



Report on Reliability of Methane Emissions Disclosure



JULY 2023



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Introduction

The world is facing an ambitious and critically important challenge: the need to evolve to a lower-carbon, lower-emission energy economy while continuing to meet the growing global demand for safe, reliable and affordable energy.

Natural gas is a secure and reliable fuel that has an important role to play in the energy transition as the world reduces dependence on higher-carbon energy sources. Recent geopolitical and energy market instability has created an increased demand for Liquefied Natural Gas (LNG), which serves as one of the fastest ways to reduce global emissions by displacing higher emitting fuels like coal. Our existing assets will remain an essential element of the energy systems that supply this natural gas. As one of North America's largest energy infrastructure companies, TC Energy's 93,700-kilometre (58,200-mile) natural gas transmission network serves the largest, most competitive resource basins and the highest-value demand markets. Spanning Canada, the United States (U.S.) and Mexico, we safely supply more than 25 per cent of the natural gas required to meet North America's energy needs, and nearly 30 per cent of LNG feedstock from the U.S.

The International Energy Agency (IEA) estimates that the global oil and gas sector emitted around 70 megatonnes (Mt) of methane in 2020 (approximately 2.1 gigatonnes (Gt) carbon dioxide equivalent (CO₂e))¹ – just over five per cent of global energy-related greenhouse gas emissions. Methane, a naturally occurring compound, is the primary component in natural gas and a contributor² to climate change. We believe the energy industry must collectively advance actions to mitigate methane emissions associated with natural gas transmission. As a leading North American natural gas transportation provider, we recognize we have an important role in this journey and are committed to doing our part to reduce methane emissions.

This report builds on our climate-related reporting and provides detailed information around TC Energy's:

- Efforts to directly measure methane emissions,
- Approach to using direct methane measurement versus estimated methane emissions data, and
- The considerations and work underway to evaluate membership in methane reduction initiatives like the Oil and Gas Methane Partnership (OGMP) 2.0.

¹ [Driving Down Methane Leaks from the Oil and Gas Industry – Analysis - IEA](#)

² [Facts about Methane | UNEP - UN Environment Programme](#)





Our emissions reduction goals

We are dedicated to action towards a net-zero greenhouse gas (GHG) emissions future, and we support the aspirational pursuit of limiting the global temperature increase to 1.5°C. We are equally committed to continuously improving the accuracy, transparency, consistency, comparability, and completeness of our GHG inventory reporting.

In 2021, we established a dedicated team to chart our path forward to position for net zero. This team conducted a detailed review and analysis to set ambitious and meaningful GHG emissions reduction targets that will contribute towards global efforts to combat climate change.

In October 2021, we released our goals³:



30% BY 2030

REDUCE GHG EMISSIONS INTENSITY FROM OUR OPERATIONS 30 PER CENT BY 2030.



NET ZERO BY 2050

POSITION TO ACHIEVE ZERO EMISSIONS FROM OUR OPERATIONS, ON A NET BASIS, BY 2050.

Our GHG emissions reduction targets address Scope 1 and Scope 2 emissions, relative to a 2019 baseline year. Our targets focus on reduction of carbon dioxide (CO₂), methane (CH₄), and nitrogen oxide (N₂O) emissions, which are generated predominately from fuel combustion at our natural gas pipeline assets. Our biggest opportunity for meaningful reduction in our emissions profile is addressing Scope 1 CO₂ emissions from natural gas-fired compressor engines that power our natural gas pipeline system.

WANT TO LEARN MORE?

[TC Energy GHG Emissions Reduction Plan](#)

³ Emission intensity is calculated, in aggregate, as tonnes of CO₂ equivalent emissions per unit of energy that we transport or produce for our customers annually. Progress is measured relative to a 2019 baseline year, adjusted for material changes in our asset portfolio and quantified on an operational control boundary. Net zero means achieving an overall balance where our operations have eliminated Scope 1 and 2 GHG emissions on a net basis by 2050. This means we have removed or offset emissions through abatement activities and/or the use of carbon credits.



GLOBAL ACCESS TO NATURAL GAS IS CRITICAL AS A SUSTAINABLE, RELIABLE AND AFFORDABLE ENERGY SOURCE

NATURAL GAS VS. COAL
35% OF GLOBAL POWER GENERATION FROM COAL

2X
ENERGY DENSITY

~48% ↓
CO₂ EMISSIONS INTENSITY

1/10TH
POLLUTANTS IN COMBINED
CYCLE POWER GENERATION⁴

⁴ U.S. Energy Information Administration; NOAA Chemical Sciences Laboratory





Methane

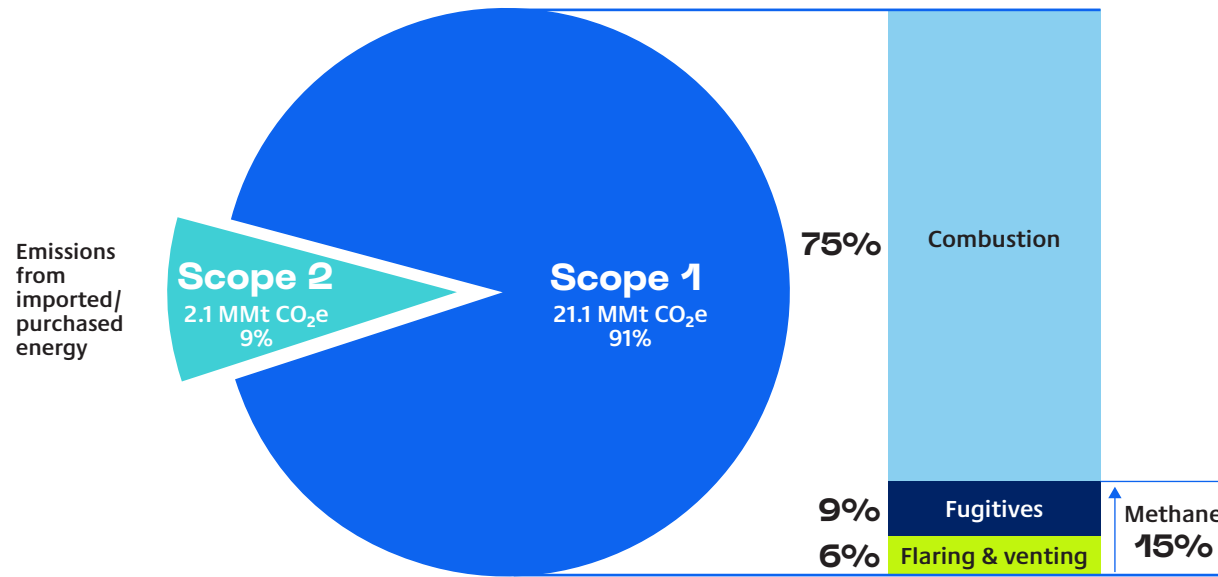
Methane emissions from our operations

Methane emissions from our operations fall primarily into two distinct categories: fugitive emissions and vented emissions. Fugitive emissions are unintentional releases of methane, most often the result of leaking equipment components. Vented emissions may occur during the normal course of operations and maintenance, or in upset or emergency conditions. Most vented releases

of methane from our operations come from controlled pipeline blowdowns required to safely complete maintenance or integrity work. For decades, TC Energy has used transfer compressors in our operations to reduce vented emissions from controlled pipeline blowdowns; however, some residual gas remains and is typically released to the atmosphere.

Fugitive emissions represent approximately nine per cent and vented emissions represent approximately six per cent of our total Scope 1 and Scope 2 emissions profile⁵.

Percentage Breakdown of Scope 1 and Scope 2 2022 GHG Emissions



⁵ Based on 2022 GHG emissions reported on an operational control reporting boundary. Total may not sum due to rounding.

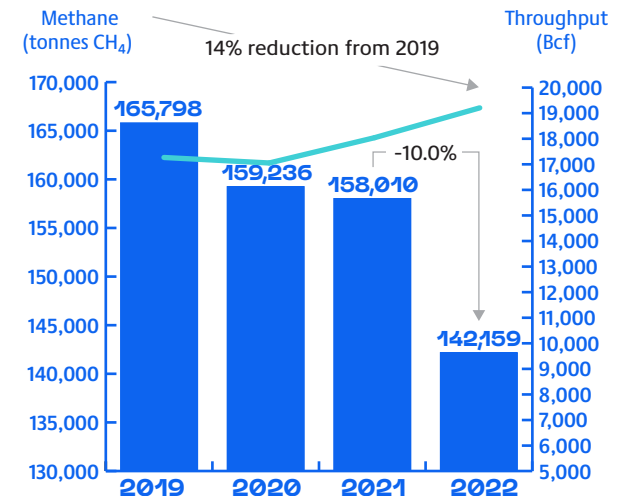
Methane reduction

METHANE PERFORMANCE SUMMARY BY NATURAL GAS BUSINESS UNIT

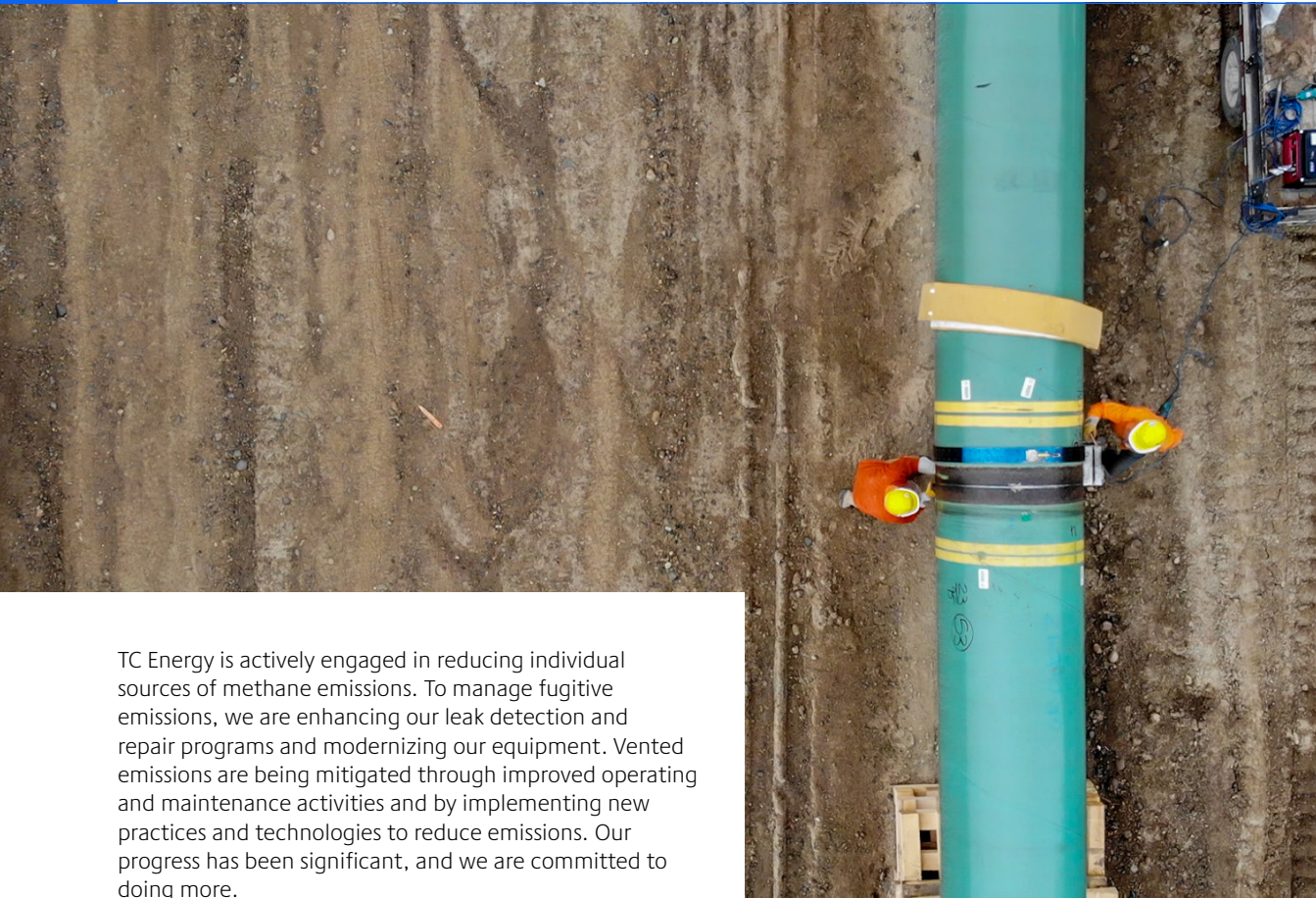
TC Energy is committed to minimizing the environmental impact of pipelines throughout the entire pipeline lifecycle. **We have reduced our absolute methane emissions by 14 per cent from 2019 to 2022, while increasing natural gas throughput by 11 per cent over the same period.** The decrease in corporate methane emissions is predominantly related to reductions in venting emissions achieved by our U.S. natural gas business unit.

The following graph illustrates our annual methane emissions between 2019 and 2022 across our natural gas pipeline assets.

Natural Gas Pipelines Absolute Methane Emissions and Throughput 2019-2022



■ Absolute methane emissions — Natural gas throughput



TC Energy is actively engaged in reducing individual sources of methane emissions. To manage fugitive emissions, we are enhancing our leak detection and repair programs and modernizing our equipment. Vented emissions are being mitigated through improved operating and maintenance activities and by implementing new practices and technologies to reduce emissions. Our progress has been significant, and we are committed to doing more.

TC Energy's methane emission improvements have reduced our annual methane emissions by approximately **24,000 tonnes CH₄** from 2019 levels

This is the equivalent of taking approximately **180,000** non-electric vehicle cars off the road for one year

or the equivalent of approximately **140,000** homes' energy use for one year

⁶ Calculated using the [Greenhouse Gas Equivalencies Calculator | Natural Resources Canada \(nrcan.gc.ca\)](https://www.nrcan.gc.ca/greenhouse-gas-equivalencies-calculator) based on the AR4 methane global warming potential (GWP) of 25

1 FUGITIVE EMISSIONS

Source(s): Unintentional releases from valves, fittings and other pressurized equipment

Mitigations:



Leak detection and repair program



Valve and meter equipment enhancements



Digital solutions and technologies

2 VENTED EMISSIONS

Source(s): Controlled releases during operation and maintenance

Mitigations:



Improving maintenance activities



Addressing operational practices



Utilizing capture and destruction technologies



Our roadmap to 2050 - five focus areas

To achieve our GHG emissions reduction goals, we are targeting five focus areas to lower the emissions intensity of our operations while developing the next generation of lower-carbon energy solutions.



MODERNIZING OUR EXISTING SYSTEMS AND ASSETS AND DRIVING DIGITAL SOLUTIONS AND TECHNOLOGIES ARE THE TWO CRITICAL FOCUS AREAS WITH THE GREATEST POTENTIAL TO DIRECTLY IMPACT OUR METHANE EMISSIONS REDUCTIONS.



Modernize our existing systems and assets



Leak detection and repair program



Equipment enhancements



Waste heat recovery units on compressors



Decarbonize our energy consumption



Source renewable power



Convert gas compressor stations to electric or dual-drive



Shift TC fleet towards electric vehicles



Drive digital solutions and technologies



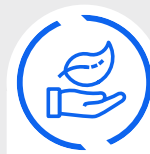
Autonomous pipeline applications



Artificial intelligence and machine learning integration



Continued system and network integration



Invest in low-carbon energy and infrastructure



Continue to develop renewable energy projects and storage solutions



Expand renewable natural gas and hydrogen opportunities



Further the deployment of CCUS



Leverage carbon credits and offsets



Evaluate and leverage carbon offsets



Assess opportunities to develop nature-based solutions



Modernize our existing systems and assets

Modernizing our existing systems and assets offers the greatest opportunity to reduce our methane emissions. We continue to focus on pipeline integrity, enhancing our leak detection and repair (LDAR)/leak survey programs, modernizing and upgrading our equipment, and developing and implementing new practices and pilot technologies.

PIPELINE INTEGRITY

The Pipeline Integrity Management Program (IMP) has, for many years, been utilizing set-frequency aerial leak detection to detect the uncommon scenario of a methane leak from a pipeline asset. A methane release from the pipeline asset is repaired as a priority activity, to manage the risk associated with safety and environmental impacts. The repair and pipeline blowdown strategy utilizes a variety of methane reduction processes (i.e. capacity drawdown, transfer compression, incineration) where applicable.

ENHANCING OUR LDAR AND LEAK SURVEY PROGRAMS

Current programs among our three natural gas transmission business units are at varying levels due to the differing regulatory requirements in each jurisdiction. Where possible, we leverage the experience and practices from the different business units to determine which technologies best complement our footprint.

Emissions detection technology has come a long way in the past few years. Here are some examples of enhancements and programs in each of the jurisdictions in which we operate.

In 2020, in parallel with various methane regulations being introduced in Canada, we began implementing an enhanced approach to managing and reducing fugitive emissions from routine operations on our Canadian Natural Gas Pipelines. We survey for leaks three times annually at all our compressor and meter stations using

Optical Gas Imaging (OGI) cameras in accordance with regulations and have expanded our program to include annual valve site inspections. In 2022, we piloted new valve models to reduce fugitive emissions on devices where we identified leak recurrences through the LDAR program. Since the enhanced Canadian LDAR program started in 2020, we have abated over 240,000 tCO₂e through expanded use of direct measurement techniques and timely equipment repairs.

We have digitized our processes and created an emissions management application (EMA), improving our ability to plan maintenance activities. The EMA enables us to capture methane emissions data from field surveys, pinpoint leak locations with precise GPS coordinates, and rapidly triage required maintenance and repair work on pipeline, meter station and compressor station valves and other components.

In our U.S. operations, we complete leak surveys at a subset of our compressor stations, in accordance with applicable U.S. regulations, using a combination of OGI cameras and flow measuring devices. We also perform voluntary surveys to fulfill our obligation under the Interstate Natural Gas

Association of America's (INGAA) Climate Commitments. Additionally, our facilities in New York, California, Maryland and Pennsylvania are subject to state LDAR programs, where the pipeline fugitive components are monitored on a variable frequency, as required. We also conduct semi-annual aerial surveys on all our pipes using rotary-wing aircraft equipped with methane detectors to identify potential leaks for further investigation.

In our Mexico operations, we complete semi-annual leak surveys at our compressor stations in accordance with Mexican regulatory requirements.

We continue to assess and deploy new practices and technologies to make further improvements. For example, we have been piloting various continuous monitoring and aerial monitoring technologies to explore their potential for enhancing the detection and measurement of our emissions.

Through these efforts, we are gaining significant experience that we will apply to further develop fugitive emissions reduction strategies across our natural gas pipeline systems.

High-flow samplers: The use of high-flow samplers to measure leak rates allows us to evaluate the severity of a leak, prioritize repair work and improve our fugitive emissions reporting.

Fixed continuous sensors: Over the years we have been piloting various fixed sensors at our compressor stations. In 2023 we will launch a new pilot to evaluate five different continuous monitoring technologies at a compressor station in Alberta.

Aerial monitoring: We are evaluating the use of sensors mounted to fixed-wing planes and helicopters to understand how they may be used to monitor methane emissions from our facilities. This is in addition to our long-time program for integrity aerial patrols.

 **WANT TO LEARN MORE?**

[2022 CDP Climate Change Questionnaire Response](#)



PILOTING NEW TECHNOLOGY AND EQUIPMENT

Driving investment in early-stage research, development, and deployment is a proven pathway to successful innovation and decarbonization. Piloting emerging technology lets TC Energy explore possibilities and incorporate innovative solutions into our methane management programs over time. We are trialing new technology and equipment that reduces vented emissions — for example:

Dry gas seal vent capture from centrifugal compressors:

- In 2021, we installed Canada’s first dry gas seal capture and reinjection skid at a compressor station in Manitoba. Natural gas from the dry gas seal vents is captured and reinjected into the pipeline instead of being released into the atmosphere.
- We are installing two more dry gas seal capture and reinjection skids in 2023. The technologies will capture gas vented from the dry gas seals of our compressor units and either reinject the natural gas upstream into the compressor suction or direct it for use in the utility gas system.

A new application of Enclosed Vapor Combustors (EVCs) that was tested in 2021 will be implemented by our Coastal GasLink Facilities Engineering team to reduce methane emissions at compressor and meter stations. Once fully implemented on Coastal GasLink, EVCs will capture natural gas from compressor dry gas seal vents and pneumatic devices to convert the methane into water vapor and CO₂.

WANT TO LEARN MORE?

- + [Growing LNG Demand](#)
- + [Coastal GasLink](#)

Pipeline and facility blowdowns:

- In 2021 and 2022, we piloted mobile incinerators for conversion of residual natural gas on three pipeline blowdowns. TC Energy has utilized large transfer compressors to reduce vented emissions from controlled blowdowns of large pipe sections since 1979; however, residual gas remains. The mobile incineration technology enables conversion of the residual methane to carbon dioxide, which has a much lower global warming potential. These three pilots collectively avoided over 5,150 tCO₂e of emissions with potential for greater reductions if used on larger pipeline sections in the future.
- In 2022 we completed installation of a pulldown manifold at a compressor station. The new yard piping captures natural gas that would normally be vented to the atmosphere during a planned blowdown event and redirects it to another plant in the station that is still running.

We continue to advance a blowdown management strategy for our assets which includes a decision-making framework for emissions reduction and continuous evaluation of new technology options. For example, in 2023 we plan to pilot small transfer compressors to capture residual pipeline blowdown volumes.





Drive digital solutions and technologies

Meeting methane emission reduction goals for companies and society will require scalable technologies and underscores the importance of driving digital solutions and technologies as a focus area for our net-zero pathway.

ENTERPRISE-WIDE DATA MANAGEMENT SYSTEM

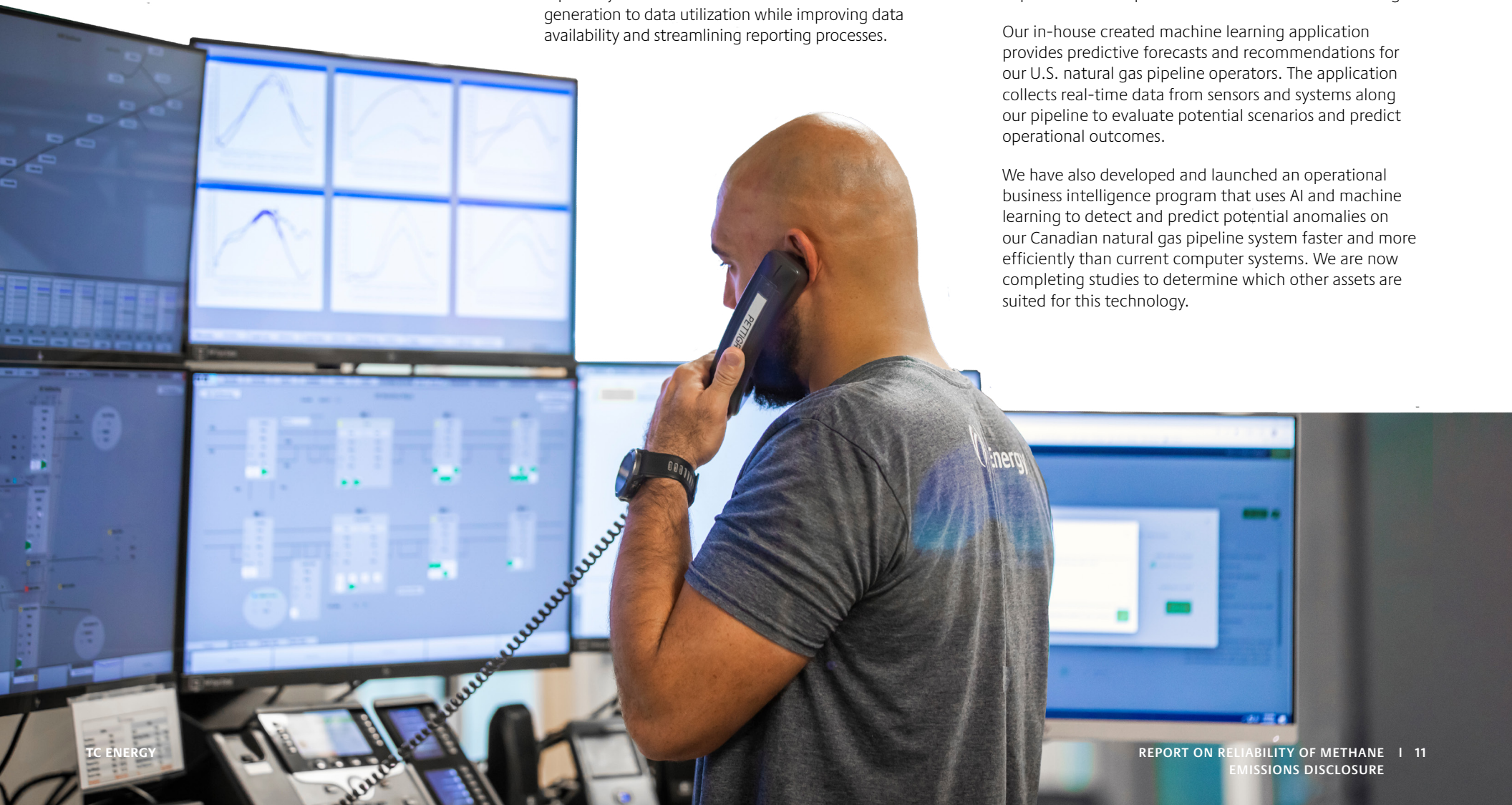
We operate in three countries and 42 jurisdictions, with asset vintages spanning a century. Building on the success of the EMA in Canada, significant effort is underway to create an enterprise-wide data management system that will allow us to enable data driven decisions. Amalgamating different emissions data and reporting systems into one central enterprise-wide reporting platform and data repository will allow us to decrease timelines from data generation to data utilization while improving data availability and streamlining reporting processes.

DIGITIZE OPERATIONS AND MONITOR EMISSIONS

In addition to centralizing emissions data management, we are developing and deploying software and systems to digitize our operations and monitor emissions, including system automation, artificial intelligence (AI) and machine learning applications. We have established an AI and machine learning innovation lab, where our team of data scientists and subject matter experts from various departments and specializations can test new technologies.

Our in-house created machine learning application provides predictive forecasts and recommendations for our U.S. natural gas pipeline operators. The application collects real-time data from sensors and systems along our pipeline to evaluate potential scenarios and predict operational outcomes.

We have also developed and launched an operational business intelligence program that uses AI and machine learning to detect and predict potential anomalies on our Canadian natural gas pipeline system faster and more efficiently than current computer systems. We are now completing studies to determine which other assets are suited for this technology.





Measurement of methane emissions






Quality data is essential to effectively manage emissions and identify the most cost-effective abatement opportunities. Methane emissions can be quantified directly through measurement or indirectly through calculations and modelling. Options to directly detect and measure methane emissions are advancing, and current technologies provide wide-ranging levels of functionality. As technology improves, we expect direct measurements will increasingly be used to quantify our emissions inventories.

Our efforts to directly measure methane emissions

We are implementing robust emissions surveillance technology to better detect, measure, monitor and report our methane emissions. Measuring and monitoring methane emissions, specifically fugitive emissions is challenging because the sources are small and can be distributed across our asset base. To keep up to date on advances in leak detection, we are piloting a wide range of solutions, from continuous on-site monitoring to satellite imaging, to help determine which technologies best complement our asset footprint.



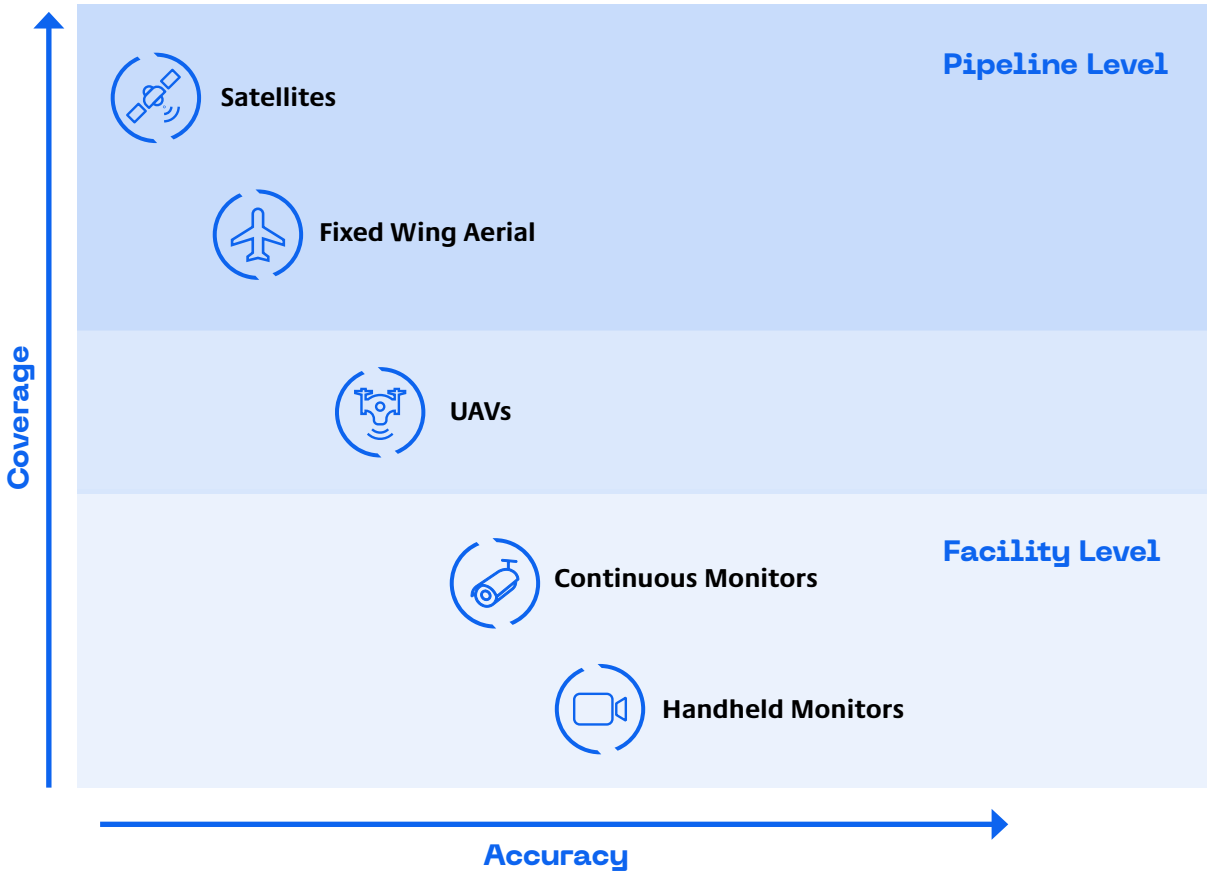
Summary of current technologies in use and pilot projects for emissions surveillance

	Implemented		Pilot Projects		
Tool	 OGI Camera	 High-Flow Samplers	 Fixed Continuous Sensors	 Satellite Emissions Monitoring	 Aerial Imaging
What is it?	<ul style="list-style-type: none"> Highly specialized infrared/thermal imaging camera 	<ul style="list-style-type: none"> Instrument used to measure methane emission leak rates 	<ul style="list-style-type: none"> Methane emissions sensors 	<ul style="list-style-type: none"> Remote emissions satellite monitoring 	<ul style="list-style-type: none"> Drones, helicopters, fixed-wing planes, and unmanned aerial vehicles equipped with specialized sensors and detectors
How does it work?	<ul style="list-style-type: none"> Allows for visualization of invisible methane emissions Detects infrared radiation absorbed and emitted by methane 	<ul style="list-style-type: none"> Quantifies emissions from identified leaking equipment components and from vent sources Regulatory requirement in Canada 	<ul style="list-style-type: none"> Real-time methane emissions detection Real-time operational data tracking 	<ul style="list-style-type: none"> Using satellites to collect emissions data 	<ul style="list-style-type: none"> Monitor operations and surrounding environment for potential methane emissions
Benefits	<ul style="list-style-type: none"> Helps identify and locate sources of methane leaks Enables faster response and remediation to leaks 	<ul style="list-style-type: none"> Prioritizes maintenance and repair activities based on the severity of the leak 	<ul style="list-style-type: none"> Faster response to leaks Targeted maintenance activities Potential for 24/7 site coverage 	<ul style="list-style-type: none"> Monitors operational emissions on a larger scale with greater frequency Potential to be the lowest-cost option by site 	<ul style="list-style-type: none"> Ability to scan an entire site, including areas that would otherwise be difficult to reach with handheld devices Highly scalable
Limitations	<ul style="list-style-type: none"> Resource intensive and can only detect one leak at a time Requires specialized and expensive cameras to quantify leaks 	<ul style="list-style-type: none"> Resource intensive and can only detect one leak at a time Cannot distinguish between methane and other hydrocarbons 	<ul style="list-style-type: none"> Data analysis and user interpretation required and results in false alarms Difficult to pinpoint emissions sources Issues with quantification 	<ul style="list-style-type: none"> Only provides detection at the facility level Leak detection threshold is very high and cannot detect normal operations emissions 	<ul style="list-style-type: none"> Flight scheduling and measurements are weather dependent Not sensitive enough for equipment level detection Quantification is not accurate



No single technology offers a perfect solution for monitoring emissions across our North American footprint, but we are committed to continuing to partner and innovate in pursuit of enhanced tools and approaches.

Comparison of emissions surveillance technologies



OUR METHANE MONITORING JOURNEY



Integrated emissions surveillance

Enterprise-wide monitoring system using the latest technology and operational data available to pinpoint, accurately quantify and alert on emissions events.



Alternative LDAR systems

Utilizing new technologies to make fugitive LDAR programs more efficient and fit for purpose.



Standardized & robust data architecture

Data foundations in place to enable consistent emissions data flow and utilization by curated digital tools and platforms.



Emissions intelligence decision making

Quality data and digital systems driving emissions conscious modernization and reduction efforts across the enterprise.



Ongoing approach to enhancing data quality

Given the limitations of current technologies, emission factor-based inventories provide an important tool for understanding methane emissions resulting from various types of facilities and activities. Historically, the oil and gas industry has relied heavily on emission factors and equipment counts for estimating fugitive emissions.

TC Energy's published estimates of fugitive methane emissions are based on a combination of direct measurements, emission factors and equipment component or other relevant counts. As measurement-based reporting has become more widespread and accessible, our reliance on direct measurement technologies across our system has increased, leading to data that is more representative of asset-specific fugitive emissions.

Given the current state of measurement protocols and methane detection capability, TC Energy does not believe that we can assess, with a high degree of certainty, the differences between inventories developed using emission factor-based approaches and those based on direct measurement. However, our initial deployment of direct measurement technologies, from LDAR surveys in certain areas of our operations, has generally found reported emissions to be within expected ranges. We will continue to enhance our emissions reporting as commonly accepted standard protocols become available and help create consistent and transparent methodologies for calculating and reporting methane emissions.

GOING BEYOND REGULATORY REQUIREMENTS

Over the last two years, we have taken strides to enhance the completeness, transparency, and comparability of GHG emissions reported across our operational footprint. This means going beyond the regulatory requirements and reporting GHG emissions that are relevant to our business operations. As an example, although it is not required in all jurisdictions, we are including venting and fugitive emission estimates for our valve sites and meter stations in corporate methane emissions inventory for all natural gas transmission assets. We are also including venting emissions estimates from all our compressor dry seals and glycol dehydration units.

INDEPENDENT ASSURANCE

TC Energy obtained independent limited assurance of operational control boundary for Scope 1 corporate GHG emissions and Scope 2 corporate GHG emissions (location-based) and corporate GHG emissions intensity for the year ended December 31, 2022. Scope 1 and 2 corporate GHG emissions are comprised of CO₂, CH₄, N₂O, hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF₆). To read the third-party limited assurance statement, please refer to our [ESG webpage](#).

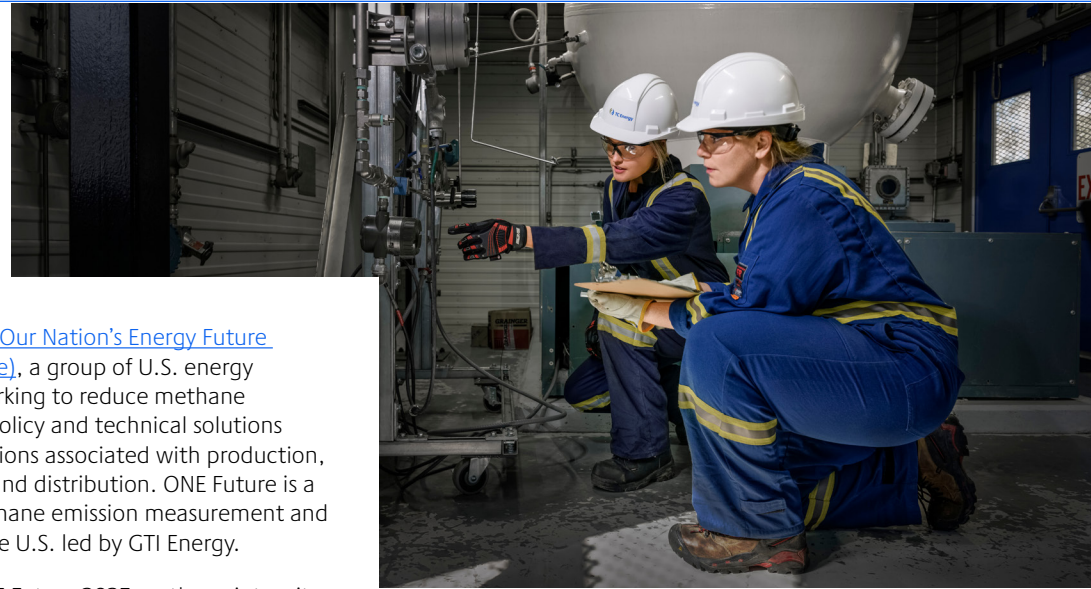
In addition, as part of our regulatory reporting requirements, approximately 95 per cent of our Scope 1 GHG emissions in Canada have undergone external verification and a more detailed review to obtain a reasonable level of assurance.



Global partnerships and initiatives

Advancing our efforts in methane detection, direct measurement and quantification requires collaboration with multiple stakeholders, including government and regulators to support technology and protocol improvements. We help fund research with governments, industry peers, environmental non-governmental organizations, and other stakeholders to improve our collective understanding of emissions detection technology and measurement. Working together and sharing best practices and innovative ideas can help others reduce their methane emissions and expedite the global effort to reach net-zero.

Since the [Global Methane Pledge](#) launched in November 2021, more than 100 countries have joined the effort to reduce global human-made methane emissions by at least 30 per cent from 2020 levels by 2030. All three jurisdictions where we operate signed the Global Methane Pledge. We support the pledge through participation in the Methane Guiding Principles (MGP) initiative which was collaboratively developed in 2017 by a coalition of industry and civil society organizations. The principles drive efforts and focus on actions to reduce methane emissions across the natural gas supply chain and provide signatories with a framework for reporting our progress. As a signatory since 2018, we have committed to investing in innovative technologies for monitoring and reducing emissions, improving emissions data collection methodologies and working with key stakeholders to improve approaches to methane management.



TC Energy is a member of [Our Nation’s Energy Future Coalition, Inc. \(ONE Future\)](#), a group of U.S. energy companies voluntarily working to reduce methane emissions by identifying policy and technical solutions that better manage emissions associated with production, processing, transmission and distribution. ONE Future is a partner of Veritas – a methane emission measurement and verification initiative in the U.S. led by GTI Energy.

We committed to the ONE Future 2025 methane intensity goals, which means reducing the methane intensity of our U.S. natural gas transmission and storage operations to 0.301 per cent. Our U.S. natural gas pipelines methane intensity is more than two times below the ONE Future sector target, and we continue to find ways to drive down these emissions.

[TC Energy has committed to sponsor and facilitate virtual Executive and Masterclasses in 2023 to share learnings of methane reduction activities and policies. These sessions will be posted on the MGP website along with Best Practice webinars from MGP members.](#)

WANT TO LEARN MORE?

[View ONE Future’s 2022 Methane Emissions Intensity Report, Veritas’ Home Page and our latest MGP signatory report](#)

In partnering to identify solutions in methane measurement and management, we are also collaborating with the following industry groups and coalitions:

- [INGAA](#)
- U.S Environmental Protection Agency’s (EPA) [Natural Gas STAR Program](#)
- Canadian Gas Association (CGA) [Canadian Energy Partnership for Environmental Innovation \(CEPEI\)](#)
- [Canadian Emissions Reduction Innovation Consortium \(CanERIC\)](#), an initiative of the Petroleum Technology Alliance Canada (PTAC)
- American Petroleum Institute (API) [Environmental Partnership Pipeline Blowdown Program](#)
- [Natural Gas Innovation Fund](#) (NGIF) Cleantech Ventures

We participate in dialogue to share insights and learnings about what has been effective within our own operations. For example, in October 2022, we presented on a panel at the [PTAC Net Zero Conference & Expo](#) to share our learnings on methane mitigation through our incineration pilot projects.



Public policy

We are an active participant in the development of public policy and advocacy positions, sharing our expertise and experience using technology and contributing to research and development to reduce methane emissions.

Across North America, there are several new and evolving initiatives and policies in development at the federal, regional, state and provincial levels aimed at reducing methane emissions. We actively monitor and, when appropriate, submit comments to regulators as these new and evolving initiatives are undertaken and policies are implemented.

For example, earlier this year we continued our ongoing engagement with the Government of Canada as they developed and refined their [proposed regulatory framework](#) for reducing oil and gas methane emissions by at least 75 per cent by 2030. We are also monitoring and evaluating the impacts of the U.S. EPA [supplemental proposal](#) for new source performance standards and emissions guidelines for existing sources, aimed at reducing methane emissions from oil and gas sources pursuant to the Clean Air Act (CAA).

••• WANT TO LEARN MORE?

View TC Energy's [Report on Climate-related Lobbying](#)






Oil and Gas Methane Partnership 2.0

Organizations like the OGMP 2.0 are voluntary multi-stakeholder initiatives that provide insight on emerging methods for approaching methane quantification. OGMP 2.0 has developed a measurement-based reporting framework that lays out five distinct levels of reporting standards which are defined based on the quality and completeness of the methane emission data reported – 1 is the least detailed and 5 is the most detailed. Part of the commitment companies make in joining is to achieve “Gold Standard” methane reporting within three years. The Gold Standard is achieved when companies achieve level 4 or 5 across all reporting categories.

TC Energy is exploring the possibility of joining the OGMP 2.0. We have established a cross-functional task force of internal subject matter experts to help assess and quantify the potential impacts, costs and benefits of joining. Methane emissions are heavily regulated, with complex and differing regulations at the federal, state and provincial levels in each of the three jurisdictions that we operate. We are engaging with OGMP 2.0 representatives to discuss the perspectives and potential costs for our different business units as we consider pathways to enhance and improve our methane reporting across our organization.

As part of our in-depth analysis, the internal task force conducted a self-assessment using the OGMP 2.0 five-level framework to evaluate the current state of our methane emissions measurement and reporting against the OGMP 2.0 methodology⁷.

OGMP 2.0 Five-reporting levels self-assessment by natural gas transmission business unit

	Business unit	Method	TC Energy self-assessment
	Canada Gas	Source-specific emission factors or measured/ engineering estimated emissions at source level	4
	United States Natural Gas (USNG)	Source-specific measurement using field data and emission factors	3
	Mexico Gas	Source-specific measurement using field data and emission factors	3

As shown above, current methane quantification programs among our three natural gas transmission business units are at varying levels of OGMP conformance due to the differing regulatory requirements in each jurisdiction. TC Energy has implemented comprehensive compliance programs to address the unique nature of each jurisdiction and our disclosure is in line with industry standards and expectations. While joining additional methane reduction initiatives can potentially offer new insights or opportunities, it is important to consider our existing commitments and targets, the regulatory environment, and overall costs.

We are also considering the effectiveness of our internally driven methane measurement and management approach. Since 2019, we have seen marked progress in methane emissions from our existing efforts to improve monitoring and to reduce emissions - reducing our absolute methane emissions by 14 per cent from 2019 to 2022, while increasing natural gas throughput by 11 per cent over the same period. This progress is a result of thoughtful and deliberate activities that will continue to be refined and improved.

We will continue to focus on modernizing our existing systems and assets and driving digital solutions and technologies as the two critical areas with the greatest potential to directly impact our methane emissions reductions. We have improved the completeness, transparency, and comparability of GHG emissions reported across our operational footprint and we will continue our ongoing approach to enhance enterprise-wide data quality. We are implementing robust emissions surveillance technology to better detect, measure, monitor and report our methane emissions. Further, we will remain an active participant in the development of public policy and advocacy positions and will continue to seek technologies, opportunities and partnerships that advance our ability to meaningfully measure and reduce methane emissions from our operations. Our progress has been significant, and we are committed to doing more.

 **WANT TO LEARN MORE?**

[OGMP 2.0 and 2023 Sustainable Energy Forum](#)

⁷ TC Energy's Liquids, Power & Energy Solutions and non-operated assets were not directly accounted for in this self-assessment



Looking ahead

The need for responsible energy solutions is clear, as is our obligation, ability and opportunity to bring solutions forward. At TC Energy, we are dedicated to action towards a net zero emissions future - reducing methane intensity and improving methane emissions inventories are key to progressing towards this global goal.

Advancements in detection and measurement continue to shape our approach as we aim to improve performance and build trust among our key stakeholders and partners. We continue to demonstrate our industry leadership through proactive investments in emission abatement and detection technologies and participation in partnerships and initiatives focused on methane reduction. We are taking actions that we believe will provide information to help enable further emissions reductions and improve the quality and transparency of our methane emissions disclosures.

NEXT STEPS

We are committed to transparent disclosures around our methane management activities. We plan to provide periodic updates internally, to our Board of Directors, and to stakeholders as appropriate.

We will provide an update on our progress in our 2024 sustainability report.

ACCOUNTABILITY

To hold ourselves accountable, we have linked environmental, social, and governance (ESG) priorities to compensation in our internal corporate scorecard with a stronger focus on overall corporate performance to progress ESG priorities and advance energy transition. Key performance areas that we track to measure success against these goals include achieving top personal safety, maintaining safe, reliable operations and asset integrity while minimizing environmental impacts and developing solutions for a lower-carbon energy future. Our 2023 corporate scorecard further embeds ESG into our goals with a 30 per cent weighting to ESG including targets for human and process safety, diversity of women and visible minorities in leadership and GHG-emissions reduction.

We have also embedded our emissions reduction targets and commitments in our financing activities. In December 2022, we converted our \$3 billion five-year facility to a sustainability-linked loan (SLL). Interest rates on the SLL are tied to our key performance indicators that include GHG and gender diversity targets.



WANT TO LEARN MORE?

[TC Energy Report on Sustainability and TC Energy Management Information Circular](#)



Forward-looking information

This document contains certain information that is forward-looking and is subject to important risks and uncertainties (such statements are usually accompanied by words such as “anticipate”, “expect”, “believe”, “may”, “will”, “should”, “estimate”, “intend” or other similar words). Forward-looking statements do not guarantee future performance. Actual events and results could be significantly different because of assumptions, risks or uncertainties related to our business or events that happen after the date of this report. Our forward-looking information in this document includes, but is not limited to statements on our methane reduction strategy, including the modernization of our existing systems and assets and driving digital solutions and technologies, targets related to GHG emissions intensity and methane reduction, our financial and operational performance, including the performance of our subsidiaries, expectations about strategies and goals for growth, expansion and emission reduction, our expected emission and methane reductions from planned projects, expected costs and schedules for planned projects, the installation, adoption and integration of new methane reduction, monitoring and recapture technologies into our business, including, compressor dry seals capture and reuse technology, enclosed vapour combustors, mobile incinerators, enterprise-wide data management systems, AI and machine learning technologies, satellite imaging, high flow samplers and other methane emission tracking technologies, statements on our future approach to direct methane measurement versus estimated emissions and expectations of increased use of direct measurement in methane emission reporting, statements relating to joining OGMP and conformance to its disclosure standards,

expected energy demand levels, future-orientated financial information or financial outlook and statements regarding our future plans and prospects overall, including those statements relating to methane and GHG reporting and reduction.

Our forward-looking information is based on certain key assumptions and is subject to risks and uncertainties, including but not limited to: our ability to successfully implement our strategic priorities and whether they will yield the expected benefits, our ability to develop, access or implement some or all of the technology and infrastructure necessary to efficiently and effectively achieve GHG emissions targets and ambitions, the commercial viability and scalability of GHG and methane emissions reduction strategies and related technology and products, the development and execution of implementing strategies to meet our sustainability commitments, methane reduction goals, and GHG emissions targets and ambitions, our ability to implement a capital allocation strategy, portfolio management and divestiture programs aligned with maximizing shareholder value, the operating performance of our pipeline and power generation and storage assets, amount of capacity sold and rates achieved in our pipeline businesses, the amount of capacity payments and revenues from our power generation assets due to plant availability, production levels within supply basins, construction and completion of capital projects, cost and availability of, and inflationary pressure on, labour, equipment and materials, the availability and market prices of commodities, access to capital markets on

competitive terms, interest, tax and foreign exchange rates, performance and credit risk of our counterparties, regulatory decisions and outcomes of legal proceedings, including arbitration and insurance claims, our ability to effectively anticipate and assess changes to government policies and regulations, including those related to the environmental, social and governance (ESG) matters, competition in the businesses in which we operate, unexpected or unusual weather, acts of civil disobedience, cybersecurity and technological developments, ESG related risks, the impact of energy transition on our business, economic conditions in North America as well as globally, and global health crises, such as pandemics and epidemics and the unexpected impacts related thereto. In addition, there are risks that the effect of actions taken by us in implementing targets, commitments and ambitions for sustainability may have a negative impact on our existing business, growth plans and future results from operations.

For additional information about the assumptions made, and the risks and uncertainties which could cause actual results to differ from the anticipated results, refer to the most recent Quarterly Report to Shareholders and Annual Report filed under TC Energy’s profile on SEDAR and with the U.S. Securities and Exchange Commission. As actual results could vary significantly from the forward-looking information, you should not put undue reliance on forward-looking information and should not use future-oriented information or financial outlooks for anything other



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