



Welcome to your CDP Climate Change Questionnaire 2022

C0. Introduction

C0.1

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

MEG is an energy company focused on sustainable in situ thermal oil production in the southern Athabasca oil region of Alberta, Canada. MEG is actively developing innovative enhanced oil recovery projects that utilize steam assisted gravity drainage ("SAGD") extraction methods to improve the responsible economic recovery of oil as well as lower carbon emissions. MEG transports and sells thermal oil (known as Access Western Blend or "AWB") to customers throughout North America and internationally. MEG owns a 100% working interest in approximately 410 square miles of mineral leases. GLJ Ltd. ("GLJ"), an independent qualified reserves and resources evaluator, estimated that the leases it had evaluated, as at December 31, 2021, contained approximately 2.0 billion barrels of gross proved plus probable ("2P") bitumen reserves at the Christina Lake Project. For information regarding MEG's estimated reserves contained in the report prepared by GLJ, please refer to the Corporation's most recently filed Annual Information Form ("AIF"), which is available on the Corporation's website at www.megenergy.com and is also available on the SEDAR website at www.sedar.com.

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Reporting year	January 1, 2021	December 31, 2021	No



C0.3

(C0.3) Select the countries/areas in which you operate.

Canada

C0.4

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

CAD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C-OG0.7

(C-OG0.7) Which part of the oil and gas value chain and other areas does your organization operate in?

Row 1

Oil and gas value chain

Upstream

Other divisions

Grid electricity supply from gas

C0.8

(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?



Indicate whether you are able to provide a unique identifier for your organization	Provide your unique identifier
Yes, a Ticker symbol	MEG

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	<p>The Board of Directors (Board) is responsible for overall stewardship and oversight of the Corporation and activities of management. The Board is responsible for the oversight of climate-related issues impacting the Corporation, including overseeing processes to identify, assess and manage climate risks and opportunities, developing the Corporations approach to governance issues, principles, practices, and disclosure; overseeing and monitoring metrics and targets to assess and manage climate risk and opportunities; and reviewing ESG disclosures. The Board delegates responsibility for certain ESG matters to the four Board committees from time to time based on mandate and expertise: Governance and Nominating Committee (GNC), Audit Committee, Human Capital, and Compensation Committee (HCCC), and Health, Safety and Environment and Reserves Committee (HSERC). The HSERC Board committee is responsible for overseeing the implementation of policies and procedures to monitor and mitigate environmental risks, including climate change. The HSERC manages information on climate-related issues and makes recommendations to the Board regarding strategies to mitigate climate related risks. Examples of actions taken include review and approval of continued strategic investments in MEG’s proprietary eMSAGP and eMVAPEX technologies. The Board and HSERC committee are updated by the CEO, COO, and representatives of the ESG and Environment Health & Safety (EH&S) Committees quarterly on GHG performance, climate strategy,</p>

	<p>advancement of emissions reducing technology solutions, climate policy developments (including carbon pricing) and other climate-related topics as applicable. The Human Capital and Compensation Committee (HCCC) assists the Board to ensure that climate matters are reflected in compensation policies and guidelines as well as the Corporations corporate goals and objectives related to compensation. In 2021, the Board approved mid-term target of a 30% reduction in bitumen GHG intensity (scope 1 and scope 2) from 2013 levels by 2030 and the 2022 Corporate Performance Scorecard and CEO objectives which linked performance (5%) to Steam Oil Ratio (SOR) (GHG Intensity Measure) and 5% to advancing decarbonization plans.</p>
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C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	<ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives 	<p>The Board of Directors (Board) is responsible for the overall stewardship of and for overseeing the conduct of the Corporation and activities of management who are responsible for the day-to-day conduct of the business. Under their mandate, the Board is responsible to oversee environmental, social and governance (ESG) issues, including (a) overseeing and monitoring management processes relating to the identification, assessment and management of ESG risks and opportunities, including climate-related issues, emissions, air and water impacts, and land and wildlife management, (b) developing the Corporations approach to corporate governance issues, principles, practices and disclosure; (c) approving and monitoring a code of business conduct and ethics for directors, officers, employees and contractors; (d) overseeing and monitoring of metrics and targets used by the Corporation to assess and manage ESG risk and opportunities; and (e) reviewing the Corporation’s ESG reporting on ESG matters. The Board delegates responsibility for certain ESG matters to the four Board committees from time to time based on mandate and expertise: Governance and Nominating Committee (GNC), Audit Committee, Human Capital, and Compensation Committee (HCCC), and Health, Safety and Environment and Reserves</p>



	<p>Overseeing major capital expenditures, acquisitions and divestitures</p> <p>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</p>	<p>Committee (HSERC). For example, the Compensation Committee assists the Board to ensure that ESG matters are reflected in the Corporations compensation policies and guidelines as well as the Corporations corporate goals and objectives related to compensation. The HSERC assists the board in fulfilling its stewardship with respect to ensuring compliance and with applicable laws pertaining to environment including climate change and GHG, and reviewing and supervising MEG's policies and procedures designed to mitigate climate risks and liabilities. The HSERC committee is updated by the CEO, COO, and representatives of the ESG and HSE Committees quarterly on our GHG performance, climate strategy, advancement of emissions reducing technology solutions, climate policy developments (including carbon pricing mechanism) and other climate-related topics as applicable. In 2021, the Board also approved the 2022 Corporate Performance Scorecard and CEO objectives which linked performance 5% to Steam Oil Ratio (SOR) (GHG Intensity Measure) and 5% to advancing decarbonization plans Other examples of actions taken include review and approval of continued strategic investments in MEG's proprietary eMSAGP and eMVAPEX technologies.</p>
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C1.1d

(C1.1d) Does your organization have at least one board member with competence on climate-related issues?

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues
Row 1	Yes	Criteria used to assess competence of board members on climate-related issues include SAGD operational experience, including reservoir and facility optimization, cogeneration, and greenhouse gas emissions management. Criteria also include environmental, regulatory and policy experience all of which pertain to climate-related issues as wells as corporate governance experience in ESG. Refer to MEG's Management Proxy Circular for further details.



C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Quarterly
Safety, Health, Environment and Quality committee	Both assessing and managing climate-related risks and opportunities	Quarterly
Other, please specify Executive ESG Committee	Both assessing and managing climate-related risks and opportunities	Quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

Our management team is responsible for executing corporate strategy including assessment and management of climate risks/opportunities, with the ultimate responsibility resting with the CEO. The CEO, subject to the direction of the Board, is responsible for the general supervision and control over business affairs of the Corporation including managing ESG priorities, policies, procedures, and practices, including climate change and reports to the full Board on the company’s ongoing climate performance and status of climate initiatives quarterly. The CEO is supported by two committees as outlined below. The Executive ESG committee (ESG Committee) assists the CEO in assessing and managing climate risks and opportunities and providing guidance on climate strategy and disclosure. It is comprised of senior leadership including the CEO, CFO, COO, Senior VP Legal & General Counsel, and VP Human Resources. It provides guidance and oversight with respect to ESG strategy, priorities, and corporate disclosure, and is responsible for embedding ESG into practices and behaviours, including climate-related issues. Meetings are held at least quarterly to discuss policies, practices and disclosure, current and emerging trends and regulations, the identification, assessment and management of risks and opportunities, and metrics and targets to advance strategy. Specific duties include (a) assist the CEO in setting MEG’s general strategy with respect to ESG matters, (b) consider and recommend policies, practices and disclosures; (c) oversee MEG’s reporting and disclosure with respect to ESG; (d) assist the CEO in overseeing internal and external communications regarding MEG’s position on to ESG; (e) monitor and keep the CEO apprised of current and



emerging ESG matters that may affect the business, operations, performance or public image of MEG or are otherwise pertinent to MEG and its stakeholders, and to make recommendations with respect to policies, practices and disclosure regarding such matters; (f) assist the CEO in the identification, assessment and management of ESG-related risk and opportunities, including climate-related. In 2021, the ESG Committee approved ESG disclosure and performance enhancements, and evaluated bitumen and electricity GHG intensities, 2030 and 2050 climate targets and potential technological developments. The ESG Committee oversaw the climate scenario analysis, focused on climate change disclosure improvements, and enhanced climate-related financial disclosure aligned with TCFD recommendations. The Corporate Health, Safety & Environment (HSE Committee) is responsible for the implementation and functioning of the climate change program (including regulatory compliance and corporate performance targets), reports quarterly to the HSERC committee of the Board and communicates learnings across MEG to drive continuous improvement. It consists of senior, interdisciplinary subject matter experts from across MEG including H&S, Environment and Regulatory, Operations, Projects, Reservoir & Production Engineering, Drilling and Completions, Enterprise Services, Human Resources and Marketing. It ensures proper due diligence in the development, implementation and functioning of HSE programs. Meetings are held monthly where potential issues, trends, enhancement opportunities, and performance against objectives and targets are discussed. Its primary function is to assist MEG in carrying out its responsibilities by reviewing, reporting, and making recommendations on MEG’s policies, management systems and programs with respect to HSE and exercising due diligence in ensuring these are implemented and functioning properly. With regards to climate, the HSE committee is responsible for the implementation and functioning of the climate change program. Climate-related topics addressed by the HSE committee include GHG emissions performance, methane management, flaring activities, electricity trends, equipment efficiency, as well as climate policy and regulatory change. In 2020 and early 2021, the HSE Committee put additional focus on outreach and understanding existing and anticipated changes to climate policy in an effort to evaluate how our business can adapt in the face of changing regulations, and further inform our climate strategy. HSE Committee outreach activities included the implementation of the Technology Innovation and Emission Reduction Regulation, review of the draft Clean Fuels Regulation, proposed changes to the federal Output Based Pricing System and other external engagements focused on examining the role of sectoral policy. efficiency, as well as climate policy and regulatory change.

C1.3

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

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction project Emissions reduction target Company performance against a climate-related sustainability index	The corporation has adopted CEO objectives which are fully transparent to both employees and shareholders. The purpose of the objectives is to set and ensure alignment on the strategic objectives across the organization. The individual performance weighting contributes 20% of the CEO's short-term incentive compensation. The 2021 CEO objectives related to climate change include: continuing to advance on all aspects of ESG, including CO2 technology solutions, 2030 and 2050 GHG targets, alignment with TCFD, a 2021 ESG report and sustainable finance options. A portion of the CEO's annual incentives are also linked to environmental performance indicators including the management of climate-related issues as identified in the Corporate Performance Scorecard. In 2021, 3.5% of MEG's Corporate Performance Scorecard is linked to a GHG emissions performance metric and 4.0% to technology development.
Corporate executive team	Monetary reward	Emissions reduction project Emissions reduction target Company performance against a climate-related sustainability index	A portion of the corporate executive teams' annual incentives are linked to environmental performance indicators including the management of climate-related issues. Both performance and strategic indicators reflect the corporations continued focused ESG priorities and initiatives, including supporting the organization's climate strategy. ESG indicators made-up greater than 35% of our Corporate Performance Scorecard in 2021. In 2021, 3.5% of our Corporate Performance Scorecard is linked to a GHG emissions performance metric and 4.0% to technology development.
All employees	Monetary reward	Emissions reduction project Emissions reduction target	A portion of employee annual incentives are linked to environmental performance indicators including the management of climate-related issues. Both performance and strategic indicators reflect the corporations continued focused ESG priorities and initiatives, including supporting the organization's climate strategy. ESG indicators made-up greater than 35% of our Corporate



		Company performance against a climate-related sustainability index	Performance Scorecard in 2021. In 2021, 3.5% of our Corporate Performance Scorecard is linked to a GHG emissions performance metric and 4.0% to technology development.
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C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	1	2	The short-term horizon in MEG's strategic planning is 1 to 2 years. In the context of climate, this time frame aligns with the review cycle of greenhouse gas regulations.
Medium-term	2	5	The medium-term horizon includes MEG's strategic planning time frame.
Long-term	5	30	The long-term horizon considers MEG's reserve life and the Government of Canada (GOC) commitment to develop a plan to achieve net-zero emissions by 2050 which is in line with recent research from the IPCC which suggests the commitments made under the Paris Agreement must go beyond 2030 emission reductions to limit the extent of warming global temperatures and limit warming to 1.5°C. This would require human caused emissions to reach net-zero around 2050. MEG's long-term target to achieve net-zero GHG emissions (scope 1 and scope 2) by 2050 and its involvement with the Pathways Alliance are important elements of the long-term horizon.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

Climate-related risk is an element of MEG's Enterprise Risk Management (ERM) system which uses a risk matrix based on likelihood and impact severity to identify, assess, and prioritize strategic risks i) Definition: MEG defines substantive financial risk and strategic impact as a risk which, if it materialized, has the potential to materially negatively impact the enterprise value of the corporation. ii)+iii) Metrics/Thresholds: Enterprise value could be negatively impacted by reduced forecast free cash flow or higher cost of capital due to increased risk in the business, higher costs, or reduced revenue among other factors. Financial and strategic risks with the ability to impact value by 5% or more are considered material. Climate related risks are rated serious and the combination of one or more impacts could result in an enterprise value impact of up to 15%, unmitigated. Investment in mitigation activity is required to reduce risk to less than 10% potential value impact. iv) Scope: The mentioned definitions and thresholds apply regardless of where in the value chain the risk/event is located (operations and supply chain).

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

The Board is responsible for a) understanding the principal risks of the Corporation's business and confirming that systems are in place that effectively monitor and manage those risks with a view the long-term viability of the Corporation, b) overseeing the Corporation's enterprise risk management (ERM) program, including its design and structure and assessment of its effectiveness, c) overseeing the Corporations principal risks directly or, where the Board determines it to be appropriate, delegating the oversight of certain individual risks to a committee of the Board, and d) approving management's approach to ERM and its mitigation practices, including the identification, assessment and mitigation of principal risks, and satisfying itself as to the effective oversight of risk management of individual risks by the Board or its committees through periodic reports from the committee chair or management as appropriate. The Health, Safety and Environment and Reserves Committee (HSERC) provides direction and oversight of climate related matters including climate-related risk. The senior leadership team is accountable for the management of climate-related risk and delegating management of specific risks throughout the organization. Continuous improvement is integral to MEG's compliance and Environment, Health & Safety (EHS) management system. As such, climate change risks, opportunities and mitigation strategies are monitored continuously and reported monthly to MEG's corporate HSE Committee and quarterly to the Board of Directors and HSERC. Potentially material climate change risks are communicated to shareholders in MEG's Annual Information Form (AIF) and other continuous disclosure documents publicly available on SEDAR, the filing system for Canadian Securities Administrators.

MEG uses a value-driven ERM philosophy to identify key strategic risks. ERM is integrated into strategic planning, business planning, operating practices, marketing, compliance monitoring, operating performance measurement and facility design. MEG's entire leadership team is engaged in evaluation and ranking of risk areas across the organization. Risks identified in MEG's assessments are tracked in a Corporate Risk Register and evaluated based on impact severity and likelihood of occurrence, based on the current and potential future operating conditions and business or political environment. Impact severity considers financial impact to enterprise value and free cash flow, operational impact, environmental, safety, regulatory and reputational impact. Likelihood is ranked from remote to frequent. An overall Risk Rating is obtained by considering both impact severity and probability. Risks with a risk rating of 'low' are monitored by routine procedures and operations. Risks with a risk rating of 'catastrophic' require immediate risk treatment and mitigation plans. MEG defines substantive financial risk and strategic impact as a risk which, if it materialized, has the potential to materially negatively impact the enterprise value of the corporation. Metrics/Thresholds: Enterprise value could be negatively impacted by reduced forecast free cash flow or higher cost of capital due to increased risk in the business, higher costs, or reduced revenue among other factors. Financial and strategic risks with the ability to impact value by 5% or more are considered material. Climate related risks are rated serious and the combination of one or more impacts could result in an enterprise value

impact of up to 15%, unmitigated. Investment in mitigation activity is required to reduce risk to less than 10% potential value impact.

MEG has also established a cross functional management team (HSE Committee) to examine GHG operational performance and identify risks and areas of opportunity for efficiency improvement. Recommendations inform operational capital investments, operating strategy as well as overall corporate strategy development. Opportunities identified and assessed by this team include production technology enhancements, operational efficiency projects (including Capital projects), carbon capture and storage opportunities as well as value-added downstream technologies. The ERM process also identifies how the company currently mitigates risk and how it plans to mitigate risk in the future; including additional resource required. Canada.

A case study of how our process has been used for a transition risk has been our response to climate regulation. Operating in Alberta, MEG is subject to the Technology Innovation and Emissions Reduction Regulation (“TIER”) regulation as a large emitter which includes facility-specific benchmarks and sector based high-performance benchmarks. The stringency of the benchmark will increase annually beginning in 2021 until the high-performance benchmark is met. The situation is the increasing cost of regulatory compliance for GHG emissions. The potential impacts of this risk include financial impact to enterprise value and free cash flow. The task was to identify possible mitigations to reduce compliance costs associated with the regulation which prompted MEG to consider possible investments in technologies to reduce GHG. The ERM process helped drive the introduction of several technological strategies to enhance bitumen recovery which also improve GHG performance. These include utilization of infill wells, non-condensable gas injection to maintain reservoir pressure and solvent injection on selected wells. MEG continued to advance these bitumen recovery technologies including eMSAGP and the continued testing its eMVAPEX technology. MEG also received government grants for the eMVAPEX pilot. As a result of the application of proprietary technologies and optimizations MEG achieved a companywide SOR of 2.43 in 2021 and performed better than the TIER facility specific benchmark.

A case study of how our process has been used for physical climate risks has been the risk of wildfire. MEG operates in Alberta where in 2016 the Fort McMurray wildfires caused significant loss and impacted production at oil and gas facilities. Climate change could increase the frequency of these events by with increased frequency and severity of extreme temperatures. Wildfire could cause damage to MEG’s infrastructure, impact accessibility to MEG’s properties and cause interruptions to production. MEG has utilized data from the latest IPCC Fifth Assessment Report (AR5) to update a climate change assessment with recent climate trend comparisons locally and projections of changes in temperature, precipitation and other extreme events that could be expected out to 2080. MEG has identified the risk of wildfires in the ERM and identified mitigations through engineering design and operational procedures. An example of a mitigative action taken is a Fire Smart program and a lightning strike detection system. As a result, we are better prepared to protect infrastructure from wildfire hazards.

C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Current GHG emission regulations are identified, assessed, and captured in the corporate risk register, included in corporate budgets if applicable as well as corporate strategy decisions. MEG considers international, federal, and provincial regulations. Many GHG emission regulations are designed to increase in stringency over time to achieve jurisdictional goals and targets. MEG regularly assesses and monitors emissions performance of its development plans to understand potential current and future financial implications. MEG has introduced several strategies including enhanced bitumen recovery technologies. In addition, our Christina Lake Project generates electricity and steam through the use of cogeneration. Examples of current regulation include the federal GHG Pollution Pricing Act (GGPPA) and TIER. On June 21, 2018 the GGPPA came into force which includes: a fuel charge and an output-based pricing system for industrial facilities. On December 6, 2019 the federal government confirmed equivalency with the GOA's TIER under the Emissions Management and Climate Resilience Act. TIER came into force January 1, 2020 replacing the CCIR. It includes facility-specific benchmarks and sector based high-performance benchmarks. The stringency of the benchmark began to increase annually in 2021 and will continue until the high-performance benchmark is met. MEG will continue to implement its bitumen recovery enhancement strategies and monitor the outcomes and implications for MEG under TIER. The fuel charge under Part 1 of the GGPPA came into force in Alberta on January 1, 2020 after the Government of Alberta adopted the Carbon Tax Repeal Act in 2019. MEG's exposure to Part 1 of the GGPPA is minimal as all facility operating emissions are regulated under the TIER Regulation. Further, the TIER Regulation received federal equivalency with Part 2 of the GGPPA in December 2019 eliminating the risk of duplicative regulation and/or pricing.
Emerging regulation	Relevant, always included	Changes to the political landscape and regulatory regimes can lead to emerging regulations. There will likely be some financial impact of emerging GHG regulation on most oil sands industry participants, however the extent of the impact is not always known. In 2019, MEG experienced uncertainty regarding the ultimate GHG emission regulatory regime that would apply to MEG in 2020. Effective January 1, 2020, both provincial and federal methane regulations came into force in Alberta. These two regulations have a significant amount of duplication in the targeted source types and management approaches. In 2019, equivalency between the two regulations had not been reached and both remained in effect. In



		<p>response, MEG had taken measures to ensure compliance with both sets of regulations in 2020 including enhancements to the fugitive emissions leak detection and repair and equipment retrofits. On June 6, 2020 the Government of Canada published the Order Declaring that the Provisions of the Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds (Upstream Oil and Gas Sector) Do Not Apply in Alberta in the Canada Gazette. This preliminary agreement on methane reduction regulations would permit the federal methane regulations to stand down in Alberta; however, a finalized agreement has not yet been reached at time of this submission. In the absence of a future agreement, it is anticipated that the cost of meeting the federal methane requirements will be higher than the costs of meeting Alberta's requirements alone. To mitigate this risk, a multidisciplinary team regularly monitors climate policy developments and emerging regulations for potential operational and financial impacts. Findings are communicated monthly to the corporate HSE Committee and at least quarterly to the Board and applicable Board Committees to be factored into corporate strategy and planning. MEG actively consults with the federal and provincial governments/regulators on policy and regulatory issues and provides input into new and existing legislation to properly reflect a balanced approach to sustainable development. MEG consulted on the new AER methane requirements and TIER regulation.</p>
Technology	Relevant, always included	<p>MEG considers transitional risks associated with a global transition to a less carbon-intensive economy. MEG competes with the global petroleum producers as well as with other industries (alternative energy suppliers) in supplying energy, fuel, and related products to consumers. Technological advancements and innovations can impact the demand for MEG's products (including bitumen and electricity) by potentially improving the price and availability of alternative energy supplies and improving the carbon performance of petroleum competitors. MEG continuously monitors the supply and demand parameters of its products as well as opportunities for technological advancement and innovation. Due to its low decline, low-cost structure and high-quality asset, MEG is well positioned and continuously working towards being the last ethically, environmentally, and economically produced barrel of oil and intends to be a leader in the carbon energy future. The transition to a less carbon-intensive economy is creating technological development opportunities to improve emissions intensities. MEG has introduced a number of technological strategies to enhance bitumen recovery including utilization of infill wells, non-condensable gas (NCG) injection to maintain reservoir pressure and the application of solvent injection on selected wells. MEG continues to advance its bitumen recovery technologies including eMSAGP and the continued evaluating its eMVAPEX technology. In 2021, MEG joined the Oil Sands Pathways to Net Zero Alliance. Formed in 2021, the Alliance has the stated goal of achieving net zero GHG emissions from all oil sands operations by 2050 through a collaborative CO2 pipeline and carbon capture / storage project.</p>



<p>Legal</p>	<p>Relevant, always included</p>	<p>MEG’s corporate risk assessment process has identified the potential for climate-related legal risks. This includes the failure to comply with GHG legislation and regulations which may result in the imposition of significant fines and penalties. For example, under the Climate Change and Emissions Act, a person who is guilty of an offence is liable to a fine of up to \$1,000,000 in the case of a corporation. MEG mitigates this risk by tracking its performance regarding current regulation and regularly monitors climate policy developments and emerging regulations. Performance and potential operational and financial impacts from climate policy developments and emerging regulations are communicated monthly to the Corporate EHS Committee and quarterly to the Board of Directors. MEG has also identified climate-related legal risks including the risk of climate-related litigation against MEG’s directors and officers, for misleading and incomplete disclosure with respect to climate change. Such claims may be material or may be indeterminate, may affect the financial condition or results of operations, or may cause MEG to incur significant expenses or devote significant resources in defense of any litigation. MEG protects its officers and directors against such litigation with insurance, which also covers securities claims against the organization.</p>
<p>Market</p>	<p>Relevant, always included</p>	<p>The availability of pipeline capacity and other transportation and storage facilities for MEG’s bitumen could affect MEG’s operating results. MEG’s corporate risk register identifies that reputational climate-related risks can impact this availability. In terms of reputational risk, the development of the Alberta oil sands has received considerable attention on environmental and social impacts including climate change and GHG emissions. The influence of anti-fossil fuels activists (with a focus on oil sands) has negatively affected the expansion of Western Canadian pipeline capacity increasing competition for market access. In addition, future legislation or policies that limit the purchase of bitumen produced from the oil sands may be adopted by jurisdictions further limiting markets for MEG’s products. In terms of physical risk, potential increases in extreme weather events may impede operation of pipelines, storage infrastructure as well as refineries. Marketing risks are mitigated by utilizing a network of pipelines, and storage facilities to optimize market access for the transport and sale of bitumen to current and emerging crude oil market throughout North America and internationally. The transportation network includes transportation capacity on the Flanagan South and Seaway pipeline systems providing pipeline transportation directly to U.S. Gulf Coast refineries and export terminals, the Trans Mountain Expansion Project providing access to Canada’s West Coast and storage capacity in Alberta and strategic locations in the U.S. with marine export capacity with certain U.S. Gulf Coast terminals. This combination of pipeline access, storage capacity and marine export capacity advances MEG’s strategy of having long-term, broadening, and reliable market access to world oil prices.</p>



<p>Reputation</p>	<p>Relevant, always included</p>	<p>Reputational impacts which include the potential loss of stakeholder or shareholder trust are included in MEG’s risk assessment. Development of the Alberta oil sands has received considerable attention on the subjects of environmental and social impacts including climate change and GHG emissions. The influence of anti-fossil fuels activists (with a focus on oil sands) targeting equity and debt investors, lenders and insurers and changes in consumer behaviour may result in policies which reduce support for or investment in the Alberta oil sands sector. In addition, evolving decarbonization policies of institutional investors, lenders and insurers could affect the Corporation’s ability to access capital pools. Certain insurance companies have taken actions or announced policies to limit available coverage for companies which derive some or all of their revenue from the oil sands sector. As a result of these policies, premiums, and deductibles for some or all of the Corporation’s insurance policies could increase substantially. In some instances, coverage may become unavailable or available only for reduced amounts of coverage. As a result, the Corporation may not be able to extend or renew existing policies, or procure other desirable insurance coverage, either on commercially reasonable terms, or at all. Negative consequences which could arise as a result of changes to the current regulatory environment include, but are not limited to, changes in environmental and emissions regulation of current and future projects by governmental authorities, which could result in changes to facility design and operating requirements, potentially increasing the cost of construction, operation, and abandonment. In addition, legislation or policies that limit the purchase of crude oil or bitumen produced from the oil sands may be adopted in domestic and/or foreign jurisdictions, which, in turn, may limit the world market for this crude oil, reduce its price and may result in stranded assets or an inability to further develop oil resources. MEG is committed to further integrate ESG practices throughout the business including advancing its climate change strategy, continue to monitor and manage risks and drive more impactful disclosure to continue working towards being the last ethically, environmentally, and economically produced barrel of oil.</p>
<p>Acute physical</p>	<p>Relevant, always included</p>	<p>Climate change may introduce new acute physical risks including fires, lightning, earthquakes, extreme cold weather or extreme weather events such as storms. These may cause damage to MEG’s infrastructure, impact accessibility to MEG’s properties and cause interruptions to production. These are identified in the ERM process and cannot be controlled; therefore, these risks are mitigated through engineering design and operational procedures. For example, MEG implements a Fire Smart program to protect infrastructure from wildfire hazards and conditions equipment against other extreme weather events. MEG assesses hazards such as trees that could potentially strike infrastructure such as power lines as a result of weather conditions and has a trouble tree program in place. MEG’s facilities are located in a geographical area that is not prone to significant weather events such as hurricanes or flooding. The area does experience extreme weather temperatures and MEG’s facilities are designed to handle these extreme temperatures and standards are in place to ensure</p>



		<p>worker health and safety and reliability, therefore the potential impact of these risks is low. MEG has updated the previous climate change assessments with more recent data and modelling information from the latest Intergovernmental Panel on Climate Change’s (IPCC) Fifth Assessment Report (AR5). The assessment update provided more recent climate trend comparisons locally and projections of changes in temperature, precipitation and other extreme events that could be expected out to 2050 and 2080. The intent of the revision was to support design reviews and develop mitigations (if necessary) to minimize the impacts of potential changes in environmental extremes.</p>
Chronic physical	Relevant, always included	<p>Climate change may introduce new chronic physical risks including changes to seasonal weather patterns including changes in temperature extremes and precipitation patterns. These may cause damage to MEG’s infrastructure, impact accessibility to MEG’s properties and cause interruptions to production. These are identified in the ERM process and cannot be controlled; therefore, these risks are mitigated through engineering design and operational procedures. The design of MEG’s facilities ensure that storm water run-off facilities have sufficient capacity to manage potential increase in flows and storm events and were designed to handle 1 in 100-year 24-hour rainfall events. MEG also has an extensive environmental monitoring program in place for water and wetlands that will identify trends and support appropriate adaption of operating practices and facilities which includes wetland and culvert monitoring to ensure unobstructed flow of surface water across site infrastructure and prevents flooding. MEG's facilities are located in a geographical area that is not prone to significant weather events such as hurricanes or flooding. The area does experience extreme weather temperatures and MEG’s facilities are designed to handle these extreme temperatures and standards are in place to ensure worker health and safety and reliability. Therefore, the potential impact of these risks is low. MEG has updated the previous climate change assessments with more recent data and modelling information from the latest Intergovernmental Panel on Climate Change’s (IPCC) Fifth Assessment Report (AR5). The assessment update provided more recent climate trend comparisons locally and projections of changes in temperature, precipitation and other extreme events that could be expected out to 2050 and 2080. The intent of the revision was to support design reviews and develop mitigations (if necessary) to minimize the impacts of potential changes in environmental extremes.</p>

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Company-specific description

In 2021 MEG's operational GHG emissions were regulated under the Government of Alberta's Technology Innovation and Emissions Reduction Regulation ("TIER Regulation"). TIER includes facility-specific benchmarks and sector based high-performance benchmarks. The stringency of the intensity-based facility-specific benchmark is currently scheduled to increase annually at a rate of 1% per year. Under Alberta policy, the carbon price increased from \$40/tonne in 2021 to \$50/tonne in 2022. In 2021, the federal government established the Federal Benchmark for Carbon Pollution Pricing for 2023 to 2030 that will increase by \$15/year to reach \$170/tonne in 2030. Alberta will need to maintain equivalency with Federal climate policy including the price of carbon. In each year, all else equal, compliance costs for MEG would expect to increase as target intensity is lowered and cost per tonne increases. As such, current GHG emissions regulations, including forecast increase annually in the price of carbon, are identified, assessed, and captured in the corporate risk register, included in corporate budgets if applicable as well as corporate strategy decisions. We regularly assess and monitor emissions performance of our development plans to understand the potential current and future financial implication of regulations and the carbon price. Measures are taken to reduce emissions to lessen the impact of increasing stringency and carbon pricing of current regulations. Incrementally, further increases in the stringency of GHG regulations over time



to achieve jurisdictional goals and targets, may be implemented and may include strengthened GHG emissions performance benchmarks and rising carbon prices. This could continue to impact compliance costs and MEG's cost competitiveness due to increased direct (operating) costs. Failure to comply with GHG legislation and regulations may also result in the imposition of significant fines and penalties.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

2,000,000

Potential financial impact figure – maximum (currency)

4,000,000

Explanation of financial impact figure

The potential financial impact figure estimates potential increased annual indirect (operating) costs of compliance to current carbon pricing mechanisms in the short-term horizon. It assumes projected annual emissions and the current performance benchmark under Alberta TIER regulation to forecast a carbon compliance deficit and uses 2022 carbon pricing of \$50/tonne.

Cost of response to risk

2,228,000

Description of response and explanation of cost calculation

We have a long history of reducing the GHG intensity of our production and we are proud of the significant progress we have made to date. With cogeneration, energy efficiency and proprietary reservoir technology advancements that reduce SOR, we decrease our bitumen GHG intensity by approximately 20% below the in-situ industry average. A key pillar of our climate change strategy to manage this risk includes the advancement of innovative technology through investment in research and development, and through collaboration. Our strategy includes identifying and implementing carbon efficiencies and assessing opportunities to decarbonize which will reduce forecast regulatory compliance costs in years to come as well as achieving our carbon reduction targets. We actively engage with stakeholders to assess and bring low carbon technology opportunities to fruition including through the Oil Sands Pathways to Net Zero initiative. We have committed to support global and national objectives to address climate change, in particular the goal of the Paris Agreement and have set a target to achieve net zero GHG emissions (scope 1 and scope 2) by 2050 in support of these objectives, as well as a mid-term target of a 30% reduction in bitumen GHG emissions intensity (scope 1 and scope 2) from 2013 levels by 2030. The estimated cost of the work undertaken under to support this plan is: \$28,000 process tank emissions management, \$100,000 fugitive emissions management, and \$900,000 CO2 storage feasibility study, such costs are partly offset by government grants. Additional costs into future years are anticipated as larger-scale technology solutions are adopted.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Company-specific description

In 2021 MEG's operational GHG emissions were regulated under the Government of Alberta's Technology Innovation and Emissions Reduction Regulation ("TIER Regulation"). TIER includes facility-specific benchmarks and sector based high-performance benchmarks. The stringency of the intensity-based facility-specific benchmark is currently scheduled to increase annually at a rate of 1% per year. Under Alberta policy, the carbon price is set to increase from \$40/tonne in 2021 to \$50/tonne in 2022. The TIER is subject to an annual equivalency test against the Federal system to maintain its applicability within Alberta and avoid the imposition of a Federal backstop. This test requires that both regulated emissions coverage and pricing remains equivalent to the Federal benchmark. The TIER is mandated to undergo a review in 2022 that is anticipated to align with new benchmarking criteria and is likely to increase compliance requirements into the future, although the specific impacts are unknown at this time. In addition to the 2022 TIER review, there are further regulatory changes expected to support Canada's international climate commitments, mounted within the Net-Zero Emissions Accountability Act that guides the legally binding process to set five-year national emissions-reduction targets and establish Emission Reduction Plans (ERP). The first ERP, released in 2022, suggests the intent to cap emissions from the oil and gas sector at some point, reduce emissions from the oil and gas sector by 42% below 2019 levels by 2030, and further limit emissions from power generation through a national Clean Electricity Standard. The details and timing of these changes is currently unknown and poses a degree of regulatory uncertainty on the sector. This is layered by pricing uncertainty and pressure for Alberta to adopt the updated Federal Benchmark for Carbon Pollution Pricing for 2023 to 2030 which would see carbon price increase up to \$170/tonne in 2030. There is uncertainty regarding the ultimate GHG emission regulatory regime that will be applicable to MEG due to the potential changes in regulatory and government regimes.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

30,000,000

Potential financial impact figure – maximum (currency)

150,000,000

Explanation of financial impact figure

The estimated financial impact represents the range of the potential cost of compliance in 2030 associated with various regulatory outcomes that could evolve considering the stated initiatives within the Federal ERP and Federal Benchmark for Carbon Pollution Pricing, if emissions were unmitigated and growth is limited.

Cost of response to risk

2,228,000

Description of response and explanation of cost calculation

We have a long history of reducing the GHG intensity of our production and we are proud of the significant progress we have made to date. With cogeneration, energy efficiency and proprietary reservoir technology advancements that reduce SOR, we decrease our bitumen GHG intensity by approximately 20% below the in-situ industry average. A key pillar of our climate change strategy to manage this risk includes the advancement of innovative technology through investment in research and development, and through collaboration. Our strategy includes identifying and implementing carbon efficiencies and assessing opportunities to decarbonize which will reduce forecast regulatory compliance costs in years to come as well as achieving our carbon reduction targets. We actively engage with stakeholders to assess and bring low carbon technology opportunities to fruition including through the Oil Sands Pathways to Net Zero initiative. We have committed to support global and national objectives to address climate change, in particular the goal of the Paris Agreement and have set a target to achieve net zero GHG emissions (scope 1 and scope 2) by 2050 in support of these objectives, as well as a mid-term target of a 30% reduction in bitumen GHG emissions intensity (scope 1 and scope 2) from 2013 levels by 2030. The estimated cost of the work undertaken under to support this plan is: \$28,000 process tank emissions management, \$100,000 fugitive emissions management, and \$900,000 CO2 storage feasibility study, such costs are partly offset by government grants. Additional costs into future years are anticipated as larger-scale technology solutions are adopted.

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical

Other, please specify

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Decreased revenues due to reduced production capacity

Company-specific description

Physical risks from climate change can include event driven (acute) natural events. Our only facility, CLRP, is in the southern Athabasca region of Alberta, Canada, an area that experiences a wide range of temperature extremes (-40°C to +40°C). Severe weather patterns or catastrophic weather events such as wildfires, extreme cold weather, storms or flooding also occur in this area and have the potential to damage our facility, infrastructure, or impact accessibility to MEG's properties (via road or air) resulting in material interruptions to production. A specific example of a physical climate risks is the risk of wildfire. MEG operates in Alberta where in 2016 the Fort McMurray wildfires caused significant loss and impacted production at oil and gas facilities. Climate change has the potential to increase the frequency of these events by increasing the frequency and severity of extreme temperatures. Wildfire could cause damage to MEG's infrastructure and/or camps, impact accessibility to MEG's properties and cause interruptions to production.

Time horizon

Long-term

Likelihood

Exceptionally unlikely



Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

250,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Estimated financial impact includes impact of business interruption and damage to facilities and/or camps associated with acute events-based risk. The impact estimate . assumes a full plant outage for up to 1 month which results in lost revenue due (net of avoided cost) to lost production of ~\$250 million based on 2022 average commodity price environment plus ~\$100 million for damages to facilities and camps. Damages to facilities and camps should be recoverable under MEG's property insurance, resulting in a ~\$250 million estimated impact net of insurance recoveries. Estimated cost of response reflects a portion of the annual premium for MEG's property insurance coverage.

Cost of response to risk

1,000,000

Description of response and explanation of cost calculation

Impacts of extreme weather events or catastrophic events such as wildfires are identified in the ERM process. Consideration of acute physical risks is incorporated into engineering design of facilities and supporting infrastructure, including importantly, the segregation of phases of production, and the risks are further mitigated through appropriate maintenance and operational procedures. To understand this risk further, MEG has updated the previous climate change assessment completed in 2008 with more recent data and modelling information from the latest Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report (AR5). The assessment update provided more recent climate trend comparisons locally and projections of changes in temperature, precipitation and other extreme events that could be expected out to 2050

and 2080. The intent of the revision was to support design reviews and develop mitigations (if necessary) to minimize the impacts of potential changes in environmental extremes. Significant mitigation measures are already in place. For example, MEG manages wildfire risk through the implementation of a Fire Smart program which protects infrastructure from fire hazards and has in place an Emergency Response Plan (ERP) which includes a wildfire supplement. The ERP monitors, classifies and communicates wildfire risk as well as outlines wildfire season preparation and evacuation. MEG also purchases property and business interruption insurance which would protect MEG against a severe weather event that causes damage to the facility resulting in prolonged shut down. MEG's business interruption insurance coverage also protects against shutdowns in critical third-party infrastructure (e.g. damage to Access pipeline because of severe weather). MEG's property insurance is subject to a \$5 million deductible and MEG's business interruption is subject to a 60-day retention period. As a result, we are better prepared to protect infrastructure from wildfire hazards or other physical acute climate risks. The cost of response to risk reflects a portion of MEG's total insurance costs. As climate change data is understood, additional investment in the plant to protect against severe weather may be required.

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Reduced direct costs

Company-specific description

In 2021, MEG operations were subject to the Technology Innovation and Emissions Reduction (TIER) Regulation. The TIER Regulation was effective in Alberta starting January 1, 2020 and is Alberta's industrial greenhouse gas emissions pricing regulation and emissions trading system. Facilities regulated under TIER must reduce emissions to meet facility specific benchmarks or a high-performance benchmark. The regulation prescribes facility-specific benchmarks based on historical facility performance. As of January 1, 2020, a 10% emission intensity reduction requirement applied and increases in stringency by 1% per year. Facilities that reduce emissions below the benchmark can generate emissions performance credits which can be used to offset future costs or monetized. The compliance options for facilities that exceed their benchmark remain unchanged from those established under the CCIR therefore an opportunity continues to exist for MEG to earn emissions performance credits by reducing emissions below the benchmark through continuing to seek innovative operational efficiencies, reduce fuel usage and ultimately reduce operational costs. Specifically, MEG uses cogeneration and its proprietary eMSAGP process to reduce steam requirements for production, thus reducing the energy intensity and carbon intensity of its production process. MEG is also deploying other advanced physical and digital techniques to optimize the SOR.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

9,500,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

In 2021, MEG had a surplus of emission performance credits registered within the Alberta Carbon Registries that had the potential for monetization at a rate realistically slightly below the 2021 Alberta carbon pricing of \$40/tonne. MEG was under no obligation to market these credits in 2021 and this figure only represents the potential value of a market sale.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Our corporate strategy addresses both business risks and opportunities arising from climate change. This includes the need to reduce GHG emissions to meet regulatory requirements and provide low-carbon energy. We have a long history of reducing our GHG intensity and have made significant progress to date. With cogeneration, energy efficiency and proprietary reservoir technology advancements that reduce SOR, we decreased our bitumen GHG intensity by approximately 20% below the in-situ industry average. One key pillars of our climate change strategy to manage this risk include is the advancement of innovative technology to reduce carbon intensity of production and advance carbon capture through investment in research and development, and through collaboration. Part of this strategy includes a significant focus on optimizing steam generation to reduce greenhouse gas emissions and reduce fuel use. An important metric for this purpose is Steam-Oil Ratio (SOR), the quantity of steam used to produce a barrel of oil. SOR is a key measure of efficiency for SAGD projects, with a lower SOR indicating that steam is more efficiently utilized. By decreasing the amount of steam used, MEG can reduce per barrel water and fuel requirements which

results in lower GHG intensity and more economic projects. With the SAGD industry average SOR about 3 to 3.5, eMSAGP and eMVAPEX have enabled MEG to achieve a companywide SOR of 2.43 in 2021. It is through these measures, that CLRP has been able to generate a surplus of emission performance credits. Explanation of cost to realize opportunity: there is no cost to the seller when activating a transaction on the Alberta Carbon Registries.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Primary potential financial impact

Increased revenues resulting from increased production capacity

Company-specific description

The transition to a less carbon-intensive economy is creating technological development opportunities to improve emissions intensities. MEG has introduced several technological strategies to enhance bitumen recovery including utilization of infill wells, non-condensable gas (NCG) injection to maintain reservoir pressure and the application of solvent injection on selected wells. MEG continues to advance its bitumen



recovery technologies including eMSAGP and the continued testing its eMVAPEX technology. This proprietary technology, if proven commercial through pilot operations, will further enable MEG to add production without increasing aggregate carbon emissions, reducing GHG emission intensity. Development of this technology has been partially funded through government grants received from Alberta Innovates, Natural Resources Canada, Emissions Reduction Alberta, and Sustainable Development Technology Canada.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Technology development is still underway and commercial scale implications are considered financially sensitive due to the proprietary nature of the technology.

Cost to realize opportunity

11,000,000

Strategy to realize opportunity and explanation of cost calculation

MEG manages the potential cost impact associated with changes to GHG legislation by investing in reservoir enhancement technologies. One of these projects is eMVAPEX. MEG continued testing its proprietary eMVAPEX technology. A modification of its eMSAGP technology, eMVAPEX has the potential to further decrease MEG's steam-oil ratio (SOR) beyond what eMSAGP can achieve, and further reduce GHG emissions intensities. SOR is a key measure of efficiency for SAGD projects, with a lower SOR indicating that the steam is more efficiently utilized. By decreasing the amount of steam used, MEG can reduce per barrel fuel requirements which results in lower GHG emissions intensity. MEG has been granted funding from Alberta Innovates, Natural Resources Canada, Emissions Reductions Alberta, and Sustainable Development Technology Canada for continued eMVAPEX work. The potential financial impact is the total amount of funding for the continued advancement of the eMVAPEX pilot. This opportunity supports MEG strategy to produce bitumen efficiently. The application of MEG proprietary technology eMSAGP has enabled MEG to reduce its companywide SOR to 2.43 for 2021.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Climate legislation is driving the demand for low carbon energy generation creating a demand for our cogeneration produced electricity and potential for future increase and expansion. In 2015, the Government of Alberta introduced the Climate Leadership Plan to reduce carbon emissions which included a phase out of coal-generated electricity within the province by 2030. The electricity transition within the province outlines the need for approximately two-thirds of the replacement capacity to be comprised of natural gas generation. MEG has significant cogeneration capacity (provided through natural gas) that is positioned to benefit from the transitional power market in Alberta. Incrementally, MEG could continue to expand its cogeneration capacity if it expands production capacity and further increase revenues by selling electricity into the grid to meet demand for lower carbon electricity in Alberta.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

87,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The potential financial impact is calculated as the power sales price x power sales in 2021 as reported in the 2021 Annual Report.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Cogeneration is the process of recovering waste heat from electricity generation to efficiently produce steam. MEG operates two cogeneration facilities at its CLRP facility. Cogeneration uses natural gas more efficiently than standalone steam generators or single-cycle gas turbine generators. The steam generated from cogeneration is used for SAGD bitumen recovery and electricity to power the plant site, with excess power sold to Alberta's power grid. The electricity provided to the power grid has a lower carbon footprint than the provincial average, helping to reduce total GHG intensity for provincial consumers. The use of cogeneration reduces the net greenhouse gas intensity of MEG's oil and provides a stable source of baseload power as coal-fired generation is phased out in Alberta. Reducing electrical power production below the electricity performance standard enables MEG to earn emissions performance credits that can offset costs. No additional investment in cogeneration were made in 2021.

Comment

C3. Business Strategy

C3.1

(C3.1) Does your organization's strategy include a transition plan that aligns with a 1.5°C world?

Row 1

Transition plan

Yes, we have a transition plan which aligns with a 1.5°C world

Publicly available transition plan

Yes

Mechanism by which feedback is collected from shareholders on your transition plan



We have a different feedback mechanism in place

Description of feedback mechanism



MEG recognizes the importance of regular and constructive communication with shareholders and MEG’s Shareholder Engagement Policy identifies how MEG’s Board engages with shareholders and provides an overview of how shareholders can communicate or provide feedback to the Board and management. MEG supports an open and transparent process for shareholders to contact the Board on various matter including environmental, social and government matters such as climate-related transition plans if applicable. Shareholder communication is managed by the Board Chair. Shareholder questions to management are managed by the Investor Relations Department. On an annual basis MEG provides information through the management proxy circular and encourages shareholder participation in the annual general meeting, which provide information and a valuable opportunity to discuss corporate governance, executive compensation practices and other important matters. Information is also communicated through the Annual Information Form and ESG Report. Additional feedback mechanisms include quarterly conference calls, press releases, shareholder presentations and investor and industry conferences.

Frequency of feedback collection

More frequently than annually

Attach any relevant documents which detail your transition plan (optional)

2021 ESG Report pg. 24-27, Shareholder Engagement Policy

-  MEG Energy ESG Report 2021.pdf
-  Shareholder-Engagement-Policy.pdf

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

	Use of climate-related scenario analysis to inform strategy
Row 1	Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization’s use of climate-related scenario analysis.



Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
<p>Transition scenarios IEA SDS</p>	<p>Company-wide</p>		<p>The two scenarios (IEA SDS and STEPS) utilized by MEG for qualitative and quantitative climate scenario analysis were identified to be commonly used, well documented, and align with TCFD recommendations. The IEA’s SDS scenario was selected because it outlines a major transformation of the global energy system and is aligned with the Paris Agreement. Given MEG’s support of the Paris Agreement and target to achieve net zero emissions by 2050, the SDS scenario assesses MEG’s financial viability, strategy and business model resilience in an environment that holds the global average temperature to well below 2°C above pre-industrial levels while pursuing efforts to limit to 1.5°C.</p> <p>Parameters: global oil demand, price of oil, implementation of carbon pricing and pace of low-carbon solution technology development, among others.</p> <p>Assumptions: Global oil demand peaks in 2019 and decreases to 66 mb/day by 2040. Price of Brent oil averages US\$66/bbl in 2040. Carbon pricing becomes prevalent globally but remains region specific (US\$140/tonne in advanced economies, \$125/tonne in developing economies by 2040). Carbon pricing in Canada increases from C\$40/tonne in 2021 to C\$170/tonne in 2030. Emergence of low-carbon solutions accelerates rapidly, driven by globally coordinated government policy, fiscal incentives, and investor demand.</p> <p>Analytical choices: MEG’s financial viability, strategy and business model resilience is assessed on whether MEG can generate the cash flow required to cover incremental carbon costs incurred between now and 2050. Time horizons: 1) Present day to 2025 which is relevant as we assess and implement near-term strategies based on current economics and regulatory regime certainties. 2) Present day to 2030, incorporates estimated costs required to reduce bitumen emissions intensity by 30% vs. 2013 levels under the existing carbon cost framework as well as initial capital spend on carbon capture and storage technology (CCS). 3) From 2030 to 2050, incorporates estimated costs</p>

			<p>to reduce absolute emissions to zero by 2050 including capital and operating costs associated with CCS (as part of the Pathways Alliance Initiative), incurring carbon taxes, and employing other technology as required. Data sources: IEA scenarios for global oil demand, carbon pricing, and pace and cost of CCS; federal and provincial carbon pricing, and additional carbon technology costs from various research.</p>
<p>Transition scenarios IEA STEPS (previously IEA NPS)</p>	<p>Company-wide</p>		<p>The two scenarios (IEA SDS and STEPS) utilized by MEG for qualitative and quantitative climate scenario analysis are commonly used, well documented, and align with TCFD recommendations. The STEPS scenario is used as a base case because it reflects the potential impact to existing policy frameworks and currently announced policy intentions. It provides a detailed sense of the direction in which existing policy frameworks and today’s policy ambitions would take the energy sector out to 2040 against which we can test MEG’s financial viability, strategy, and business model resilience.</p> <p>Parameters: global oil demand, price of oil, implementation of carbon pricing and pace of low-carbon solution technology development, among others.</p> <p>Assumptions: global oil demand increases to 104 mb/day by 2040. price of Brent oil averages US\$85 in 2040, carbon pricing is implemented in more countries but remains region specific, ranging from US\$20-52/tonne by 2040. Carbon pricing in Canada increases from C\$50 in 2022 to C\$170 in 2030 and acceleration of low-carbon solutions occurs in high-income OECD countries driving continuous improvement.</p> <p>Analytical choices: MEG’s financial viability, strategy and business model resilience is assessed on whether MEG can generate the cash flow required to cover incremental carbon costs incurred between now and 2050. Time horizons: 1) Present day to 2025 which is relevant as we assess and implement near term strategies based on current economics and regulatory regime certainties. 2) Present day to 2030, incorporates estimated costs required to reduce bitumen emissions intensity by 30% vs. 2013 levels under the existing carbon cost framework as well as initial capital spend on carbon capture and storage technology (CCS). 3) From 2030 to 2050, incorporates estimated costs</p>



			<p>to reduce absolute emissions to zero by 2050 including capital and operating costs associated with CCS (as part of the Pathways Alliance Initiative), incurring carbon taxes, and employing other technology as required. Data sources: IEA scenarios for global oil demand, carbon pricing, and pace and cost of CCS; federal and provincial carbon pricing, and additional carbon technology costs from various research. As opposed to SDS, incremental carbon costs focus on a reduction in emissions intensity. Carbon costs associated with reducing absolute emissions to zero by 2050 are also included in STEPS, however the impact on cash flow is much less severe.</p>
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C3.2b

(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.

Row 1

Focal questions

Business model resiliency is a foundational commitment at MEG. It means generating attractive returns and integrating ESG matters into our business strategies to ensure value creation today and tomorrow. We conducted climate scenario analysis to better understand the potential effects of climate change on our business model and strategy in a range of plausible futures. MEG operates a single project referred to as the Christina Lake Regional Project (CLRP). All of our bitumen and electricity production, proved, and probable reserves and scope 1 and 2 emissions are associated with CLRP. As such, the climate scenario focused on this project. While recognizing that both transitional and physical risks could impact MEG, given the design of our facility and the location in which we operate, we selected to focus on transition risks as a starting point, as we determined these risks are more likely to have a significant impact on MEG's financial viability and resilience. These risks include policy and regulation, market, reputational and technology risks. Focal Question: Is MEG's business model and strategy resilient to climate-related transitional risks within the potential scenario's evaluated and will MEG maintain financial viability? MEG utilized the two IEA scenarios (SDS and STEPS) to address this focal question because they are commonly used, well documented, align with TCFD recommendations and were utilized for both qualitative and quantitative analysis. Addressing the focal question within the STEPS creates a base case for comparison of other scenarios. The SDS addresses the focal question within a scenario of major transformation of the global energy systems. It also supports MEG's commitment to support the Paris Agreement and MEG's net zero goals.



Results of the climate-related scenario analysis with respect to the focal questions

MEG continues to progress its climate scenario analysis and intends to use learnings to identify and monitor key signposts and test and assess its business model and strategy resiliency to climate-related transitional risks.

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	<p>Potential risks and opportunities including those related to a changing climate regulatory landscape, a growing shift to low-carbon energy and opportunities for technological innovation and efficiency improvements (as reported in C2.3a/2.3a) have influenced our-product-related strategy, in that we strive to provide a lower GHG intensity barrel of bitumen (product) to market by focusing on reducing our steam-oil ratio (SOR). SOR is a key measure of efficiency, with a lower SOR indicating that steam, and in turn gas, is more efficiently utilized. By decreasing the amount of steam used, MEG can reduce its per barrel water and gas requirements which results in a lower greenhouse gas emissions intensity and more economic projects. Strategic decisions made to reduce SOR include the introduction of various technologies to enhance bitumen recovery including infill wells, non-condensable gas (NCG) injection to maintain reservoir pressure and the application of solvent injection on selected wells. This includes the development and implementation of MEG’s patented proprietary eMSAGP technology. This strategy has resulted in MEG reducing companywide SOR to 2.43 in 2021 (in comparison to a 3 to 3.5 industry average) and a GHG intensity of 20% below industry average. Most recently, climate-related risks have compelled MEG to set a 2050 net-zero target and join the Oil Sands Pathways to Net Zero Alliance. Formed in 2021, the Alliance has the stated goal of achieving net zero GHG emissions from all oil sands operations by 2050 through a collaborative CO2 pipeline and carbon capture / storage project. The magnitude of these opportunities is significant, and the effects are anticipated to be realized over the short (1-2 year), medium (2-5 year) and long (5-30 year) term timescale and beyond. MEG is</p>

		continually monitoring the climate regulatory landscape including carbon pricing signals to evaluate potential future technology development.
Supply chain and/or value chain	Yes	The availability of pipeline capacity and other transportation and storage facilities for MEG’s bitumen could affect MEG’s operating results. MEG is aware that physical climate risks, such as increases in extreme weather events may impede operation of pipelines, storage infrastructure as well as refineries, impacting MEG’s ability to bring product to market. This is incorporated into MEG’s long-term marketing strategy. Marketing risks are mitigated by utilizing a network of pipelines and storage facilities to optimize market access for the transport and sale of bitumen to current and emerging crude oil market throughout North America and internationally. The transportation network includes transportation capacity on the Flanagan South and Seaway pipeline systems providing pipeline transportation directly to U.S. Gulf Coast refineries and export terminals, the Trans Mountain Expansion Project providing access to Canada’s West Coast, rail transloading capacity and storage capacity in Alberta and strategic locations in the U.S. with marine export capacity with certain U.S. Gulf Coast terminals. This combination of pipeline access, rail and storage capacity and marine export capacity advances MEG’s strategy of having long-term, broadening, and reliable market access to world oil prices. The potential impact of climate related risks and opportunities on MEG’s supply chain has also impacted MEG’s strategy. Access to highline power generated through cogeneration has allowed MEG to provide electricity to remote areas surrounding our facility to support our drilling program. In the past, drilling would have been powered with diesel engines. Now, with electricity from cogeneration, we have equivalent power capabilities with an approximate 60% reduction in emissions related to drilling activities. This strategic decision reduces exposure to potential carbon pricing for fuels such as diesel.
Investment in R&D	Yes	The changing climate regulatory landscape and a growing shift to low-carbon energy as well as opportunities for technological innovation and efficiency improvements (as reported in C2.3a) have influenced MEG’s strategy to invest in R&D and innovation in reservoir technologies, an aspect of which is the development and implementation of our patented and proprietary eMSAGP technology which helps reduce our SOR, GHG emissions intensity and water use intensity while maintaining or improving oil recovery. It involves drilling additional production wells between SAGD well pairs, injecting a non-condensable gas to maintain reservoir pressure, and reducing steam injection. The resulting overall SOR for eMSAGP is approximately 25% less than SAGD. By applying the eMSAGP process to



		<p>significant portions of the reservoir, we have achieved an average SOR of 2.43 in 2021 at at CLRP (in comparison to a 3 to 3.5 industry average). This technology allows MEG to provide a lower GHG emission intensity production to market. The magnitude of this identified opportunity is significant, and effects are anticipated to be realized in the short-term timescale and beyond. We have further reduced our SOR by piloting eMVAPEX. MEG has been granted funding from Alberta Innovates and Natural Resources Canada for continued testing and expansion of eMVAPEX. The magnitude of this identified opportunity has the potential to be significant with a medium to long term timescale. In 2021, MEG carried out a carbon capture study for our CLRP facilities with a mid-stream service provider to evaluate the cost of capturing and compressing CO2 using an amine-based process. In addition to the capture work, MEG also conducted a study to evaluate the feasibility of local CO2 storage in the vicinity of our CLRP operations with partial funding received from Alberta Innovates. MEG is piloting a technology that uses a combination of heat and catalyst to lower the viscosity of produced bitumen. If successful, the technology has the potential to reduce diluent use lowering Scope 3 emissions associated with transport and generate a higher value product that requires less refining which further lowers the lifecycle emissions of MEG’s bitumen. MEG is continually monitoring the climate regulatory landscape including carbon pricing signals to evaluate potential future technology development.</p>
Operations	Yes	<p>As part of the growing shift to low-carbon energy, in 2015 the Government of Alberta introduced the Climate Leadership Plan to reduce carbon emissions including a phase out of coal-generated electricity in the province by 2030. The electricity transition within the province outlines the need for approximately two-thirds of the replacement capacity to be natural gas generation. This climate opportunity incentivized MEG to use industrial cogeneration technology (COGEN), one key element in our energy management strategy. The natural gas turbines that make up this COGEN technology generate electricity that is used in our operations, with surplus power sold into the Alberta electricity grid. The heat from the turbine is recovered by a heat recovery steam generator for use in the thermal heavy oil recovery process, resulting in more efficient use of natural gas and a thermal efficiency of 86%. Our power has an emission intensity roughly 40% that of coal. We exported over 70% of our total generated power onto the provincial power grid amounting to just above 1% of the total Alberta grid demand in 2021. The electricity provided to the power grid has a lower GHG footprint than the provincial average, helping to reduce total GHG intensity for provincial consumers. The use of COGEN also reduces the</p>

		net GHG intensity of our oil, helping MEG exceed emissions regulations and generate carbon credits, and add value and support the changing electricity market structure. COGEN provides a stable source of baseload power as coal-fired generation is phased out in Alberta.
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C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Capital expenditures Capital allocation Acquisitions and divestments Access to capital Assets Liabilities	<p>Revenues: The impact of climate risk has contributed to political activism and delays in the development of pipeline infrastructure. Historically, the lack of takeaway capacity has led to the widening of light / heavy oil differentials which decreases the realizations on MEG’s blend barrels and in turn decreases revenue. MEG’s financial planning includes scenario and sensitivity analysis of various pricing environments and macro industry trends including the pace of infrastructure development. To manage the risk associated with price volatility MEG periodically enters into financial risk management contracts.</p> <p>Direct Costs: MEG’s financial planning includes a forecast of the direct costs associated with climate change, namely regulatory costs associated with current regulations around GHG compliance and the cost of carbon. Sensitivities are also conducted with respect to a range of potential future regulatory outcomes. MEG’s business plan continues to focus on implementation of technology that reduce SOR, energy cost and GHG emissions, including the application of eMSAGP. Planning assumes that such technologies will continue to be applied across future developments, providing economic and climate change benefits. MEG conducts scenario analysis to determine the sensitivity of the company’s cash flows to changes in carbon taxation and pricing. MEG’s reservoir technologies, including eMSAGP, have helped reduce the capital intensities required for future growth by as much as half. The application of eMSAGP costs significantly less than the capital intensity required to complete large scale projects.</p> <p>Capital expenditures/Capital allocation: The changing regulatory landscape has created an opportunity for MEG to improve its oil production performance. MEG has incorporated the cost of carbon in calculating the return on capital</p>

		<p>investments. MEG’s reservoir technologies, including eMSAGP, have helped reduce the capital intensities required for future growth by as much as half. The application of eMSAGP to the Phase 2B producing wells costs significantly less than the capital intensity required to complete large scale projects. This technology reduced GHG intensity as well as capital intensity, which provided additional incentives for this technology. Future growth capital allocates resources to the further the expansion of eMSAGP. MEG expects its capex obligation within the Pathways project to track with its share of total emissions amongst the operators in the Alliance and expected to be partly offset by the federal government’s recently announced Investment Tax Credit as well as the expectation of further support from the provincial government. The magnitude of this identified opportunity is significant, and the effects are anticipated to be realized in the short-term timescale and beyond. Inclusion of cost of carbon in financial evaluations is a long-term measure and the price will be updated if and when regulations change.</p> <p>Acquisitions and divestments: From a financial planning perspective, environmental performance, climate change impacts and carbon costs are key elements considered in the evaluation of acquisitions or divestments.</p> <p>Access to capital: MEG’s development plan and related analysis undertaken as part of our financial planning process is focused on reducing MEG’s reliance on external capital markets, in part, because climate change activism has impacted access to capital and increased cost of external financing. MEG is focused on reducing debt outstanding and funding capital within cash flow. MEG’s balance sheet management strategies are conservative, ensuring continuing access to debt capital markets. To combat capital market risks, MEG has increased its public disclosure with respect to its comprehensive efforts to manage all ESG performance including climate change measures. Where possible, the changing regulatory landscape has created an opportunity for MEG to invest in R&D and innovative reservoir technologies. MEG has been granted funding from Alberta Innovates, Natural Resources Canada, Emissions Reductions Alberta, and Sustainable Development Technology Canada for continued eMVAPEX work. Future capital may be allocated to the expansion of eMVAPEX which is expected to further improve SOR, and in turn, emissions intensity. These grants help to offset investment. The magnitude of this identified opportunity is low, and the effects are anticipated to be realized in the short-term timescale.</p> <p>Assets: Climate regulations are considered in the development timeframe of long-term assets such as the Surmont and May River projects. In 2019, MEG elected to defer the development of Surmont, given market conditions, reducing total</p>
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		<p>probable reserves.</p> <p>Liabilities: MEG uses progressive reclamation plans to minimize the footprint of disturbance and return the land to a state of equivalent capability. Physical risks from climate change are event driven and include longer-term shifts in climate patterns. Primary factors which could affect MEG's reclamation plans include fires and seasonal weather patterns. Fires can impact revegetation activities and success. Higher rainfall events can cause erosion issues and shorter winter seasons can impact accessibility to sites. MEG participates in working groups including the Faster Forests program by Canada's Oil Sands Innovation Alliance, the Industrial Footprint Reduction Options Group, and the Regional Industry Caribou Collaboration. MEG encourages innovation and application of industry leading oil sands construction, reclamation, and restoration best management practices. The magnitude of this risk is anticipated to be low with a timescale of short to long term expected.</p>
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C3.5

(C3.5) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's transition to a 1.5°C world?

No, but we plan to in the next two years

C4. Targets and performance

C4.1

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

Intensity target

C4.1b

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

Target reference number

Int 1

Year target was set

2021

Target coverage

Company-wide

Scope(s)

Scope 1

Scope 2

Scope 2 accounting method

Location-based

Scope 3 category(ies)

Intensity metric

Other, please specify

metric tons CO₂e per m³ of bitumen

Base year

2013

Intensity figure in base year for Scope 1 (metric tons CO₂e per unit of activity)

0.415

Intensity figure in base year for Scope 2 (metric tons CO₂e per unit of activity)

0

Intensity figure in base year for Scope 3 (metric tons CO2e per unit of activity)

Intensity figure in base year for all selected Scopes (metric tons CO2e per unit of activity)

0.415

% of total base year emissions in Scope 1 covered by this Scope 1 intensity figure

100

% of total base year emissions in Scope 2 covered by this Scope 2 intensity figure

100

% of total base year emissions in Scope 3 (in all Scope 3 categories) covered by this Scope 3 intensity figure

% of total base year emissions in all selected Scopes covered by this intensity figure

100

Target year

2021

Targeted reduction from base year (%)

11

Intensity figure in target year for all selected Scopes (metric tons CO2e per unit of activity) [auto-calculated]

0.36935

% change anticipated in absolute Scope 1+2 emissions

16

% change anticipated in absolute Scope 3 emissions



Intensity figure in reporting year for Scope 1 (metric tons CO2e per unit of activity)

0.379

Intensity figure in reporting year for Scope 2 (metric tons CO2e per unit of activity)

0

Intensity figure in reporting year for Scope 3 (metric tons CO2e per unit of activity)

Intensity figure in reporting year for all selected Scopes (metric tons CO2e per unit of activity)

0.379

% of target achieved relative to base year [auto-calculated]

78.860898138

Target status in reporting year

Underway

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Target ambition

Please explain target coverage and identify any exclusions

This target corresponds to that established under the Technology Innovation and Emission Reduction Regulation based on facility specific performance from a 2013-2015 baseline. The target covers all Scope 1 and Scope 2 emissions company-wide.

Plan for achieving target, and progress made to the end of the reporting year

We have a long history of reducing the GHG intensity of our production and have made significant progress to date. With cogeneration, energy efficiency and proprietary reservoir technology advancements that reduce SOR, we decrease our bitumen GHG intensity by approximately 20% below the in-situ industry average. We have made improvements in intensity-based reductions by advancement of innovative technology through investment in research and development, and through collaboration. Our strategy to build towards meeting our target includes



identifying and implementing carbon efficiencies and assessing opportunities to decarbonize. Further, we actively engage with stakeholders to assess and bring low carbon technology opportunities to fruition including through the Oil Sands Pathways to Net Zero initiative.

List the emissions reduction initiatives which contributed most to achieving this target

Target reference number

Int 2

Year target was set

2021

Target coverage

Product level

Scope(s)

Scope 1

Scope 2

Scope 2 accounting method

Location-based

Scope 3 category(ies)

Intensity metric

Other, please specify

metric tonnes CO₂e per m³ of bitumen

Base year

2013



Intensity figure in base year for Scope 1 (metric tons CO2e per unit of activity)

0.412

Intensity figure in base year for Scope 2 (metric tons CO2e per unit of activity)

0

Intensity figure in base year for Scope 3 (metric tons CO2e per unit of activity)

Intensity figure in base year for all selected Scopes (metric tons CO2e per unit of activity)

0.412

% of total base year emissions in Scope 1 covered by this Scope 1 intensity figure

79

% of total base year emissions in Scope 2 covered by this Scope 2 intensity figure

100

% of total base year emissions in Scope 3 (in all Scope 3 categories) covered by this Scope 3 intensity figure

% of total base year emissions in all selected Scopes covered by this intensity figure

79

Target year

2030

Targeted reduction from base year (%)

30

Intensity figure in target year for all selected Scopes (metric tons CO2e per unit of activity) [auto-calculated]

0.2884

% change anticipated in absolute Scope 1+2 emissions

% change anticipated in absolute Scope 3 emissions

Intensity figure in reporting year for Scope 1 (metric tons CO2e per unit of activity)

0.38

Intensity figure in reporting year for Scope 2 (metric tons CO2e per unit of activity)

0

Intensity figure in reporting year for Scope 3 (metric tons CO2e per unit of activity)

Intensity figure in reporting year for all selected Scopes (metric tons CO2e per unit of activity)

0.38

% of target achieved relative to base year [auto-calculated]

25.8899676375

Target status in reporting year

New

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Target ambition

Please explain target coverage and identify any exclusions

MEG's CLRP facility generates two product types, bitumen, and electricity. This target corresponds to the emissions associated with the bitumen production from the generation of steam and electricity use.

Plan for achieving target, and progress made to the end of the reporting year

MEG's path to net zero may include but is not limited to the following solutions: subsurface technology development, a phased approach to CCS deployment including assessing both local and regional storage options, continued optimization and improvements in energy efficiency, and offset opportunities and nature-based solutions that are aligned with our business. MEG's first milestone to net zero will be to achieve a 30% reduction in (scope 1 and scope 2) bitumen GHG emissions intensity from 2013 levels by 2030 to ensure we remain on pace. We have achieved a 10% reduction in bitumen GHG intensity already and aim to have another 20% reduction by 2030. Progress made in 2021 includes:

1. Appointment of a new Chief Technology Officer who will champion MEG's path to net zero and progress on MEG' 2030 target, the first milestone.
2. MEG along with five other oil sand operators that collectively represent 90% of Canada's Oil Sands production, joined together to form the Oil Sands pathways to Net Zero Alliance to work collectively with the federal and Alberta governments to achieve net zero GHG emissions from oil sands operations by 2050. A key component of this initiative is a 400 km CO2 pipeline connecting oil sands facilities in Fort McMurray, Christina Lake, and Cold Lake region of Alberta to a carbon sequestration hub near Cold Lake. For further information visit: <https://www.oilsandspathways.ca/>. The Pathway Alliance welcomed a formal announcement of a federal investment tax credit for capital invested in CCUS projects in April 2022.

List the emissions reduction initiatives which contributed most to achieving this target

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

- Target(s) to reduce methane emissions
- Net-zero target(s)

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number

Oth 1



Year target was set

2021

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Methane reduction target

Other, please specify

Fugitive Gas Release in E3m3

Target denominator (intensity targets only)

Base year

2019

Figure or percentage in base year

79

Target year

2021

Figure or percentage in target year

73

Figure or percentage in reporting year

73

% of target achieved relative to base year [auto-calculated]

100

Target status in reporting year

Achieved

Is this target part of an emissions target?

Yes, this target is encompassed within Int1 and Int2

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions

This target was established to support MEG's ongoing efforts to reduce GHG emissions and control the unintentional release of methane to the atmosphere as well as in response to the AER Annual Methane reporting requirement, which came into effect for the 2019 calendar year. In 2021, resources were directed specifically towards improving this target through a Methane Task Force focused on improving the performance of production and process tank pressure relieving valves. This is an absolute reduction target to demonstrate year over year continuous improvement. The figure is the volume of Fugitive Gas Released in e3m3. In MEG's operations, methane primarily results from releases of fugitive and vent emissions which account for less than 0.5% of total facility emissions. Fugitive emissions are captured in the intensity target referenced in CC4.1b and 4.2b which includes all associated methane emissions. In addition, the Int1 target reported in C4.1b capture methane emissions from combustion while the target reported in 4.2b is focused specifically on fugitive sources. Due to the small contribution of methane (from fugitives and venting) to MEG's total scope 1 GHG emissions, MEG includes the methane target in the overall intensity target. MEG recognizes that reducing methane emissions is an important aspect of addressing climate change. As a result of MEG's continued focus on methane reductions in operations we anticipate a continued decrease in the next 5 years or a potential plateau as the full effectiveness of the fugitive management program is realized

Plan for achieving target, and progress made to the end of the reporting year

List the actions which contributed most to achieving this target

MEG has implemented a fugitive emissions management plan for managing fugitive emissions from equipment leaks, a primary source of methane emissions. The plan utilizes several inspection techniques including comprehensive leak surveys, permanent instrument monitoring,

and targeted monthly and quarterly monitoring. This has proven to be an effective approach to managing methane as it has consistently comprised less than 1% of total releases. Leaks are documented, tracked, and repaired. In addition, MEG's only operating CLRP facility is subject to gas conservation requirements, which means overall venting and flaring is virtually eliminated in normal operating conditions and only flaring or venting only results when it is necessary to maintain safe plant operations.

Target reference number

Oth 2

Year target was set

2021

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Methane reduction target

Other, please specify

Vent gas volume in E3m3 per month

Target denominator (intensity targets only)

Base year

2019

Figure or percentage in base year

2.1

Target year

2021

Figure or percentage in target year

15

Figure or percentage in reporting year

6.3

% of target achieved relative to base year [auto-calculated]

32.5581395349

Target status in reporting year

Achieved

Is this target part of an emissions target?

Yes, this target is encompassed within Int1

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions

This target was established to support MEG's ongoing efforts to reduce GHG emissions and limit routine and non-routine venting of methane to the atmosphere as well as in response to the AER Annual Methane reporting requirement, which came into effect for the 2019 calendar year. In 2021, resources were directed specifically towards improving this target through a Methane Task Force focused on process optimization and process tank pressure relieving valves. This is an absolute limit on monthly vent volumes, equating to no greater than 15 e3m3 per month. In MEG's operations, methane primarily results from releases of fugitive and venting emissions which account for less than 0.5% of total facility emissions. Venting emissions are captured in the intensity target referenced in CC4.1b and 4.2b which includes all associated methane emissions. In addition, the Int1 target reported in C4.1b capture methane emissions from combustion while the target reported in 4.2b is focused specifically on venting sources. Due to the small contribution of methane (from fugitives and venting) to MEG's total scope 1 GHG emissions, MEG includes the methane target in the overall intensity target. MEG recognizes that reducing methane emissions is an important aspect of addressing climate change. MEG's only operating CLRP facility is subject to gas conservation requirements, which means overall venting and

flaring is virtually eliminated in normal operating conditions and flaring or venting only results when it is necessary to maintain safe plant operations.

Plan for achieving target, and progress made to the end of the reporting year

List the actions which contributed most to achieving this target

Through the Methane Task Force, MEG has established a series of procedures to identify, document and mitigate potential vent emissions throughout the facility. This has been a cross-functional effort involving participation at the operations and management level to successfully implement the various supports to manage vented volumes and review on a monthly frequency. In addition to the identification and repair of vent sources, a significant effort has been invested in ensuring accurate emissions quantification methods are applied along with a comprehensive approach to inventory management.

C4.2c

(C4.2c) Provide details of your net-zero target(s).

Target reference number

NZ1

Target coverage

Company-wide

Absolute/intensity emission target(s) linked to this net-zero target

Int1

Int2

Target year for achieving net zero

2050

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Please explain target coverage and identify any exclusions

In 2020, the Board committed to supporting the Paris Agreement and approved MEG's long-term goal of reaching net zero GHG emissions (Scope 1 and Scope 2) by 2050. This target covers 100% of our Scope 1 and Scope 2 emissions.

Do you intend to neutralize any unabated emissions with permanent carbon removals at the target year?

Yes

Planned milestones and/or near-term investments for neutralization at target year

MEG's path to net zero may include but is not limited to the following solutions: subsurface technology development, a phased approach to CCS deployment including assessing both local and regional storage options, continued optimization and improvements in energy efficiency, and offset opportunities and nature-based solutions that are aligned with our business. MEG's first milestone to net zero will be to achieve a 30% reduction in (scope 1 and scope 2) bitumen GHG emissions intensity from 2013 levels by 2030 to ensure we remain on pace. We have achieved a 10% reduction in bitumen GHG intensity already and aim to have another 20% reduction by 2030.

Progress made in 2021 includes: 1. Appointment of a new Chief Technology Officer who will champion MEG's path to net zero and progress on MEG' 2030 target, the first milestone. 2. MEG along with five other oil sand operators that collectively represent 90% of Canada's Oil Sands production, joined together to form the Oil Sands pathways to Net Zero Alliance to work collectively with the federal and Alberta governments to achieve net zero GHG emissions from oil sands operations by 2050. A key component of this initiative is a 400 km CO2 pipeline connecting oil sands facilities in Fort McMurray, Christina Lake, and Cold Lake region of Alberta to a carbon sequestration hub near Cold Lake. For further information visit: <https://www.oilsandspathways.ca/>. The Pathway Alliance welcomed a formal announcement of a federal investment tax credit for capital invested in CCUS projects in April 2022.

Planned actions to mitigate emissions beyond your value chain (optional)



C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	2	
To be implemented*	1	2,000
Implementation commenced*	1	34,000
Implemented*	1	1,200
Not to be implemented	0	

C4.3b

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

Initiative category & Initiative type

Fugitive emissions reductions

Oil/natural gas methane leak capture/prevention

Estimated annual CO2e savings (metric tonnes CO2e)

1,200

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

48,000

Investment required (unit currency – as specified in C0.4)

200,000

Payback period

4-10 years

Estimated lifetime of the initiative

6-10 years

Comment

Surface Case Vent Flow Repair.

Initiative category & Initiative type

Other, please specify

Other, please specify

Reservoir optimization

Estimated annual CO2e savings (metric tonnes CO2e)

34,000



Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1,360,000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Reservoir optimization.

C4.3c

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

Method	Comment
Compliance with regulatory requirements/standards	One driver for emissions reduction activities and projects are year over year reductions in emissions operations are subject to. As of January 1, 2020, MEG's Christina Lake Regional Project is subject to Alberta's TIER regulation, which has facility-specific benchmarks and sector based high-performance benchmarks. This target is also a component of our Corporate Performance Scorecard in reflecting the integration of emissions reduction activities into executive and employee compensation.

Dedicated budget for energy efficiency	MEG has budgeted for future carbon compliance costs associated with Alberta’s TIER requirements. MEG also carries annual budget to support investigation of emissions reduction opportunities, including joint industry partnerships.
Internal price on carbon	MEG uses an internal price of carbon set at \$40/tonne CO2e in 2021 and escalating to \$170/tonne CO2e in alignment with the pricing structure announced by the Canadian Federal government out to 2030.
Partnering with governments on technology development	MEG has been granted funding from Alberta Innovates, Natural Resources Canada, Emissions Reductions Alberta, and Sustainable Development Technology Canada for continued eMVAPEX work. Additionally, in partnership with a technology developer and with funding received from Alberta Innovates, MEG is piloting a technology that uses the combination of heat and catalyst to lower the viscosity of produced bitumen. If successful, the technology has the potential to reduce diluent used at MEG’s Christina Lake Facility. Reducing diluent requirements will lower Scope 3 emissions associated with transport and generate a higher value product that requires less refining which further lowers the lifecycle emissions of MEG’s bitumen. MEG has also received funding from Alberta Innovates for its Emissions Reduction and Sequestration (ERASE) Feed Study which will support the evaluation of local CO2 storage feasibility in the vicinity of the CLRP facility

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products.

Level of aggregation

Product or service

Taxonomy used to classify product(s) or service(s) as low-carbon

Other, please specify

CCIR co-generation calculation methodology.

Type of product(s) or service(s)

Other

Other, please specify

Electrical Power: Cogeneration

Description of product(s) or service(s)

The Christina Lake Regional Project co-generation facility uses natural gas more efficiently and produces two products: electricity and steam for oil production. The low-intensity electricity that we generate offsets the high-intensity coal-fired power prevalent on the Alberta power grid.

Approximately 70% of electricity generated is sold to the Alberta power grid.

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

Yes

Methodology used to calculate avoided emissions

Other, please specify

Internal Methodology

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Gate-to-gate

Functional unit used

MWh

Reference product/service or baseline scenario used

Alberta Power Generation Average as published in Canada's 2022 Edition of the National Inventory Report (Table A13-10)

Life cycle stage(s) covered for the reference product/service or baseline scenario

Gate-to-gate

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

235,000

Explain your calculation of avoided emissions, including any assumptions

MEG has published an Electricity GHG Intensity for power generation occurring at the CLRP facility in 2021. The intensity is approximately 40% of the most recently estimated average for power generation in Alberta (as published in the 2022 Edition of the National Inventory report). The avoided emissions estimated assumes that MEG has displaced an equivalent amount of power that would have otherwise been generated at the Alberta power generation average in 2021.

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

2

C-OG4.6**(C-OG4.6) Describe your organization's efforts to reduce methane emissions from your activities.**

In our operations, methane primarily results from the release of fugitive emissions, and to a smaller degree, venting. We proactively manage methane emissions through facility design, flare and vent controls, and fugitive emissions programs. A cross-functional team meets regularly to implement our methane management program and identify reduction opportunities. Our operational focus on minimizing the release of methane is further supported by annual methane reduction targets adopted in 2019 in line with Alberta's methane emissions reduction framework, which aims to reduce methane emissions by 45% by 2025 through progressive reduction measures. Our approach includes the following design controls: 1. We operate a gas-conserving facility by design, where all produced gas is recycled as fuel gas for steam generation and reservoir co-injection. In 2021, we conserved greater than 99.5% of produced gas. 2. Our flare and vapour recovery system are used to control the release of process gases that would otherwise be vented to atmosphere. 3. Process valve set points are monitored and carefully configured to maintain safe operations, while limiting over-pressuring events that can result in releases to atmosphere. In addition to the design controls listed above, we have implemented a fugitive emissions management plan (FEMP) which utilizes several inspection techniques, including comprehensive survey leak detection with Optical Gas Imaging (OGI) conducted three times annually, permanent instrument monitoring, and targeted monthly and quarterly monitoring. All identified leaks are consolidated in a central tracking system, where they are analysed to identify trends and inform pro-active methane reduction planning decisions. Most leaks are corrected at the time of identification. If they cannot be completed upon identification, a device repair or replacement program is arranged within 30 days. With the execution of this program, we have continuously reduced fugitive emissions year over year. We are evaluating alternative detection technologies such as drone surveys that can provide an aerial enhancement to identifying leaking equipment. We have focused on reducing emission from process tanks, which are located at our production

facility to store fluids, such as bitumen and diluent. The tanks are operated under pressure to manage the volume throughput and are blanketed with sweet natural gas for the purpose of process control and process safety management. Under normal operating conditions, all tank vapours are captured and returned to the fuel system. In the rare event that a tank experiences a sudden pressure increase, a safety device will lift, allowing the excess pressure to temporarily relieve as a vent; however, in some situations the device may fail to reseal properly, resulting in a continued fugitive release. In 2017, we recognized an opportunity to improve the management of these releases and focused efforts on improving detection and evaluating reliable replacement seals. As a result, we reduced the emission contribution associated with fugitive tank releases by more than 80% over the past five years.

C-OG4.7

(C-OG4.7) Does your organization conduct leak detection and repair (LDAR) or use other methods to find and fix fugitive methane emissions from oil and gas production activities?

Yes

C-OG4.7a

(C-OG4.7a) Describe the protocol through which methane leak detection and repair or other leak detection methods, are conducted for oil and gas production activities, including predominant frequency of inspections, estimates of assets covered, and methodologies employed.

Reducing methane emissions is an important aspect of addressing climate change. We have implemented a fugitive emissions management plan for managing fugitive emissions from equipment leaks, a primary source of methane emissions at MEG. The plan includes Comprehensive survey leak detection with Optical Gas Imaging (OGI) conducted three times annually, along with permanent instrument monitoring, and targeted monthly and quarterly monitoring for the full facility and well pads. All identified leaks are consolidated in a central tracking system, where they are analysed to identify trends and inform pro-active methane reduction planning decisions. Through MEG's FEMP, leaks are documented, tracked, and repaired. A device repair or replacement program is arranged within 30 days of any identified leak, excluding minor leaks requiring major production outage. We have also begun to evaluate alternative detection technologies such as drone surveys that can provide an aerial enhancement to identifying leaking equipment. Based on the consolidated survey results, we prioritize retrofitting and replacing pressure relief devices using trends such as recurring leaks. An engineering review of any chronic leakers is performed, when required, to determine more appropriate control measures (e.g., replacement of the component with a more robust or rugged design or installation of a leak capture and treatment system. With the execution of the repair and retrofit program, MEG has continuously reduced its fugitive emissions year over year. This has proven to be an effective approach to managing methane as it

has consistently comprised less than 1% of total releases. The FEMP has been developed in accordance with CAPP Best Management Practice: Management of Fugitive Emissions at Upstream Oil and Gas Facilities (Requirements in AER Directive 60 as of 2018). We have focused on reducing emission from process tanks, which are located at our production facility to store fluids, such as bitumen and diluent. The tanks are operated under pressure to manage the volume throughput and are blanketed with sweet natural gas for the purpose of process control and process safety management. Under normal operating conditions, all tank vapours are captured and returned to the fuel system. In the rare event that a tank experiences a sudden pressure increase, a safety device will lift, allowing the excess pressure to temporarily relieve as a vent; however, in some situations the device may fail to reseal properly, resulting in a continued fugitive release. In 2017, we recognized an opportunity to improve the management of these releases and focused efforts on improving detection and evaluating reliable replacement seals. As a result, we reduced the emission contribution associated with fugitive tank releases by more than 80% over the past five years.

C-OG4.8

(C-OG4.8) If flaring is relevant to your oil and gas production activities, describe your organization's efforts to reduce flaring, including any flaring reduction targets.

MEG's facility is a gas conserving facility, which means overall venting and flaring is virtually eliminated in normal operating conditions. MEG has a gas conservation efficiency target of 90% where $\text{gas conservation} = (\text{Solution gas production} - \text{Flared} - \text{Vented}) / (\text{Solution gas production}) \times 100$. In 2021 MEG had an overall gas conservation of >95%. MEG only flares or vents when it is absolutely necessary to maintain safe plant operations. In 2021, GHG emissions from flaring activities contributed to 0.30% of MEG's total GHG emissions. Due to the low contribution from flaring to overall GHG emissions, MEG does not set separate GHG emissions targets for flaring. Flaring emissions are captured in the Int1 and Int2 targets reported in C4.2b. MEG does however set internal key performance indicators for flaring activities.

C5. Emissions methodology

C5.1

(C5.1) Is this your first year of reporting emissions data to CDP?

No



C5.1a

(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

Row 1

Has there been a structural change?

No

C5.1b

(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?
Row 1	No

C5.2

(C5.2) Provide your base year and base year emissions.

Scope 1

Base year start

January 1, 2013

Base year end

December 31, 2013

Base year emissions (metric tons CO2e)

1,896,700



Comment

Normalized annual emissions over baseline period. Base year start is 01/01/2013 and base year end is 12/31/2015.

Scope 2 (location-based)

Base year start

January 1, 2013

Base year end

December 31, 2013

Base year emissions (metric tons CO2e)

500

Comment

Normalized annual scope 2 emissions over baseline period. Base year start is 01/01/2013 and base year end is 12/31/2015.

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 1: Purchased goods and services



Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 2: Capital goods

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

Base year start

Base year end



Base year emissions (metric tons CO2e)

Comment

Scope 3 category 4: Upstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 5: Waste generated in operations

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment



Scope 3 category 6: Business travel

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 7: Employee commuting

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 8: Upstream leased assets

Base year start



Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 9: Downstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 10: Processing of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)



Comment

Scope 3 category 11: Use of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 12: End of life treatment of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 13: Downstream leased assets



Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 14: Franchises

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 15: Investments

Base year start

Base year end



Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (upstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (downstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

C5.3

(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009

Canadian Association of Petroleum Producers, Calculating Greenhouse Gas Emissions, 2003

Other, please specify

- TIER Quantification Methodology (March 2021) • Environment Canada: Canada's Greenhouse Gas Inventory

C6. Emissions data

C6.1

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

Reporting year

Gross global Scope 1 emissions (metric tons CO₂e)

2,439,106

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We have no operations where we are able to access electricity supplier emission factors or residual emissions factors and are unable to report a Scope 2, market-based figure

Comment

C6.3

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

Reporting year

Scope 2, location-based

0

Comment

MEG generates electricity through the use of cogeneration and sells excess supply to the Alberta electricity grid. In 2021, MEG did not purchase any electricity and therefore Scope 2 emissions are 0.

C6.4

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

No

C6.5

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

Purchased goods and services

Evaluation status

Not relevant, explanation provided

Please explain

Fuel usage for drilling activities were included as Scope 3 emissions in 2018. As of 2019 they are included as Scope 1 emissions as per the TIER boundary changes.

Capital goods

Evaluation status

Not evaluated

Please explain

Additional scope 3 categories will be investigated in the future.

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

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO₂e)

1,573

Emissions calculation methodology

Other, please specify

Fuel usage is obtained from suppliers or from MEGs internal fuel usage tracking system and emissions are calculated using fuel specific emission factors.

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

100

Please explain

This includes camp site and site service heating.

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

MEG extracts primary resources (Bitumen) and therefore minimal upstream transportation or distribution emissions exist. This category is not applicable to MEG.

Waste generated in operations

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO₂e)

1,110

Emissions calculation methodology

Other, please specify

Fuel usage is obtained from suppliers and emissions are calculated using fuel specific emission factors.

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

100

Please explain

This includes emissions associated with transportation of waste off site.

Business travel

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO₂e)

3,478

Emissions calculation methodology

Other, please specify

Fuel usage is obtained from suppliers and emissions are calculated using fuel specific emission factors.

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

0

Please explain

This includes air travel to CLRP.

Employee commuting

Evaluation status

Not relevant, explanation provided

Please explain

Employees commuting to the corporate office are considered negligible.

Upstream leased assets

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO₂e)

750

Emissions calculation methodology

Other, please specify

Head office natural gas for heat and electricity usage obtained from head office management company.

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



100

Please explain

This includes emissions at MEG's head office including emissions from electricity use and natural gas for heating.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

4,427

Emissions calculation methodology

Other, please specify

Fuel usage obtained from value chain partner and emissions are calculated using fuel specific emission factors.

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

100

Please explain

This includes downstream storage emissions.

Processing of sold products

Evaluation status

Relevant, not yet calculated

Please explain

MEG bitumen is processed in various upgrading and refining facilities in North America.

Use of sold products



Evaluation status

Relevant, not yet calculated

Please explain

Oil produced by MEG is used as a feedstock for a number of products thus end use of sold products is not known to MEG and could include transportation fuels, plastics, chemicals, and other hydrocarbon-based products. The Scope 3 emissions will vary based on end product.

End of life treatment of sold products

Evaluation status

Relevant, not yet calculated

Please explain

Oil produced by MEG is used for a number of products thus end of life treatment of sold products is not known to MEG and could include transportation fuels, plastics, chemicals, and other hydrocarbon-based products. The Scope 3 emissions for end-of-life treatment will vary based on the end product.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

MEG does not own any downstream leased assets. This category is not applicable to MEG Franchises.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

MEG does not operate any franchises. This category is not applicable to MEG.



Investments

Evaluation status

Not relevant, explanation provided

Please explain

MEG is not a financial institution. This category is not applicable to MEG.

Other (upstream)

Evaluation status

Relevant, not yet calculated

Please explain

No other (upstream) Scope 3 categories are applicable at this time.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

No other (downstream) Scope 3 categories are applicable at this time.

C6.7

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

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO₂e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.000564

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO₂e)

2,439,106

Metric denominator

unit total revenue

Metric denominator: Unit total

4,321,000,000

Scope 2 figure used

Location-based

% change from previous year

39

Direction of change

Decreased

Reason for change

The decrease in emission intensity was influenced primarily by the increase in annual revenue associated with the increase in the average blend sales price realized in 2021.

Intensity figure

0.071

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO₂e)

2,439,106

Metric denominator

Other, please specify
unit of bitumen production

Metric denominator: Unit total

34,212,545

Scope 2 figure used

Location-based

% change from previous year

2

Direction of change

Increased

Reason for change

Bitumen intensity increase is associated with new sustaining production continuing to be brought online in 2021. This is expected to decrease through time. Please note that the MEG denominator reflects barrels of bitumen produced rather than a converted unit of oil equivalent.

C-OG6.12

(C-OG6.12) Provide the intensity figures for Scope 1 emissions (metric tons CO₂e) per unit of hydrocarbon category.

Unit of hydrocarbon category (denominator)

Thousand barrels of oil sands (includes bitumen and synthetic crude)

Metric tons CO2e from hydrocarbon category per unit specified

60.5

% change from previous year

3

Direction of change

Increased

Reason for change

Bitumen intensity increase associated with new sustaining production brought online. This should decrease through time.

Comment

C-OG6.13

(C-OG6.13) Report your methane emissions as percentages of natural gas and hydrocarbon production or throughput.

Oil and gas business division

Upstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division

0.014

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division

0



Comment

Reflects fugitive methane release as a proportion of total purchased natural gas throughput.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	2,420,766.25	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	9,889	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	8,451	IPCC Fourth Assessment Report (AR4 - 100 year)

C-OG7.1b

(C-OG7.1b) Break down your total gross global Scope 1 emissions from oil and gas value chain production activities by greenhouse gas type.

Emissions category

Combustion (excluding flaring)



Value chain

Upstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

2,414,196.47

Gross Scope 1 methane emissions (metric tons CH4)

85.24

Total gross Scope 1 emissions (metric tons CO2e)

2,424,749.47

Comment

Emissions category

Flaring

Value chain

Upstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

6,476.6

Gross Scope 1 methane emissions (metric tons CH4)

34.24

Total gross Scope 1 emissions (metric tons CO2e)

67,361.91

Comment

Emissions category

Venting

Value chain

Upstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

93.18

Gross Scope 1 methane emissions (metric tons CH4)

176.67

Total gross Scope 1 emissions (metric tons CO2e)

4,510.01

Comment



Emissions category

Fugitives

Value chain

Upstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

0

Gross Scope 1 methane emissions (metric tons CH4)

99.4

Total gross Scope 1 emissions (metric tons CO2e)

2,484.91

Comment

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Canada 💬 ¹	2,439,106

💬¹MEG only operates one facility in Canada.

C7.3

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

- By facility
- By activity

C7.3b

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

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
CLRP	2,439,106	55.66638	-110.71404

C7.3c

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

Activity	Scope 1 emissions (metric tons CO2e)
Electric utility generation activities	370,159
Oil and gas production activities (upstream)**	2,068,948

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

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

	Gross Scope 1 emissions, metric tons CO2e	Comment
Oil and gas production activities (upstream)	2,068,948	
Oil and gas production activities (midstream)	0	MEG does not have midstream activities.

Oil and gas production activities (downstream)	0	MEG does not have downstream activities.
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C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Canada 🗨️ ₁	0	

🗨️₁MEG only operates one facility in Canada.

MEG consumed a small amount of indirect power in 2020 during turnaround activities.

C7.6

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

By facility

C7.6b

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

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
CLRP	0	

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

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



	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Oil and gas production activities (upstream)	0	0	MEG generates electricity through the use of cogeneration and sells excess supply to the Alberta electricity grid. In 2021, MEG did not purchase any electricity and therefore Scope 2 emissions are 0.
Oil and gas production activities (midstream)	0	0	MEG does not have midstream activities.
Oil and gas production activities (downstream)	0	0	MEG does not have downstream activities.

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Increased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0	No change	0	Not applicable.
Other emissions reduction activities	0	No change	0	No change

Divestment	0	No change	0	Not applicable.
Acquisitions	0	No change	0	Not applicable.
Mergers	0	No change	0	Not applicable.
Change in output	258,368	Decreased	12	Gross emissions increase as a result of increased power generation and bitumen production.
Change in methodology	0	No change	0	Not applicable.
Change in boundary	0	No change	0	Not applicable.
Change in physical operating conditions	67,288	Increased	3	New sustaining production brought online. This should decrease through time.
Unidentified	0	No change	0	Not applicable.
Other	0	No change	0	Not applicable.

C7.9b

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

Location-based

C8. Energy

C8.1

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

More than 5% but less than or equal to 10%

C8.2

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

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	12,856,643	12,856,643
Consumption of purchased or acquired electricity		0	0	0
Consumption of self-generated non-fuel renewable energy		0		0
Total energy consumption		0	12,856,643	12,856,643

C8.2b

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

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

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

Sustainable biomass

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Comment

MEG does not consume this fuel type.

Other biomass

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Comment

MEG does not consume this fuel type.

Other renewable fuels (e.g. renewable hydrogen)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of heat

0



MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Comment

MEG does not consume this fuel type.

Coal

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Comment

MEG does not consume this fuel type.

Oil

Heating value

Unable to confirm heating value



Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Comment

MEG does not consume this fuel type.

Gas

Heating value

HHV

Total fuel MWh consumed by the organization

11,985,129

MWh fuel consumed for self-generation of heat

157,699

MWh fuel consumed for self-generation of steam

4,835,769

MWh fuel consumed for self- cogeneration or self-trigeneration

6,991,666

Comment

Other non-renewable fuels (e.g. non-renewable hydrogen)

Heating value

HHV

Total fuel MWh consumed by the organization

42,298

MWh fuel consumed for self-generation of heat

42,298

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Comment

This includes diesel and propane.

Total fuel

Heating value

Total fuel MWh consumed by the organization

12,087,427

MWh fuel consumed for self-generation of heat

199,997



MWh fuel consumed for self-generation of steam

4,835,769

MWh fuel consumed for self- cogeneration or self-trigeneration

6,991,666

Comment

C8.2d

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	1,411,872	386,299	0	0
Heat	126,705	126,705	0	0
Steam	421,205	421,205	0	0
Cooling	0	0	0	0

C8.2g

(C8.2g) Provide a breakdown of your non-fuel energy consumption by country.

C9. Additional metrics

C9.1

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

C-OG9.2a

(C-OG9.2a) Disclose your net liquid and gas hydrocarbon production (total of subsidiaries and equity-accounted entities).

	In-year net production	Comment
Crude oil and condensate, million barrels	0	MEG does not have crude oil and condensate in its production portfolio.
Natural gas liquids, million barrels	0	MEG does not have natural gas liquids in its production portfolio.
Oil sands, million barrels (includes bitumen and synthetic crude)	34.21	MEG is a sustainable in situ thermal oil production company.
Natural gas, billion cubic feet	0	MEG does not have natural gas in its production portfolio.

C-OG9.2b

(C-OG9.2b) Explain which listing requirements or other methodologies you use to report reserves data. If your organization cannot provide data due to legal restrictions on reporting reserves figures in certain countries, please explain this.

MEG reports its reserves and other oil and gas information in accordance with the National Instruments 51-101 – Standards for Disclosure for Oil and Gas Activities, the standard governing and reporting of petroleum reserves and resources for Canadian publicly traded companies. The Instrument requires all Canadian reporting issuers engaged in oil and gas activity to provide disclosure of their estimated oil and natural gas

reserves and related future net revenues on an annual basis; and all disclosure to be prepared or audited in accordance with the Canadian Oil and Gas Evaluation Handbook.

C-OG9.2c

(C-OG9.2c) Disclose your estimated total net reserves and resource base (million boe), including the total associated with subsidiaries and equity-accounted entities.

	Estimated total net proved + probable reserves (2P) (million BOE)	Estimated total net proved + probable + possible reserves (3P) (million BOE)	Estimated net total resource base (million BOE)	Comment
Row 1	1,502.7	1,645.8	2,360.9	

C-OG9.2d

(C-OG9.2d) Provide an indicative percentage split for 2P, 3P reserves, and total resource base by hydrocarbon categories.

	Net proved + probable reserves (2P) (%)	Net proved + probable + possible reserves (3P) (%)	Net total resource base (%)	Comment
Crude oil/ condensate/ natural gas liquids	0	0	0	
Natural gas	0	0	0	
Oil sands (includes bitumen and synthetic crude)	100	100	100	

C-OG9.2e

(C-OG9.2e) Provide an indicative percentage split for production, 1P, 2P, 3P reserves, and total resource base by development types.



Development type

Oil sand/extra heavy oil

In-year net production (%)

100

Net proved reserves (1P) (%)

100

Net proved + probable reserves (2P) (%)

100

Net proved + probable + possible reserves (3P) (%)

100

Net total resource base (%)

100

Comment

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	

C-CO9.6a/C-EU9.6a/C-OG9.6a

(C-CO9.6a/C-EU9.6a/C-OG9.6a) Provide details of your organization's investments in low-carbon R&D for your sector activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Other energy efficiency measures in the oil and gas value chain	Pilot demonstration	81-100%		MEG tested its proprietary eMVAPEX technology at the Christina Lake Project from 2016 through to the end of 2020. It involves the targeted injection of light hydrocarbons in replacement of steam. MEG achieved a cumulative SOR of 1.5 using eMVAPEX technology, which is approximately 50% less than industry average. We will be investigating opportunities to utilize the MVAPEX process on a commercial scale. The pilot is funded in part through grants received from Alberta Innovates, Natural Resources Canada, Emissions Reductions Alberta, and Sustainable Development Technology Canada for continued eMVAPEX work. MEG continued to pilot eMVAPEX in 2019 and 2020.
Other energy efficiency measures in the oil and gas value chain	Pilot demonstration	≤20%		Diluent is used in the in-situ industry for oil and water separation, as well as transportation of heavy oil. In partnership with a technology developer and with funding received from Alberta Innovates, we are piloting a technology that uses the combination of heat and catalyst to lower the viscosity of produced bitumen. If successful, this technology has the potential to significantly reduce diluent use at the CLRP. For every barrel of bitumen produced there is approximately 0.45 barrels of diluent used to transport the bitumen to downstream customers. The diluent used at



				<p>CLRP is produced by Canadian and American suppliers and transported by pipeline to our operations, where it is injected at multiple locations in the central processing facility and downstream shipping facilities. The heavy oil viscosity reduction project has the potential to reduce the scope 3 GHG emissions associated with producing and transporting heavy oil by reducing diluent use.</p>
Carbon capture and storage/utilisation	Applied research and development	≤20%		<p>Alberta is well positioned to continue its leadership in CCS deployment due to the centralized nature of GHG emissions in in situ oil sands operations, and the depth and capacity of the Western Canada Sedimentary Basin to store CO2 safely and permanently. MEG is currently actively investigating the technology and costs associated with all the components of CCS. We have recently secured \$2.1MM in funding from Alberta Innovates under Alberta’s TIER program to support an evaluation of local CO2 storage feasibility in the vicinity of our CLRP operations. Our next focus will be carbon capture technology and regional storage opportunities. We recognize that the commercial development and deployment of CCS technology to thermal oil production operations will require collaboration with governments and industry, as well as financial support and long-term climate policy certainty. In June 2021, MEG, along with four other oil sands operators that collectively represent 90% of Canada’s oil sands production, joined together to form the Oil Sands Pathways to Net Zero Alliance to work collectively with the federal and Alberta governments to achieve net zero GHG emissions from oil sands operations by 2050. A key component of this initiative is a 400km CO2 pipeline connecting oil sands facilities in Fort McMurray, Christina Lake, and Cold Lake regions of Alberta to a</p>



				carbon sequestration hub near cold lake.
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C-OG9.7

(C-OG9.7) Disclose the breakeven price (US\$/BOE) required for cash neutrality during the reporting year, i.e. where cash flow from operations covers CAPEX and dividends paid/ share buybacks.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	No third-party verification or assurance

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process



Status in the current reporting year


Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

 C10.1a Verification Statement.PNG

 10.1a Data Assurance Report.pdf

Page/ section reference

all pages

Relevant standard

Alberta Technology Innovation and Emissions Reduction (TIER)

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year


Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

 C10.1a Verification Statement.PNG

 10.1a Data Assurance Report.pdf

Page/ section reference

all pages

Relevant standard

Canadian Institute of Chartered Accountants (CICA) Handbook: Assurance Section 5025

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Progress against emissions reduction target	Alberta Technology Innovation and Emissions Reduction (TIER)	The target is derived from the TIER (Int1 in Question C4.1b). TIER is an emissions intensity-based regime requiring large emitters to reduce their emissions intensity below a prescribed level, or otherwise achieve this through a true-up obligation whereby-credits can be applied against such required level, together with or as an alternative to physical abatement, with penalties for failure to achieve compliance. Verification for TIER was completed annually This is a reasonable level of assurance.
C6. Emissions data	Year on year emissions intensity figure	Canadian Professional Accountants – Standards for Assurance Engagements other than audits of Financial Statements and other Historical Financial Information, Handbook Section 5025.	Question C6.10, Question C6.12 Verification completed annually at a reasonable level of assurance.
C7. Emissions breakdown	Year on year change in emissions (Scope 1)	Alberta Technology Innovation and Emissions Reduction (TIER)	Question C7.9 Verification completed annually at a reasonable level of assurance.
C7. Emissions breakdown	Year on year change in emissions (Scope 2)	Alberta Technology Innovation and Emissions Reduction (TIER)	Question C7.9 Verification completed annually at a reasonable level of assurance. MEG's CLRP facility falls under the TIER regulation in Alberta.

C11. Carbon pricing

C11.1

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

Yes

C11.1a

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

Alberta TIER - ETS

Canada federal fuel charge

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

Alberta TIER - ETS

% of Scope 1 emissions covered by the ETS

100

% of Scope 2 emissions covered by the ETS

100

Period start date

January 1, 2021

Period end date

December 31, 2021



Allowances allocated

2,023,285

Allowances purchased

36,359

Verified Scope 1 emissions in metric tons CO2e

2,439,106

Verified Scope 2 emissions in metric tons CO2e

0

Details of ownership

Facilities we own and operate

Comment

C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

Canada federal fuel charge

Period start date

January 1, 2021

Period end date

December 31, 2021

% of total Scope 1 emissions covered by tax

0

Total cost of tax paid

52,408

Comment

The Federal Fuel Charge applies to fuels purchased that are beyond the scope of the Output-Based Pricing System, which was deemed to be equivalent to Alberta's Technology Innovation and Emission Reduction Regulation (TIER) in January 2021 for the 2021 calendar year. The Federal Fuel Charge is paid on fuel use beyond the regulated facility boundary, encompassing use for camp heating.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

MEG is managing compliance with regulations by minimizing emissions through emissions reduction initiatives and efficiency upgrades. This is accomplished through operation of cogeneration facilities, implementation of reservoir production enhancements, and operational practices such as our methane management program. A case study of how we have applied our strategy is our significant efforts on optimizing steam generation. MEG identified that steam production is a significant source of energy usage and therefore a significant contributor to carbon emissions. Optimizing steam usage would therefore support compliance with regulations. An important metric for this purpose is Steam-Oil Ratio (SOR), the quantity of steam used to produce a barrel of oil. SOR is a key measure of efficiency for SAGD projects, with a lower SOR indicating that steam is more efficiently utilized. By decreasing the amount of steam used, MEG can reduce our per barrel water and fuel requirements which results in lower greenhouse gas emissions intensity and more economic projects. MEG has taken numerous actions to reduce SOR. MEG increased the application of its patented eMSAGP reservoir production technology across additional production wells. eMSAGP involves drilling additional production wells between SAGD well pairs, injecting a non-condensable gas to maintain reservoir pressure, like natural gas, into the reservoir, and reducing steam injection. The resulting overall SOR for eMSAGP is approximately 25% less than SAGD. By applying the eMSAGP process to significant portions of the operation, we have achieved an average SOR of 2.4 in 2021 at its Christina Lake Project in comparison to a 3 to 3.5 industry average. eMSAGP has improved operational performance and reduced costs, including GHG costs linked to an increasingly stringent intensity target. Another aspect of our strategy is using an internal price of carbon to assess risks and opportunities for capital and operational investments to support project economics. In 2021, MEG joined the Oil Sands Pathways to Net Zero Alliance with the stated goal to achieving net zero GHG emissions from all oil sands operations by 2050 through a collaborative CO₂ pipeline and carbon capture and storage projects.

C11.2

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

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase

Credit purchase

Project type

Other, please specify

Compliance Credit

Project identification

The TIER regulation requires that a minimum of 40% of annual compliance is obtained through the purchase of TIER Fund Credits

Verified to which standard

Other, please specify

Alberta Technology Innovation and Emissions Reduction (TIER)

Number of credits (metric tonnes CO₂e)

14,544

Number of credits (metric tonnes CO₂e): Risk adjusted volume

14,544

Credits cancelled

No

Purpose, e.g. compliance

Compliance

C11.3

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

Yes

C11.3a

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

Objective for implementing an internal carbon price

Stress test investments

Identify and seize low-carbon opportunities

GHG Scope

Scope 1

Application

MEG uses an internal price of carbon to assess risks and opportunities for capital and operational investments. MEG has an internal team that monitors and reviews carbon market trends and pricing and undertakes analysis on various carbon prices to ensure that the internal price of carbon reflects the regulatory and economic environment in which it operates.

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

40

Variance of price(s) used

MEG applies evolutionary pricing to reflect the regulatory and economic environment in which it operates. In 2021 MEG operated in Alberta, under the Technology Innovation and Emissions Reduction (TIER) Regulation TIER came into force January 1, 2020 replacing the CCIR. It includes facility-specific benchmarks and sector based high-performance benchmarks. The TIER compliance cost in 2021 was \$40 per tonne. MEG uses an internal price of carbon in 2021 set at \$40/tonne CO₂e and escalating to \$170/tonne CO₂e in alignment with the Federal Benchmark for Carbon Pollution Pricing in Canada: 2023 - 2030.

Type of internal carbon price

Shadow price

Impact & implication

The internal carbon price is used to help manage the potential cost impact associated with GHG regulations. MEG uses an internal price of carbon (set at \$40/tonne CO₂e to \$170/tonne in alignment with the Federal Benchmark for Carbon Pollution Pricing in Canada: 2023 - 2030. to forecast estimated compliance costs and potential savings associated with GHG emissions reduction opportunities which is in alignment with the 2021 carbon pricing structure applicable in Alberta where MEG operates. The carbon price is used to identify and drive toward low-carbon opportunities such as MEG's operational efficiency projects. These projects (such as eMSAGP and cogeneration) have allowed MEG to generate substantial GHG credits given the high performance of its facilities. The price of carbon is also considered for the carbon capture initiative project economics.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

No, we do not engage

C12.1e

(C12.1e) Why do you not engage with any elements of your value chain on climate-related issues, and what are your plans to do so in the future?



Currently MEG produces diluted bitumen that is transported to, and processed in, various downstream facilities. Oil produced by MEG is used as a feedstock for a number of products, thus end use of sold products is not known to MEG making it difficult to engage with customers in MEG's value chain. To date, MEG has been focusing on emissions reduction, energy efficiency and decarbonization of its only facility, CLRP. We have undertaken some initial scope 3 evaluations and based on these; the supplier portion of our scope 3 emissions are relatively small in comparison to our corporate emissions. We will continue to evaluate scope 3 emissions and value chain engagement opportunities in the future. This includes opportunities for supplier engagement including compliance & onboarding and engagement campaigns to educate suppliers about climate change.

C12.2

(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization's purchasing process?

No, and we do not plan to introduce climate-related requirements within the next two years

C12.3

(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?

Row 1

Direct or indirect engagement that could influence policy, law, or regulation that may impact the climate

Yes, we engage directly with policy makers

Yes, we engage indirectly by funding other organizations whose activities may influence policy, law, or regulation that may significantly impact the climate

Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?

No, and we do not plan to have one in the next two years

Describe the process(es) your organization has in place to ensure that your engagement activities are consistent with your overall climate change strategy

A continuous legislative overview is conducted that informs MEG of proposed changes. A multidisciplinary team regularly monitors developments in climate change policy and consolidates that information for the business to ensure that the business interests are protected and that policy trends are understood. To ensure that corporate guidance on activities that influence policy are consistent with MEG's systematic approach to addressing climate risk across our organization, coordination meetings are held with all departments potentially influenced by the policy to review forthcoming engagement opportunities. Policy developments are communicated monthly to the corporate HSE Committee and at least quarterly to the Board of Directors/applicable Board Committees to be factored into corporate strategy and planning.

C12.3a

(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?

Focus of policy, law, or regulation that may impact the climate

Other, please specify

Transition of Oil Sands Industry to Net Zero by 2050

Specify the policy, law, or regulation on which your organization is engaging with policy makers

CCUS Tax Credit, Securing Pore Space

Policy, law, or regulation geographic coverage

Regional

Country/region the policy, law, or regulation applies to

Canada

Your organization's position on the policy, law, or regulation

Undecided

Description of engagement with policy makers

Through involvement in the Oil Sands Pathways Alliance, MEG is focused on gaining multi-level government support to facilitate the various initiatives that will be necessary to achieve net zero by 2050. In order to build out CCUS, there are many other supporting systems that need to be accessed prior to commercial deployment which include securing underground storage rights, approvals to construct a carbon transportation network and economical demonstration of capture at scale. In addition to CCUS, MEG is supportive of other policy solutions that will allow emission reductions to occur such as energy efficiency, electrification, and process improvements.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

No, we have not evaluated

C12.3c

(C12.3c) Provide details of the funding you provided to other organizations in the reporting year whose activities could influence policy, law, or regulation that may impact the climate.

Type of organization

Non-Governmental Organization (NGO) or charitable organization

State the organization to which you provided funding

Business Council of Canada

Funding figure your organization provided to this organization in the reporting year (currency as selected in C0.4)

32,000

Describe the aim of this funding and how it could influence policy, law or regulation that may impact the climate

The Business Council of Alberta is a non-partisan, for-purpose organization dedicated to building a better Alberta, with a focus on two areas: jobs and opportunities for Albertans and a competitive and sustainable economy



Have you evaluated whether this funding is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Type of organization

Private company

State the organization to which you provided funding

Pathways Alliance

Funding figure your organization provided to this organization in the reporting year (currency as selected in C0.4)

300,000

Describe the aim of this funding and how it could influence policy, law or regulation that may impact the climate

In 2021, MEG joined the Pathways Alliance, an alliance of oil sands companies that represents over 90% of Canada's oil sands production committed to reaching net zero GHG emissions from collective operations by 2050. The, alliance, working in collaboration with Federal and Alberta governments, is focused on building a major carbon capture and storage (CCS) trunkline, connecting oil sands facilities in the Fort McMurray, Christina Lake and Cold Lake regions of Alberta, to a carbon sequestration hub in Cold Lake. The aim of this funding is to support the development of infrastructure to decarbonize oil sands production, one key element in achieving MEG's goal of net zero GHG emissions by 2050.

Have you evaluated whether this funding is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

C12.4

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



Publication

In mainstream reports

Status

Attach the document

 2022 MEG AIF.pdf

Page/Section reference

19-20, 35-38, 55-61

Content elements

- Governance
- Strategy
- Risks & opportunities
- Emissions figures
- Emission targets

Comment

Publication

In mainstream reports, incorporating the TCFD recommendations

Status

Complete

Attach the document

 2022 MEG MD&A.pdf

Page/Section reference

44-46

Content elements

Risks & opportunities

Comment

Publication

In voluntary sustainability report

Status

Underway – previous year attached

Attach the document

 MEG Energy ESG Report 2021.pdf

Page/Section reference

12-18, 21-30, 58, 64

Content elements

Governance

Strategy

Risks & opportunities



Emissions figures
Emission targets

Comment

C15. Biodiversity

C15.1

(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues
Row 1	

C15.2

(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity
Row 1	

C15.3

(C15.3) Does your organization assess the impact of its value chain on biodiversity?

	Does your organization assess the impact of its value chain on biodiversity?
Row 1	



C15.4

(C15.4) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?
Row 1	

C15.5

(C15.5) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
Row 1		

C15.6

(C15.6) Have you published information about your organization’s response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located

C16. Signoff

C-FI

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



C16.1

(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Chief Executive Officer (CEO)	Chief Executive Officer (CEO)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

Please confirm below

I have read and accept the applicable Terms