developments supporting plans for CCUS and new projects also come from Norway, Netherlands and United Kingdom. (WEO p. 342)	- Extension and strengthening of support for CCUS in the U.S. (WEO p. 608)	- By 2040, roughly 20% of coal capacity is equipped with carbon capture technology. (WEO p. 228) - Some 210 gigawatts (GW) of coal plants are fitted with carbon removal technology, of which 170 GW are retrofits to existing plants. (WEO p. 219) - Facilities fitted with CCUS technologies account for more than 40% of investment in fossil-fueled power plants, up from less than 2%. (WEO p. 456)
Energy Mix		
Oil		
- Oil maintains the largest share of global energy demand, but declines from 32% to 29% from 2017 to 2040. (WEO p. 38)	- Oil maintains the largest share of global energy demand, but declines from 32% to 28% from 2017 to 2040. (WEO p. 38)	- Oil is overtaken by renewables and gas as a percentage of global energy demand, declining from 32% to 23% from 2017 to 2040. (WEO p. 38)
Natural Gas		
- Natural gas' share of global energy demand grows from 22% to 25% from 2017 to 2040, in line with coal's share in 2040. (WEO p. 38)	- Natural gas overtakes coal in 2030 to become the second-largest fuel in global energy mix. (WEO p. 26) - Natural gas' share of global energy demand grows from 22% to 25% from 2017 to 2040. (WEO p. 38) - The share of gas in the energy mix is 14% in China and 8% in India by 2040. (WEO p. 192)	- Natural gas' share of global energy demand increases from 22% to 25% from 2017to 2040; surpassed only by renewables. (WEO p. 38) - Gas becomes the largest fuel in the global energy mix with a shift from 30% to 35% in North America from 2017 to 2040. (WEO p. 175 and 177) - The share of gas in the energy mix rises to almost 20% in China and 16% in India by 2040. (WEO p. 192)

Comparison of Relevant Parameters and Signposts within Transition Scenarios

IEA's Current Policies Scenario	IEA's New Policies Scenario	IEA's Sustainable Development Scenario
Bio-Energy		
- Solid biomass represents less than 5% of global energy demand. (WEO p. 33) - Traditional use of solid biomass represents 42% in 2025 and 33% in 2040 of total bioenergy consumption. (WEO p. 250) - Biofuels' share of total transport demand will be 4% in 2025 and 4% in 2040. (WEO p. 250) - Biofuel powered electricity generation will reach 873 TWh in 2025 and 1228 TWh in 2040. (WEO p. 250)	- Solid biomass represents less than 5% of global energy demand. (WEO p. 38) - Traditional use of solid biomass represents 42% in 2025 and 32% in 2040 of total bioenergy consumption. (WEO p. 250) - Biofuels' share of total transport demand will be 4% in 2025 and 6% in 2040. (WEO p. 250) - Biofuel powered electricity generation will reach 890 TWh in 2025 and 1427 TWh in 2040. (WEO p. 250)	- Solid biomass declines to ~1% of global energy demand by 2040. (WEO p. 38) - Traditional use of solid biomass represents 29% in 2025 and 5% in 2040 of total bioenergy consumption. (WEO p. 250) - Biofuels' share of total transport demand will be 7% in 2025 and 15% in 2040. (WEO p. 250) - Biofuel powered electricity generation will reach 1039 TWh in 2025 and 1968 TWh in 2040. (WEO p. 250)
% Renewables		
- Renewables' share of global energy demand grows from 10% to 14% from 2017 to 2040. (WEO p. 38) - Renewables' share of electricity generation grows from 25% to 33% from 2017 to 2040. (WEO p. 250)	- Renewables' share of global energy demand grows from 10% to 17% from 2017 to 2040. (WEO p. 38) - Renewables' share of electricity generation grows from 25% to 41% from 2017 to 2040. (WEO p. 250) - Electricity generation from renewables overtakes coal in the 2020s and supplies around 36% of electricity by 2030. (WEO p. 262) - Share of modern renewables increases to 15% of total final energy consumption in 2030. (WEO p. 244 and 262) - Renewables altogether account for over 70% of the increase in electricity generation by 2040. (WEO p. 44)	- Renewables' share of global energy demand grows from 10% to 30% from 2017 to 2040, becoming the largest contributor and surpassing any one fossil fuel. (WEO p. 38) - Renewables' share of electricity generation grows from 25% to 66% from 2017 to 2040. (WEO p. 250) - Renewables account for more than 80% of new power generation capacity additions by 2025. (WEO p. 93) - Modern renewables reach 22% of final energy consumption in 2030. (WEO p. 244 and 262)

Comparison of Relevant Parameters and Signposts within Transition Scenarios

IEA's Current Policies Scenario	IEA's New Policies Scenario	IEA's Sustainable Development Scenario
Nuclear		
- Nuclear maintains a 5% share of global energy demand 2017-2040. (WEO p. 38) - Power generation from nuclear is 10% of global power mix by 2040. (WEO p. 44)	-Nuclear maintains a 5% share of global energy demand 2017-2040. (WEO p. 38) - Output from nuclear plants remains at ~10% of global power mix. (WEO p. 44) - Some countries have committed to phase out nuclear power (Germany and Belgium), while others plan to reduce the role of nuclear progressively over time, including France, Sweden, Switzerland, Japan and Korea. At the same time, there are close to 20 countries developing new projects and raising the share of nuclear in electricity supply, including China, India, Russia, the United Arab Emirates and Saudi Arabia. In addition, Canada and the U.S. have indicated that they intend to maintain the current role of nuclear power in electricity supply. (WEO p. 342)	- Nuclear's share of global energy demand grows from 5% to 9% from 2017 to 2040. (WEO p. 38) - Power generation from nuclear is 15% of global power mix by 2040. (WEO p. 44) - Investment in nuclear is almost 40% higher relative to the New Policies Scenario. (WEO p. 456)
	Outcomes	
CO_2 Emissions		
- Global energy-related CO_2 emissions grow on average by 1.2% per year 2017-2040. (WEO p. 90)	- Global energy-related CO_2 emissions grow on average 0.4% per year 2017-2040. (WEO p. 90) - CO_2 emissions continue to rise through to 2040, with particular growth seen in the transport and industry sectors. (WEO p. 106)	- Global energy related CO_2 emissions fall on average 2.6% per year 2017-2040. (WEO p. 90) - Global energy-related CO_2 emissions peak around 2020 and then enter a steep and sustained decline, fully in line with the trajectory required to achieve the objectives of the Paris Agreement on climate change. (WEO p. 88)

Our Report includes descriptions of various policies, values, standards, procedures, processes, systems, programs, initiatives, assessments, technologies, practices, and similar measures related to our operations and compliance systems ("Policies and Procedures"). References to Policies and Procedures in our Report do not represent guarantees or promises about their efficacy, or any assurance that such measures will apply in every case, as there may be exigent circumstances, factors, or considerations that may cause implementation of other measures or exceptions in specific instances.

Our Report includes forward-looking statements within the meaning of applicable securities laws, including the U.S. Private Securities Litigation Reform Act of 1995, Section 21E of the Securities and Exchange Act of 1934, and securities laws in Canada. Generally the words "expects," "believes," "anticipates," "plans," "will," "shall," "estimates," "intends," and similar expressions identify forward-looking statements, which are generally not historical in nature. In particular, statements, express or implied, concerning the occurrence, impact or timing of future actions, conditions or events, future operating results or our ability to generate revenues, income or cash flow or to pay dividends, are forward-looking statements.

Forward-looking statements are not guarantees or assurance of performance. They are included for the purpose of providing management's current expectations and plans for the future, based on the beliefs and assumptions of management and the information currently available to management. Forward-looking statements are subject to risks and uncertainties. Although we believe that forward-looking statements in our Report are based on reasonable assumptions, we can give no assurance that any such forward-looking statements will materialize.

Important factors that could cause actual results to differ significantly from those expressed in or implied by these forward-looking statements include our ability to estimate accurately the time and resources necessary to meet the reporting and assurance testing standards applicable to additional measures we expect to include in future reports, as well as the other risks and uncertainties described in (i) our reports filed with the SEC, including our Annual Report on Form 10-K for the year-ended December 31, 2018 (under the headings "Risk Factors" and "Information Regarding Forward-Looking Statements" and elsewhere) and our subsequent reports, which are available through the SEC's EDGAR system at www.sec.gov, and on our website at www.kindermorgan.com, and (ii) KML's reports filed with the SEC and on SEDAR, including its Annual Report on Form 10-K for the year-ended December 31, 2018 (under the headings "Risk Factors," "Information Regarding Forward-Looking Statements," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and elsewhere) and KML's subsequent reports, which are available through the SEC's EDGAR system at www.sec.gov, under KML's profile on SEDAR at www.sedar.com and on KML's website at www.kindermorgancanadalimited.com.

Forward-looking statements speak only as of the date they were made, and except to the extent required by law, we undertake no obligation to update any forward-looking statement because of new information, future events, or other factors. Because of these risks and uncertainties, readers should not place undue reliance on these forward-looking statements or use them for anything other than their intended purpose.

Our Report contains references to KMI's website and KML's website. These references are for readers' convenience only. We are not incorporating our Report by reference into any other document posted on www.kindermorgan.com, www.kindermorgancanadalimited.com, or www.sec.gov and are not incorporating any other document posted on either website into this Report.

Our Report also includes links to websites owned and operated by third parties, which are provided for readers' information and convenience only. We are not responsible for these websites or their content.

We are in the process of identifying and developing the processes, procedures, and resources we expect to need to meet standards and limited assurance testing applicable to this Report. Except where and how specified in *Appendix E – Third Party Assurance and Verification Statements*, our Report and the data presented in it have not been externally audited, assured, attested, or verified. We make no warranty, express or implied, regarding the accuracy, adequacy, completeness, legality, reliability, or usefulness of our Report.