

# Welcome to your CDP Climate Change Questionnaire 2022

## C0. Introduction

### C0.1

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

Pembina Pipeline Corporation (Pembina) is a leading energy transportation and midstream service provider that has served North America's energy industry for more than 65 years. Pembina owns an integrated network of hydrocarbon liquids and natural gas pipelines, gas gathering and processing facilities, oil and natural gas liquids infrastructure and logistics services, and a growing export terminals business. Through our integrated value chain, we seek to provide safe and reliable infrastructure solutions which connect producers and consumers of energy across the world, support a more sustainable future and benefit our customers, investors, employees and communities. For more information, please visit [pembina.com](http://pembina.com).

Purpose of Pembina:

- To be the leader in delivering integrated infrastructure solutions connecting global markets;
- Customers choose us first for reliable and value-added services;
- Investors receive sustainable industry-leading total returns;
- Employees say we are the 'employer of choice' and value our safe, respectful, collaborative and inclusive work culture; and
- Communities welcome us and recognize the net positive impact of our social and environmental commitment.

#### **Forward-Looking Statements**

This document contains certain forward-looking statements and forward-looking information (collectively, "forward-looking statements"), including forward-looking statements within the meaning of the "safe harbor" provisions of applicable securities legislation, that are based on Pembina's current expectations, estimates, projections and assumptions in light of its experiences and its perception of historical trends. In some cases, forward-looking statements can be identified by terminology such as "expect", "will", "could", "assess", "explore", "potential", "continue", "would", "may", "explore", "likely", "plan", "develop", "to be", "target" "believe" and similar expressions suggesting future events or future performance. In particular, this document contains forward-looking statements pertaining to, without limitation, the

following: estimates relating to the financial or strategic impact of certain climate-related risks and opportunities on Pembina’s business; expected timing for Pembina to implement a transition plan that aligns with a 1.5°C world; plans, targets and strategies with respect to GHG emissions; intended outcomes as a result of Pembina's GHG emission intensity reduction target; completion and in-service dates; and expectations relating to power purchase agreements, including the anticipated environmental benefits therefrom.

Readers are cautioned that events or circumstances could cause results to differ materially from those predicted, forecasted or projected. The forward-looking statements contained in this document speak only as of the date of this document. For additional information on these forward-looking statements, the key assumptions on which such forward-looking statements are based and certain risks that may result in actual future results differing from such forward-looking statements, please refer to the Pembina’s public disclosure documents including, among other things, those detailed under the heading “Risk Factors” in Pembina’s management’s discussions and analysis and annual information form, each for the year ended December 31, 2021 and from time to time in Pembina's public disclosure documents available at [www.sedar.com](http://www.sedar.com), [www.sec.gov](http://www.sec.gov) and through Pembina's website at [www.pembina.com](http://www.pembina.com). Pembina does not undertake any obligation to publicly update or revise any forward-looking statements or information contained herein, except as required by applicable laws. The forward-looking statements contained in this document are expressly qualified by this cautionary statement.

## C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1, 2021	December 31, 2021	Yes	3 years

## C0.3

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

- Canada
- United States of America

## 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

Midstream

Other divisions

## 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, an ISIN code	CA7063271034

## 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	The Governance, Nominating and Corporate Social Responsibility Committee (Governance Committee) of the Board of Directors is responsible for helping the Board develop, implement and monitor Pembina's corporate governance practices.

	<p>While oversight of environment, social and governance (ESG) and climate-related issues is ultimately the responsibility of Pembina’s Board of Directors, the Board has delegated responsibility for ESG strategy to the Governance Committee. The Safety, Environment and Operational Excellence Committee also oversees specific environment and emission-related initiatives.</p> <p>In 2021, the Board approved Pembina’s target for a reduction of emission intensity (30% reduction in emission intensity of scope 1 and 2 by 2030, based on a 2019 baseline). The Governance Committee and Board will monitor and oversee Pembina's progress towards this intensity target.</p> <p>The Governance Committee receives at least quarterly updates from management on ESG-related risks and opportunities, including emissions reduction strategies. The Board also regularly engages on ESG issues, including at strategy sessions.</p> <p>The Human Resources, Health and Compensation Committee is responsible for overseeing our employee and executive incentive plan design, compensation decisions and equity, diversity and inclusion targets. In 2021, the Board approved changes to Pembina’s short term incentive plan which had been redesigned to include performance goals related to ESG performance and emissions intensity.</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"> <li>Reviewing and guiding strategy</li> <li>Reviewing and guiding major plans of action</li> <li>Reviewing and guiding risk management policies</li> <li>Reviewing and guiding annual budgets</li> <li>Reviewing and guiding business plans</li> <li>Setting performance objectives</li> <li>Monitoring implementation and</li> </ul>	<p>In addition to the Governance Committee’s oversight of ESG strategy as described in response to C1.1a above, the Safety, Environment and Operational Excellence Committee has oversight responsibility in respect of development, implementation and monitoring of environmental risks and reviewing appropriate programs to manage and reduce risk. This committee also oversees the development and implementation of environmental management policies, programs, systems and practices, and reviews overall environmental performance and the impact of regulatory changes.</p> <p>The Safety, Environment and Operational Excellence Committee reports directly to the Board and at each Board meeting provides an update on safety and environment related risks, mitigation efforts in respect</p>

	<p>performance of objectives</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>to such risks and Pembina’s safety and environmental performance.</p> <p>In addition, the Board of Directors considers climate related criteria when evaluating potential investment opportunities.</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 included skills, experience or knowledge of the following: climate adaption science, climate adaption planning and implementation, risk assessment, economic analysis, future thinking, collaboration and change management.

### 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
Chief Financial Officer (CFO)	Both assessing and managing climate-related risks and opportunities	Quarterly
Other C-Suite Officer, please specify Senior Vice President, External Affairs and Chief Legal and Sustainability Officer	Both assessing and managing climate-related risks and opportunities	Quarterly

Other C-Suite Officer, please specify Senior Vice President, Marketing and New Ventures & Corporate Development Officer	Both assessing and managing climate-related risks and opportunities	Quarterly
Chief Operating Officer (COO)	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).**

The CEO is responsible for providing oversight and coordination of climate-related matters and for ensuring timely and effective reporting to the Board and our stakeholders. Specific to climate-related issues, the CEO is responsible for the oversight of our business strategies, including how Pembina will contribute to the development of a lower carbon economy, mitigate the risks associated with climate-related issues and capitalize on potential opportunities. For example, in 2021, Pembina announced a partnership with TC Energy Corporation (TC Energy) to jointly develop a world-scale carbon transportation and sequestration system, the Alberta Carbon Grid (ACG). This system, when fully constructed, will be capable of sequestering up to 20 million tonnes of carbon dioxide annually.

The CFO is responsible for overall financial stewardship, including assessing climate-related risks and opportunities, financial reporting as well as providing timely, accurate and transparent information to our stakeholders. Specific to climate-related issues, the CFO is responsible for oversight of our capital program, which in 2021 was approximately \$658 million. As we continue to integrate ESG, including climate-related initiatives, into all aspects of our business, it is becoming an increasing focus in our investment decisions, including through investment criteria. In 2021, we completed our first renewable power purchase agreement, placed our Prince Rupert LPG export terminal into service, and continued to invest in our Empress Cogeneration facility. We also conducted research and development, evaluating numerous renewable energy investments and opportunities that can reduce our overall emissions while also providing competitive returns to our shareholders.

In April 2021, Pembina appointed a Senior Vice President, External Affairs and Chief Legal and Sustainability Officer, responsible for overseeing Pembina’s ESG Strategy, including oversight and monitoring of climate-related issues and risks, trends and Pembina’s environmental performance as well as making recommendations to the executive team on climate and environmental matters. In particular, for 2021, the SVP, External Affairs and Chief Legal and Sustainability Officer had accountability for establishing Pembina’s emission intensity reduction target and also provided regular updates to Pembina’s Board of Directors, Governance Committee, the Safety, Environment & Operational Excellence Committee, as well as Pembina’s Enterprise Risk Committee (ERC) regarding Pembina’s ESG strategy and climate and environmental matters. The ERC, consisting of senior company officers, meets at least quarterly to review the performance, appropriateness and current business environment

surrounding risk management activities. The ERC provides updates to the Board of Directors, outlining risk identification, management and reporting and any deficiencies identified.

Assessment, monitoring and management of climate-related issues occurs at the executive level as the entire executive team is responsible for the oversight of climate-related issues within their areas of responsibility. Each executive works with their respective teams on their designated areas of responsibility, in addition to working with the executive team and the Board as a whole to ensure a company-wide approach. More recently, in February 2022, executive accountability for operational emissions reductions was consolidated into a single role, with the newly combined position of Senior Vice President & Chief Operating Officer, Pipelines and Facilities.

The Senior Vice President, Marketing and New Ventures & Corporate Development Officer is responsible for initiatives associated with extending Pembina's value chain and is actively exploring new opportunities centered around a lower carbon economy.

### 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	In 2021, the Board approved changes to Pembina's short term incentive plan to include performance goals related to ESG metrics performance and emissions intensity. Included in those metrics is meeting our one-year target under our Board approved emission intensity reduction plan. Achieving this metric will have an impact on annual compensation for all employees.

### 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
All employees	Monetary reward	Emissions reduction target	We believe that linking compensation to corporate performance on these important ESG factors aligns with long-term value creation and our stakeholders' interests.

## 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	0	2	
Medium-term	2	5	
Long-term	5	10	

### C2.1b

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

Pembina is exposed to a variety of financial and strategic risks and opportunities, including the transition to a lower carbon economy. Some of these impacts are applicable to the oil and gas industry as a whole and others are unique to Pembina. The impact of any risk or opportunity (or any combination of risks and opportunities) may positively or negatively affect, among other things, Pembina’s business, reputation, financial condition, access to and cost of capital, results of operations, cash flows and dividends. This may in turn affect our strategic priorities, our response to changes in our operating environment, and may materially affect the market price of our securities.

Climate change, including the transition to a lower carbon economy, has been identified as a key risk and opportunity which has the potential to intensify over time. Assessments of all identified risks and opportunities include the evaluation of potential impacts to financial results, health, safety or environmental conditions, operating system and reputation. The associated probability is also considered and those with higher potential financial or strategic impact are prioritized accordingly for investigation, management, mitigation or implementation.

For additional discussion on potential risks and opportunities that Pembina has identified, please see our management’s discussions and analysis and annual information form, each for the year ended December 31, 2021.



## C2.2

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

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### **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 of Directors is responsible for ensuring that proper systems and practical procedures are in place to identify, monitor and mitigate risks. The Board has delegated oversight of specific risks to its committees, with a view to each committee's mandate and experience. Our Enterprise Risk Management (ERM) program drives the identification, measurement, prioritization and management of risk across Pembina and is integrated with our Operating Management System (OMS). Our ERM policy defines principles and specific expectations associated with Pembina's risk management activities and governance. All employees are required to sign-off on Pembina's enterprise risk management policy which outlines responsibilities for the identification, reporting and mitigation of risks. The ERM program consists of risk management practices and procedures applied across the Company to address principal risks that affect the achievement of business objectives.

The Enterprise Risk Committee (ERC), consisting of senior company officers, meets at least quarterly to identify and validate enterprise level risks and review the performance, appropriateness and current business environment surrounding our risk management activities. Management reports to the Board of Directors about the risks that have been identified. Once the ERC has identified a risk, a risk owner is assigned based on associated oversight or portfolio responsibility. A mitigation workbook is also established which outlines mitigation plans and details, milestone dates and tracking and overall status of the mitigation plan. The risk owner is responsible for delegation of accountability for mitigation plans within their teams. Climate-related risks associated with Pembina's direct operations, as well as upstream and downstream in our value chain have been identified through the ERM process.

Furthermore, Pembina manages risks to its physical assets due to environmental threats potentially resulting from climate change. Pembina’s Geohazard Management Program (“GMP”) is designed to identify, monitor and mitigate geotechnical (slope-related), hydrotechnical (water-related), and seismic threats to its pipeline systems. All geohazard locations are ranked to determine their likelihood of failure, and this ranking is used to define the level and frequency of inspection and monitoring such that mitigations can be employed at the appropriate time to safely manage risk. Pembina utilizes numerous monitoring technologies for continual evaluation of geohazard risks such as in-line inspections, slope movement and river level monitoring. As well, Pembina leverages third party information such as early weather event warning systems, total annual precipitation accumulations, and snowpack levels to provide proactive operational responses to upcoming events.

From a carbon transition risk perspective, Pembina monitors changing regulatory requirements, regularly assesses the impact of carbon pricing, has included climate related investment criteria in our capital allocation decisions and focuses on taking actions in its operations to reduce its emissions.

## 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	<p>Pembina’s operations are subject to extensive federal, provincial, state and local environmental laws and regulations governing among other things, discharges to air, land and water, the handling and storage of petroleum products, waste disposal and the investigation and remediation of contamination. Pembina’s facilities and pipelines must maintain a number of environmental permits from various governmental authorities in order to operate and failure to maintain compliance with these requirements could result in operational interruptions, fines or penalties or the need to install additional environmental mitigation technologies and/or management process controls.</p> <p>Various federal, provincial and state governments have announced intentions to regulate greenhouse gas (GHG) emissions. Some of these regulations are in effect while others remain in various stages of review or implementation. These regulations could impact our existing and/or planned projects or increase capital investment or operating expenses, negatively impacting our financial results.</p> <p>Alberta’s Technology Innovation and Emissions Reduction (TIER) Regulation came into effect January 1, 2020. The TIER Regulation continues to facilitate emissions reductions for large industrial facilities</p>

		<p>that emit 100,000 tonnes of GHGs or more per year or for facilities that chose to volunteer into the regulation. Pembina has eight natural gas processing facilities and aggregate facilities that are subject to TIER as either mandatory or volunteer opt-in facilities. The potential costs and benefits to Pembina of those facilities under the TIER continue to be assessed.</p> <p>On December 11, 2020, the federal government announced "A Healthy Environment and a Healthy Economy", which aims to exceed the federal government's previous 2030 target for national GHG emissions reductions and to set Canada on a track to net-zero GHG emissions by 2050. The upstream oil and gas industry is expected to contribute a significant amount of the reduction needed to achieve these goals.</p> <p>The federal government mandated a pan-Canadian carbon price beginning at \$20 per tonne in 2019, rising by \$10 per tonne per year to \$50 per tonne in 2022. Pursuant to the New Federal Climate Plan, after 2022, the carbon price will rise by \$15 a year to \$170 in 2030. Future amendments, including the potential increase in carbon prices may impose additional costs on the operations of Pembina and Pembina's customers and suppliers.</p>
Emerging regulation	Relevant, always included	<p>Changes in environmental regulations and enforcement policies, including those with respect to climate change, could result in significant new or higher operating or capital costs, including but not limited to: higher compliance costs; costs to adopt and deploy new practices, processes and technologies; and higher energy and non-energy input costs. If Pembina is not able to mitigate the impacts of these changes or is unable to recover the resulting capital or operational costs through existing contractual terms or through higher tolls, this could negatively impact Pembina's financial results.</p> <p>Changes to environmental regulations and legislation, including those with respect to climate change, may also impact Pembina's customers and could result in crude oil and natural gas development and production becoming uneconomical, which would impact throughput and revenue on Pembina's systems and facilities.</p> <p>The federal government has also developed a Clean Fuel Standard that will require all producers and importers of liquid fossil fuels in Canada to reduce or offset the carbon intensity of the fuels they produce or import leading to a decrease of approximately 15 percent (below 2016 levels) in the carbon intensity of liquid fuels used in Canada by 2030. The Clean Fuel Standard will be implemented by the Clean Fuel Regulations, which is expected to come into force in a future reporting period. Pembina continues to assess the potential</p>

		costs and benefits of the Clean Fuel Standard to Pembina and its customers.
Technology	Relevant, always included	<p>Achieving the Company's GHG emissions intensity reductions target and goals could require significant capital expenditures and resources. The overall final cost of investing in and implementing a GHG emissions intensity reduction strategy and technologies in furtherance of such strategy, and the resultant change in the deployment of the Company's resources and focus, could have a material effect on Pembina's business, financial condition and results of operations.</p> <p>As the world transitions to a lower carbon economy, technology will be a key factor. As renewable energy technology becomes more cost effective in the long term, Pembina may face the risk of changes in customer demand which could in turn impact revenues.</p> <p>Pembina also sees technology as an opportunity to diversify our business and contribute to a lower carbon economy. Pembina continues to explore technology associated with CCUS, hydrogen, ammonia and solar to effectively manage Pembina emissions and also contribute positively to a lower-carbon economy.</p>
Legal	Relevant, always included	<p>For companies in the energy sector, legal liability risk (including potential project delays or loss of stakeholder trust) could increase due to increase in the number and complexity of regulatory requirements, as well as the potential for climate-related litigation. Specifically, Pembina monitors the risks associated with the violation of or potential non-compliance with laws and regulations such as, for example, discharge to air, land and water or handling, storage, transportation and disposal of waste and other materials.</p>
Market	Relevant, always included	<p>Changing consumer preferences, new technologies, government regulation or other external factors may result in a rapid transition from fossil-based sources of energy, including energy derived from oil and natural gas, to renewable and other alternative sources of energy. This may lead to lower global demand for crude oil and natural gas and related commodities and in turn may lead to lower prices for crude oil, natural gas and NGL and related commodities. This could negatively impact Pembina's producing customers and lead to less demand for Pembina's services, which could negatively impact the revenue Pembina receives from and the value of, its pipeline, facilities, and other infrastructure assets, the useful life of those assets and accelerate the timing of decommissioning. Pembina continues to evaluate opportunities that support the transition to a lower carbon economy. Pembina has many of the core competencies to adjust to a changing energy mix and is exploring opportunities for new infrastructure service including carbon transportation and sequestration and new forms of energy including hydrogen and ammonia.</p>

Reputation	Relevant, always included	<p>Pembina's reputation could be negatively impacted by changing public attitudes towards climate change. Negative impacts from a compromised reputation could include revenue loss, reduction in customer base, delays in obtaining regulatory approvals with respect to growth projects, reduced access to capital, higher cost of capital, or decreased value of Pembina's securities.</p> <p>Concerns about the effects of the use of fossil fuels on climate change and the impact of oil and gas operations on the environment have affected certain investors' sentiments towards investing in the oil and gas industry. As a result of these concerns, some investors have announced that they are no longer willing to fund or invest in oil and gas properties or companies and/or are reducing the amount of such investments over time. In addition, certain institutional investors are requesting that issuers develop and implement more robust social, environmental and governance policies and practices. Developing and implementing such policies and practices can involve significant costs and require a significant time commitment from Pembina's Board of Directors, management and employees.</p> <p>Failure to implement the policies and practices as requested by institutional investors may result in such investors reducing their investment in Pembina or not investing in Pembina at all. Any reduction in the investor base interested or willing to invest in the oil and gas industry and, more specifically, Pembina, may result in limits on Pembina's ability to access capital, increases to the cost of capital, a downgrade in Pembina's credit ratings and outlooks, and a decrease in the price and liquidity of Pembina's securities even if Pembina's operating results, underlying asset values or prospects have not changed. Additionally, these factors, as well as other related factors, may cause a decrease in the value of an asset which may result in an impairment charge.</p> <p>Pembina has responded to this concern through the development of a robust strategy to address climate change, reduce emissions and participate in the energy transition. Furthermore, the company continues to strengthen the transparency of the information it publishes on climate-related issues including, governance, risk, opportunities and performance.</p>
Acute physical	Relevant, always included	<p>Changes and or extreme variability in weather patterns, as well as increases in the frequency of extreme weather events, such as floods, cyclones, hurricanes, drought and forest fires, increases the potential risk for Pembina's assets, including operational disruptions, transportation difficulties, supply chain disruptions, employee safety incidents, and damage to assets, which may result in lower revenue,</p>

		<p>higher costs or project delays. An example of a specific risk would be floods and the potential impact to our pipeline assets in both a business continuity as well as public health and safety perspective. Pembina's Geohazard Management Program ("GMP") is designed to identify, monitor and mitigate geotechnical (slope-related), hydrotechnical (water-related), and seismic threats to its pipeline systems. All geohazard locations are ranked to determine their likelihood of failure, and this ranking is used to define the level and frequency of inspection and monitoring such that mitigations can be employed at the appropriate time to safely manage risk. Pembina utilizes numerous monitoring technologies for continual evaluation of geohazard risks such as in-line inspections, slope movement and river level monitoring. As well, Pembina leverages third party information such as early weather event warning systems, total annual precipitation accumulations, and snowpack levels to provide proactive operational responses to upcoming events.</p>
Chronic physical	Relevant, always included	<p>Weather conditions (including those associated with climate change) can affect the demand for and price of natural gas and NGL. As a result, changes in weather patterns may affect Pembina's gas processing business. For example, colder winter temperatures generally increase demand for natural gas used for heating which tends to result in increased throughput volume on the Alliance Pipeline and at the Company's gas processing facilities and higher prices in the processing and storage businesses. Pembina has capacity to handle any such increased volume of throughput and storage at its facilities to meet changes in seasonal demand; however, at any given time, processing and storage capacity is finite.</p> <p>Weather conditions (including those associated with climate change) may impact Pembina's ability to complete capital projects, maintenance and integrity projects or facility turnarounds. Unseasonable weather or work required outside of ideal construction seasons can result in delays and increased costs. In areas where construction activities can be conducted in non-winter months, Pembina attempts to schedule its construction timetables so as to minimize potential delays due to cold winter weather. Weather impacts include persistent and heavy rainfall events, early onset of winter conditions, excessive cold, warm winter conditions and early spring breakup. Changes in regulatory approval process and consultation may result in activities taking place outside of preferred construction seasons.</p> <p>Mitigation measures may include full width stripping of topsoil from the work area; installation of matting to create access, cross wet or thawing areas; and the use of helicopters to access sites where normal equipment access is not possible. Pembina may adjust scheduling to accommodate weather conditions. In more severe cases project</p>

		<p>activities can be suspended until the weather conditions are more favourable or more extreme cases until the next preferred construction season (i.e. winter to winter) and a potential delay of nearly a year. Weather may also affect access to Pembina's facilities and operations and require the use of helicopters to transport personnel. Where heavy equipment moves are required maintenance activities may require the installation of temporary matting to create access or delays to the next appropriate season for activity. Delays associated with equipment moves have the potential to impact the supply and/or demand for Pembina's services.</p>
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## 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.**

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**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**

Federal, provincial, and state governments are supporting the transition to a lower carbon economy by introducing increasingly stringent climate-related laws, regulations and policies. Without appropriate climate-related risk mitigation strategies, Pembina could face increased carbon-related costs, which may impact Pembina's long-term business resilience. For example, in Alberta the Technology Innovation and Emissions Reduction (TIER) Regulation came into effect January 1, 2020. The TIER Regulation continues to facilitate emissions reductions for large industrial facilities that emit 100,000 tonnes of GHGs or more per year or for facilities that choose to volunteer into TIER.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**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)**

6,500,000

**Potential financial impact figure – maximum (currency)**

7,500,000

**Explanation of financial impact figure**

As an estimate for all of our assets, we utilized the facility-specific benchmark methodology which specifies a reduction requirement of 10% below historical levels. Essentially, this dictates that we are required to pay a carbon price on 10% of our Scope 1 emissions. This estimate applies Alberta's TIER Regulations to all of our assets in all jurisdictions and does not account for other facility-specific regulations. We multiplied the 10% by the carbon price in 2021 of \$40/tonne CO<sub>2</sub>e and our 2021 scope 1 emissions. Our actual carbon liability will differ from this number when jurisdictional and facility-specific regulations are factored in, but we used this methodology to obtain an estimate for 2021.

**Cost of response to risk**

500,000

**Description of response and explanation of cost calculation**

In 2021, Pembina had a dedicated team working with various groups across the organization to optimize our operations. These optimization activities could result in lower emissions across the business. The cost disclosed above equates to the cost of this dedicated team (an estimate of time/total compensation). This figure does not reflect capital costs. Subsequent to 2021, Pembina has established a steering committee which is focused on operationalizing environmental initiatives, including emissions reductions.

**Comment**

The potential financial impacts and costs set out above are estimates only and are based on assumptions and expectations that management believes are reasonable as of the date hereof and are “forward-looking” in nature. Pembina makes no representation that actual results achieved will be the same in whole or in part as those set out in such forward-looking information. See “Forward-Looking Statements” on the first page of this document.



**Identifier**

Risk 2

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Current regulation

Enhanced emissions-reporting obligations

**Primary potential financial impact**

Increased direct costs

**Company-specific description**

Pembina has operating assets in jurisdictions that have robust reporting obligations and, in most cases, have assets that are regulated at both the federal and provincial levels. For instance, Pembina's Alberta-based facilities fall under TIER Regulations that apply to facilities that emit over 100,000 tonnes of CO<sub>2</sub>e. In British Columbia, all Pembina assets have a reporting obligation under the Greenhouse Gas Industrial Reporting and Control Act. In addition to these provincial requirements, Pembina also has facilities that are regulated at the federal level in Canada, under the GHG Reporting program requiring any facility emitting over 10,000 tonnes of CO<sub>2</sub>e per year to report GHG emissions. Emission reporting obligations are subject to change, as a result of change in government and or regulatory advancements. These changes can result in increased costs due to enhanced data collection requirements, increased time and efforts by employees to understand changing requirements to ensure compliance and potential increases in compliance cost associated with changes in reporting requirements.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Low

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

1,500,000

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

The financial impact is an estimate of the time/total compensation of those involved in regulatory GHG emissions reporting to government bodies at Pembina in 2021.

**Cost of response to risk**

350,000

**Description of response and explanation of cost calculation**

In an effort to manage the increasing cost associated with emission reporting, Pembina is exploring a centralized data management model. We are evaluating multiple options for data management, and are budgeting annual costs of approximately \$350,000. This figure does not include implementation costs.

**Comment**

The potential financial impacts and costs set out above are estimates only and are based on assumptions and expectations that management believes are reasonable as of the date hereof and are “forward-looking” in nature. Pembina makes no representation that actual results achieved will be the same in whole or in part as those set out in such forward-looking information. See “Forward-Looking Statements” on the first page of this document.

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**Identifier**

Risk 3

**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**

GHG regulations related to carbon pricing could become increasingly stringent and may expose Pembina to increased costs. Although not legislated, the federal government has confirmed its intention to increase the minimum carbon price by \$15 per tonne annually starting in 2023 through to 2030, which may have a significant impact on the Canadian energy industry, including potentially Pembina.

**Time horizon**

Long-term

**Likelihood**

About as likely as not

**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)**

60,000,000

**Potential financial impact figure – maximum (currency)**

70,000,000

**Explanation of financial impact figure**

As an estimate for all of our assets, we utilized the facility-specific benchmark methodology which specifies a reduction requirement of 10% below historical levels and added the proposed TIER Regulation of a 2% tightening per year starting in 2023. Essentially, this dictates that we are required to pay a carbon price on 10% of our Scope 1 emissions plus an additional 2% per year starting in 2023. This estimate applies current and proposed Alberta TIER Regulations to all of our assets in all jurisdictions and does not account for other facility-specific regulations or other potential changes to regulation. Each year, we multiplied the applicable percentage by the applicable carbon price (\$40/tonne CO<sub>2</sub>e in 2021 and \$170/tonne CO<sub>2</sub>e in 2030) and our scope 1 emissions. We assumed a reduction in scope 1 emissions of 2% per year, no additional initiatives to reduce or mitigate our emissions has been included. This impact figure is range of our potential carbon tax in 2030, and does not include customer contributions. Our actual carbon liability will differ from this number when jurisdictional and facility-specific regulations are factored in, as well as the uncertainty in emerging carbon regulation, but we used this methodology to obtain an estimate for 2030.

**Cost of response to risk**

235,000

**Description of response and explanation of cost calculation**

Pembina has a team of employees who are monitoring the risk of emerging regulation, including people from our Government Relations, Legal, Sustainability, and Financial Reporting teams. Each of these positions would have a portion of their time spent addressing this risk. The cost disclosed above is an estimate of the time/total compensation of those monitoring this risk.

**Comment**

The potential financial impacts and costs set out above are estimates only and are based on assumptions and expectations that management believes are reasonable as of the date hereof and are “forward-looking” in nature. Pembina makes no representation that actual results achieved will be the same in whole or in part as those set out in such forward-looking information. See “Forward-Looking Statements” on the first page of this document.

## 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**

Energy source

**Primary climate-related opportunity driver**

Use of lower-emission sources of energy

**Primary potential financial impact**

Reduced direct costs

**Company-specific description**

Pembina is currently constructing its second co-generation plant at the Empress NGL Extraction facility which is expected to be in service in 2022. The facility requires significant power and heat for its processes and the addition of cogeneration supplies both of these in a more energy efficient way that reduces our overall operating costs and emissions.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Low

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

19,600,000

**Potential financial impact figure – minimum (currency)**

## Potential financial impact figure – maximum (currency)

### Explanation of financial impact figure

The potential financial impact disclosed above equates to our estimated annual cost savings associated with removing variable tariff and energy charges which will no longer be applicable as a result of the co-generation. This analysis is based on our forecast for natural gas, tariffs and power.

### Cost to realize opportunity

120,000,000

### Strategy to realize opportunity and explanation of cost calculation

The cost to realize the opportunity is the announced capital cost for the project. No operating costs are included in this estimate.

### Comment

The potential financial impacts and costs set out above are estimates only and are based on assumptions and expectations that management believes are reasonable as of the date hereof and are “forward-looking” in nature. Pembina makes no representation that actual results achieved will be the same in whole or in part as those set out in such forward-looking information. See “Forward-Looking Statements” on the first page of this document.

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### Identifier

Opp2

### Where in the value chain does the opportunity occur?

Direct operations

### Opportunity type

Products and services

### Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

### Primary potential financial impact

Increased revenues through access to new and emerging markets

### Company-specific description

In 2021, Pembina announced the start-up of our Prince Rupert Terminal (“PRT”), a propane export terminal located on Watson Island, British Columbia. This a major step in providing new market solutions and helping add incremental value to western Canadian hydrocarbons. PRT is a small-scale rail terminal, moving propane from rail cars, to pressurized storage spheres, and ultimately to ‘handysize’ vessels destined for international markets. Propane shipped from PRT will help to improve air quality and reduce GHGs by displacing more carbon-intense energy sources like coal.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium

**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)**

400,000,000

**Potential financial impact figure – maximum (currency)**

450,000,000

**Explanation of financial impact figure**

This potential impact figure is a high-level estimate of total revenue, equating to total annual cargo shipped from the facility multiplied by an average propane price. No associated costs were included in this calculation.

**Cost to realize opportunity**

250,000,000

**Strategy to realize opportunity and explanation of cost calculation**

The cost to realize the opportunity is the announced capital cost for the project. No operating costs are included.

**Comment**

The potential financial impacts and costs set out above are estimates only and are based on assumptions and expectations that management believes are reasonable as of the date hereof and are “forward-looking” in nature. Pembina makes no representation that actual results achieved will be the same in whole or in part as those set out in such forward-looking information. See “Forward-Looking Statements” on the first page of this document.

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**Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Energy source

**Primary climate-related opportunity driver**

Participation in carbon market

**Primary potential financial impact**

Reduced direct costs

**Company-specific description**

Pembina views power purchase agreements as an effective tool to support development of renewable energy infrastructure and support the transition to a lower carbon energy system. In 2021, Pembina signed a long-term, 100 megawatt (MW) power purchase agreement with a subsidiary of TransAlta Corporation supporting the development of the 130 MW Garden Plain Wind Project in Alberta, with an expected start-up in 2022.

The power purchase agreement provides significant benefits to Pembina including generating cost-competitive renewable energy and fixing the price for a portion of the power Pembina consumes. The 100 MW of capacity from the power purchase agreement should provide an estimated 335,000 MWh annually of renewable energy to Alberta's power grid, or enough to power over 45,000 homes for a year.

The power purchase agreement is expected to generate on average approximately 135,000 tonnes of carbon dioxide equivalent emission (CO<sub>2</sub>e) emission offsets annually. Pembina may use these offsets to reduce its own emissions with the option to sell or bank future offsets for other uses.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**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)**

0

**Potential financial impact figure – maximum (currency)**

10,800,000

**Explanation of financial impact figure**

Pembina may use the offsets to reduce its own emissions and or has the option to sell or bank future offsets for other uses. The maximum financial impact equates to an average 135,000 tonnes of CO<sub>2</sub>e emission offsets annually multiplied by an average price of \$80 per offset. This average is based on current and potential ranges of offset prices which can range from \$40 to \$170.

**Cost to realize opportunity**

3,350,000

**Strategy to realize opportunity and explanation of cost calculation**

This cost estimate equates to the highest potential cost Pembina could realize and is calculated based on Pembina's average share of power generation at Garden Plains multiplied by the cost of energy. This cost of energy does have a range which starts at \$0, however to be conservative we have calculated using the maximum cost.

**Comment**

The potential financial impacts and costs set out above are estimates only and are based on assumptions and expectations that management believes are reasonable as of the date hereof and are "forward-looking" in nature. Pembina makes no representation that actual results achieved will be the same in whole or in part as those set out in such forward-looking information. See "Forward-Looking Statements" on the first page of this document.

## 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**

No, our strategy has been influenced by climate-related risks and opportunities, but we do not plan to develop a transition plan within two years

**Explain why your organization does not have a transition plan that aligns with a 1.5°C world and any plans to develop one in the future**

Pembina is currently conducting climate related scenario analysis to inform our strategy going forward. As part of this analysis, Pembina is utilizing the International Energy Agency (IEA) scenarios including, Stated Policies Scenario (STEPS), Sustainable Development Scenario (SDS) and Net Zero Emissions by 2050 Scenario (NZE).

Pembina anticipates discussing this analysis in an upcoming report.

### 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	Primary reason why your organization does not use climate-related scenario analysis to inform its strategy	Explain why your organization does not use climate-related scenario analysis to inform its strategy and any plans to use it in the future
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Row 1	No, but we anticipate using qualitative and/or quantitative analysis in the next two years	Important but not an immediate priority	Pembina understands the importance of climate-related scenario analysis and as such, in 2021 started the preliminary work to undertake this effort. This work is currently underway with plans to discuss this analysis in an upcoming report.
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### 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>Pembina has an established New Ventures Business Unit which is actively exploring new opportunities centered around a lower carbon economy. Included in the evaluation process is: customer interest, alignment with our value chain, technology developments, safety requirements, financial investment required, and potential government incentives and payback.</p> <p>We have announced a partnership agreement with the Haisla Nation in the development of the proposed Cedar LNG project. The Cedar LNG project will be the largest First Nation-owned infrastructure project in Canada and will have one of the cleanest LNG environmental profiles in the world. Cedar LNG’s floating design is expected to offer significantly less environmental impact on the Douglas Channel coastline and the facility will be interconnected to the existing BC Hydro transmission system, utilizing renewable electricity. This project will provide a connection for Western Canadian sedimentary basin natural gas to international markets and will contribute to the displacement of coal as an energy source in Asia. Cedar LNG expects to make a final investment decision in 2023 and subject to additional factors, including regulatory and environmental approvals, the expected in-service date for the project is planned for 2027.</p> <p>In 2021, Pembina announced a partnership with TC Energy Corporation (TC Energy) to jointly develop a world-scale carbon transportation and sequestration system, the Alberta Carbon Grid (ACG). This system, when fully constructed,</p>

		<p>will be capable of transporting up to 20 million tonnes of carbon dioxide annually. By leveraging existing pipelines and newly developed sequestration hub, the ACG represents the infrastructure needed for Alberta-based industries to effectively manage their emissions and contribute positively to Alberta's lower-carbon economy and create sustainable long-term value for Pembina and TC Energy stakeholders.</p>
Supply chain and/or value chain	Yes	<p>Pembina has implemented a supplier code of conduct as part of our supplier on-boarding and compliance program. Included in this code are details of Pembina's environmental stewardship commitments. Suppliers are now also asked to complete an ESG questionnaire, establishing their position on various ESG topics important to Pembina, including climate-related issues.</p>
Investment in R&D	Yes	<p>Pembina sees tremendous value in advancing new technologies which could have a positive impact on climate-related issues. As discussed above, the New Ventures Business Unit is actively exploring new technologies centered around a lower carbon economy. Pembina has many of the core competencies to adjust to a changing energy mix and is positioned to provide infrastructure services for new forms of energy, including energy produced from hydrogen and carbon sequestration.</p> <p>Pembina has partnered with TC Energy Corporation (TC Energy) to jointly develop a world-scale carbon transportation and sequestration system, the Alberta Carbon Grid (ACG). This system, when fully constructed, will be capable of sequestering up to 20 million tonnes of carbon dioxide annually.</p>
Operations	Yes	<p>In October 2021, Pembina announced its commitment to reduce the Company's GHG emissions intensity by 30% by 2030, relative to a 2019 baseline. This GHG reduction target will help guide business decisions and improve overall emissions intensity performance while increasing Pembina's long-term value and ensuring Canadian energy is developed and delivered responsibly. To meet this target, Pembina has identified many operational opportunities which will lower both emissions and operating costs. Through a lens of continuous improvement, Pembina is taking further steps to reduce our environmental footprint while utilizing assets more efficiently. Operational contributions identified include: optimizing pipeline capacity</p>

		and operations; constructing cogeneration facilities (for example our Empress co-generation facility); modernizing and optimizing compression facilities to reduce the amount of energy consumed; reducing flaring and venting; and enhancing leak detection and repair programs at our facilities. As an example, through our LDAR (leak detection and repair) program at Aux Sable, Pembina implemented a low emission valve replacement program. Pembina expects to be able to capitalize on the cost benefit analysis which was conducted in connection with this program as we begin to evaluate other facilities where similar programs can be implemented.
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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	<p>Revenues – It is possible that lower demand, leading to lower prices for oil, natural gas and NGL’s may be driven by changing consumer preferences, new technologies or a rapid transition to other forms of energy. This could negatively impact Pembina’s producing customers and lead to less demand for Pembina’s services, negatively impacting our revenue. As discussed above, the New Ventures Business Unit is actively exploring new opportunities centered around a lower carbon economy. For example, Pembina has partnered with TC Energy to jointly develop a world-scale carbon transportation and sequestration system, the ACG. This system, when fully constructed, will be capable of transporting more than 20 million tonnes of CO2 annually. By leveraging existing pipelines and newly developed sequestration hub, the ACG represents the infrastructure needed for Alberta-based industries to effectively manage their emissions and contribute positively to Alberta’s lower-carbon economy and create sustainable long-term value for Pembina and TC Energy stakeholders.</p> <p>In 2021 we also announced a partnership agreement with the Haisla Nation in the development of the proposed Cedar LNG project. The Cedar LNG project will be the largest First Nation-owned infrastructure project in Canada and will have one of the cleanest LNG environmental profiles in the world. Cedar LNG’s floating design is expected to offer significantly less environmental impact on the Douglas Channel coastline and the facility will be interconnected to the existing BC Hydro transmission system, utilizing renewable electricity. This project will provide a connection for Western Canadian sedimentary basin natural</p>

	<p>gas to international markets and will contribute to the displacement of coal as an energy source in Asia. Cedar LNG is targeting a final investment decision in 2023 and subject to additional factors, including regulatory and environmental approvals, the expected in-service date for the project is planned for 2027.</p> <p>In 2021, Pembina announced the start-up of our Prince Rupert Terminal ("PRT"), a propane export terminal located on Watson Island, British Columbia. This a major step in providing new market solutions and helping add incremental value to western Canadian hydrocarbons. PRT is a small-scale rail terminal, moving propane from rail cars, to pressurized storage spheres, and ultimately to 'handysize' vessels destined for international markets. Propane shipped from PRT will help to improve air quality and reduce GHGs by displacing more carbon-intensive energy sources like coal.</p> <p>Pembina has many of the core competencies to adjust to a changing energy mix and is positioned to provide infrastructure services for new forms of energy, including energy produced from hydrogen and carbon sequestration.</p> <p>Direct Costs - The costs associated with reporting and compliance as well as tracking systems, assurance fees and technology are included as direct costs to Pembina. These costs are included in the budgeting and financial planning process.</p> <p>Direct Costs - Power required to operate Pembina's assets are included in the calculation of operating costs and emissions and are a part of the financial planning process. Pembina considers these direct costs as an opportunity to reduce its emissions as it considers generating its own electricity and using the waste heat through co-generation facilities and or through the purchase of renewable electricity. For example, Pembina signed a long-term 100 MW power purchase agreement supporting the development of the 130 MW Garden Plain Wind Project in Alberta. This power purchase agreement generates cost-competitive renewable energy and will generate approximately 135,000 tonnes of CO<sub>2</sub>e emission offsets annually.</p> <p>Capital allocation – ESG and the transition to a lower carbon economy have become an increased focus on Pembina's investment decisions as we continue to progress towards our 2030 emission intensity reduction target. It is an additional lens through which all capital projects are evaluated by Pembina's Investment Committee and our Board of Directors. For example, Pembina is currently constructing a co-generation facility at our Empress NGL Extraction Facility. The Facility will use natural gas to generate up to 45 MW of electrical power,</p>
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	<p>contributing to lower annual GHG emissions through the utilization of waste heat and the low emission power generated at the co-generation facility. This facility is expected to be in-service in 2022.</p> <p>Acquisition and Divestments - ESG and the transition to a lower carbon economy have become an increased focus on our investment decisions as we continue to progress towards our 2030 emission reduction target. It is an additional lens through which all acquisitions and divestments are evaluated by Pembina's Investment Committee and our Board of Directors.</p> <p>Access to Capital – Pembina's investors are increasingly focused on ESG and the transition to a lower carbon economy. Pembina has responded to this focus in part with the commitment to reduce the Company's greenhouse gas emissions intensity by 30% by 2030, relative to baseline 2019 emissions. This GHG reduction target will help guide business decisions and improve overall emissions intensity performance while increasing Pembina's long-term value for our shareholders.</p> <p>The time horizon for Pembina's financial planning related to revenue, costs, capital allocation and acquisition and divestments covers 5 years.</p>
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## 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).**

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**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**

Metric tons CO<sub>2</sub>e per barrel of oil equivalent (BOE)

**Base year**

2019

**Intensity figure in base year for Scope 1 (metric tons CO<sub>2</sub>e per unit of activity)**

0.00172

**Intensity figure in base year for Scope 2 (metric tons CO<sub>2</sub>e per unit of activity)**

0.00122

**Intensity figure in base year for Scope 3 (metric tons CO<sub>2</sub>e per unit of activity)**

**Intensity figure in base year for all selected Scopes (metric tons CO<sub>2</sub>e per unit of activity)**

0.00294

**% 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**

2030

**Targeted reduction from base year (%)**

30

**Intensity figure in target year for all selected Scopes (metric tons CO<sub>2</sub>e per unit of activity) [auto-calculated]**

0.002058

**% 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 CO<sub>2</sub>e per unit of activity)**

0.00173

**Intensity figure in reporting year for Scope 2 (metric tons CO<sub>2</sub>e per unit of activity)**

0.00124

**Intensity figure in reporting year for Scope 3 (metric tons CO<sub>2</sub>e per unit of activity)**

**Intensity figure in reporting year for all selected Scopes (metric tons CO<sub>2</sub>e per unit of activity)**

0.00297

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

-3.4013605442

**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**

Our '30 by 30' target encompasses all Scope 1 and 2 emissions, aggregated to the corporate level on an Operational Control basis.

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

Pembina announced a target to achieve a 30% reduction in emission intensity relative to 2019 baseline in Q4, 2021. At that time, we identified multiple pathways that support the transition to a lower-carbon future, including operational opportunities, renewable energy and investments in a lower carbon economy. Pembina continues to explore many long term reduction initiatives and is executing on other, smaller, initiatives with immediate results.

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?

No other climate-related targets

## C-OG4.2d

(C-OG4.2d) Indicate which targets reported in C4.1a/b incorporate methane emissions, or if you do not have a methane-specific emissions reduction target for your oil and gas activities, please explain why not and forecast how your methane emissions will change over the next five years.

Pembina's target (Int1) to reduce our emissions intensity by 30% by 2030 ('30 by 30') is inclusive of methane emissions.

## 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	18	106,791
To be implemented*	3	89,200
Implementation commenced*	1	135,000
Implemented*	1	1,128
Not to be implemented	0	0

### C4.3b

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



**Initiative category & Initiative type**

Energy efficiency in production processes  
Motors and drives

**Estimated annual CO2e savings (metric tonnes CO2e)**

1,128

**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)**

55,120

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

625,000

**Payback period**

4-10 years

**Estimated lifetime of the initiative**

11-15 years

**Comment**

A 1,480 hp 4 cycle, lean burn, natural gas engine in a gas compression application was converted to a 1,500 hp high efficiency miller cycle, rich burn engine with a 1gram/bhp/hr NOx exhaust catalyst, providing operational benefits including air and carbon emission reductions. Project economics considered multiple factors, and the annual monetary savings indicated excludes those considered confidential.

**C4.3c**

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

Method	Comment
Compliance with regulatory requirements/standards	All of Pembina’s Canadian assets are covered by carbon emission intensity regulations or carbon tax frameworks. Pembina strives to mitigate carbon compliance costs by seeking operational improvements and energy efficiency projects that improve production output and/or carbon emission reductions.
Internal incentives/recognition programs	In 2021, the Board approved changes to Pembina's short term incentive plan to include performance goals related to ESG metrics performance and emissions intensity. Included in those metrics is meeting our one-year target under our Board approved emission intensity reduction plan. Achieving this metric will have an impact on annual compensation for all employees. We believe linking

	compensation to corporate performance on these important ESG factors aligns with long-term value creation and our stakeholders' interests.
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## C4.5

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

No

## C-OG4.6

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

Starting in 2020, the British Columbia, Alberta and Federal governments implemented methane reduction regulations to reduce methane emissions from the oil and gas sector by 40% to 45% by 2025. Pembina initiated a program to comply with the applicable regulations for the survey and measurement of vented and fugitive methane emissions from our Canadian natural gas processing, transportation and handling operations. Emission surveys are conducted up to three times per year. Based on the survey findings, Pembina makes every effort to repair identified fugitive leaks or corrective actions to mitigate vented emissions through equipment upgrades, retrofits or focused maintenance programs to ensure equipment is operating as efficient as possible.

Regulations applicable to Pembina’s operations include: *Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds (Upstream Oil and Gas Sector)*; *Alberta Methane Emission Reduction Regulation*, A.R. 244/2018, made under the *Environmental Protection and Enhancement Act* and incorporating several sections of the Alberta Energy Regulator *Directive 017* and *Directive 060*; *Saskatchewan Directive PNG036: Venting and Flaring Requirements* made under the *Oil and Gas Conservation Act* and *the Drilling and Production Regulation*, B.C. Reg. 282/2010 made under the *Oil and Gas Activities Act*, S.B.C. 282/2008, c. 36.

## 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.**

In 2020, Pembina implemented a fugitive emissions leak detection and repair program at 100% of our Canadian natural gas processing, natural gas pipeline transportation and handling operations. The leak detection program was also implemented on select liquid hydrocarbon pipeline and storage assets where required by applicable regulation.

Where required, fugitive emission leaks are identified by following the US EPA Method 21 and/or the utilization of a qualified optical gas-imaging instrumentation. These comprehensive fugitive emission surveys are conducted up to three times per year and are completed by trained third-party consultants. Identified fugitive emission leaks are measured, quantified and tagged for subsequent repairs by Pembina’s instrumentation and maintenance teams. Fugitive emission leaks are tracked until repairs are made and confirmed as completed. The results are recorded and reported as required by the regulatory authority.

## 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.**

Flaring is relevant to Pembina activities. Flaring activities predominately occur at our natural gas processing and natural gas liquid fractionation facilities, where waste gas or processing upsets result in the actuation of flaring or incineration systems. Flaring and incineration activities are regulated under operational limits (i.e., daily volume limits) and/or annual flaring limits. Pembina is committed to maintaining regulatory compliance at all our facilities.

Pembina's target (Int1) to reduce our GHG emissions intensity by 30% by 2030 ('30 by 30') is inclusive of emissions from flaring.

## 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

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**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?**

	<b>Change(s) in methodology, boundary, and/or reporting year definition?</b>	<b>Details of methodology, boundary, and/or reporting year definition change(s)</b>
Row 1	Yes, a change in methodology  No, but we have discovered significant errors in our previous response(s)	Reported emissions intensity values for 2019 and 2020 have been revised from prior reporting to reflect a methodological change to throughput calculation.  In addition, errors in excess of 5% were noted in our 2019 Scope 1 and 2 emissions resulting from incorrect application of our organizational boundary (operational control) to acquired assets. These values have been subjected to limited assurance and corrected in this submission.

## C5.1c

**(C5.1c) Have your organization's base year emissions been recalculated as result of the changes or errors reported in C5.1a and C5.1b?**

	<b>Base year recalculation</b>	<b>Base year emissions recalculation policy, including significance threshold</b>
Row 1	Yes	2019 has been selected as our base year for Scope 1 and 2 GHG emissions. As noted in C5.1b, our 2019 emissions were recalculated in 2022 to correct a previous error.  Pembina have also developed a base year emissions recalculation policy in line with the GHG Protocol. To ensure consistent, relevant and comparable emissions to track Pembina's progress against, our base year will be recalculated to account for future structural changes including mergers, acquisitions and divestments, changes in calculation methodology or errors in excess of our significance threshold which has been set as a cumulative impact of +/- 15% to Scope 1 + 2 emissions.

## C5.2

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

### Scope 1

**Base year start**

January 1, 2019

**Base year end**

December 31, 2019

**Base year emissions (metric tons CO<sub>2</sub>e)**

1,774,682

**Comment**

**Scope 2 (location-based)**

---

**Base year start**

January 1, 2019

**Base year end**

December 31, 2019

**Base year emissions (metric tons CO<sub>2</sub>e)**

1,251,655

**Comment**

**Scope 2 (market-based)**

---

**Base year start**

January 1, 2019

**Base year end**

December 31, 2019

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

No market-based emissions intensities were relevant or available prior to 2021 reporting year.

**Scope 3 category 1: Purchased goods and services**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

### **Scope 3 category 2: Capital goods**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

### **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 CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

### **Scope 3 category 4: Upstream transportation and distribution**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

### **Scope 3 category 5: Waste generated in operations**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO2e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

**Scope 3 category 6: Business travel**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO2e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

**Scope 3 category 7: Employee commuting**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO2e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

**Scope 3 category 8: Upstream leased assets**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO2e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

### **Scope 3 category 9: Downstream transportation and distribution**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

### **Scope 3 category 10: Processing of sold products**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

### **Scope 3 category 11: Use of sold products**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

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

---

**Base year start**



**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

**Scope 3 category 13: Downstream leased assets**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

**Scope 3 category 14: Franchises**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

**Scope 3 category 15: Investments**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

**Scope 3: Other (upstream)**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

**Scope 3: Other (downstream)**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

We will select the first year for which we have complete and reliable Scope 3 emissions data as our base year.

**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

IPIECA's Petroleum Industry Guidelines for reporting GHG emissions, 2nd edition, 2011

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

The Greenhouse Gas Protocol: Scope 2 Guidance

US EPA Mandatory Greenhouse Gas Reporting Rule

US EPA Emissions & Generation Resource Integrated Database (eGRID)

Other, please specify

Alberta Environment and Parks. Alberta Greenhouse Gas Quantification Methodologies

Technology Innovation and Emissions Reduction Regulation, Version 2.2. December 2021.

## C6. Emissions data

### C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO<sub>2</sub>e?

#### Reporting year

---

**Gross global Scope 1 emissions (metric tons CO<sub>2</sub>e)**

1,827,793

**Start date**

January 1, 2021

**End date**

December 31, 2021

**Comment**

#### Past year 1

---

**Gross global Scope 1 emissions (metric tons CO<sub>2</sub>e)**

1,745,245

**Start date**

January 1, 2020

**End date**

December 31, 2020

**Comment**

#### Past year 2

---

**Gross global Scope 1 emissions (metric tons CO<sub>2</sub>e)**

1,774,682

**Start date**

January 1, 2019

**End date**

December 31, 2019

**Comment**

Errors in excess of 5% were noted in our 2019 Scope 1 emissions resulting from incorrect application of our organizational boundary (operational control) to acquired assets. These values have been subjected to limited assurance and corrected in this submission.

**Past year 3**

---

**Gross global Scope 1 emissions (metric tons CO2e)**

1,623,374

**Start date**

January 1, 2018

**End date**

December 31, 2018

**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 operations where we are able to access electricity supplier emission factors or residual emissions factors, but are unable to report a Scope 2, market-based figure

**Comment**

Scope 2 emissions are calculated using current location-based emission factors from Environment and Climate Change Canada’s National Inventory Report (NIR) for Canadian facilities, U.S. Environmental Protection Agency’s Emissions & Generation Resource Integrated Database (eGRID) for US facilities.

Pembina has a contractual instrument to acquire electricity and heat from a third-party cogeneration facility at one of our sites. We are gathering the appropriate data in order to report Scope 2 emissions applying the market-based methodology in the future. Based off our initial internal analysis, we do not expect this to result in a difference greater than 10% in our overall Scope 2 emissions.

## C6.3

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

**Reporting year**

---

**Scope 2, location-based**

1,307,661

**Start date**

January 1, 2021

**End date**

December 31, 2021

**Comment**

**Past year 1**

---

**Scope 2, location-based**

1,386,511

**Start date**

January 1, 2020

**End date**

December 31, 2020

**Comment**

**Past year 2**

---

**Scope 2, location-based**

1,251,655

**Start date**

January 1, 2019

**End date**

December 31, 2019

**Comment**

Errors in excess of 5% were noted in our 2019 Scope 2 emissions resulting from incorrect application of our organizational boundary (operational control) to acquired assets. These values have been subjected to limited assurance and corrected in this submission.

**Past year 3**

---

**Scope 2, location-based**

1,411,370

**Start date**

January 1, 2018

**End date**

December 31, 2018

**Comment**

## C6.4

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

Yes

### C6.4a

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

---

**Source**

Construction activities and emissions directly resulting from spills

**Relevance of Scope 1 emissions from this source**

Emissions are not evaluated

**Relevance of location-based Scope 2 emissions from this source**

Emissions are not evaluated

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

Emissions are not relevant

**Explain why this source is excluded**

Aligned with our historical reporting, emissions from construction activities and spills are excluded to ensure Pembina's corporate annual reported GHG emissions focus' on consistent operational data.

**Estimated percentage of total Scope 1+2 emissions this excluded source represents**

**Explain how you estimated the percentage of emissions this excluded source represents**

## 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**

Relevant, not yet calculated

**Please explain**

Emissions from purchased goods and services may be relevant but have not yet been calculated.

**Capital goods**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Emissions from capital goods may be relevant but have not yet been calculated.

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

---

**Evaluation status**

Relevant, calculated

**Emissions in reporting year (metric tons CO<sub>2</sub>e)**

241,847

**Emissions calculation methodology**

Fuel-based method

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

100

**Please explain**

Scope 3 emissions have been estimated based on the best available data to Pembina at this time.

**Upstream transportation and distribution**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Further assessment of emissions from upstream transportation and distribution of products purchased by Pembina is required.

**Waste generated in operations**

---

**Evaluation status**

Relevant, calculated

**Emissions in reporting year (metric tons CO<sub>2</sub>e)**

740

**Emissions calculation methodology**

Fuel-based method

Distance-based method

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

100

**Please explain**

**Business travel**

---

**Evaluation status**

Relevant, calculated

**Emissions in reporting year (metric tons CO<sub>2</sub>e)**

179

**Emissions calculation methodology**

Distance-based method

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

60

**Please explain**

Pembina tracks business travel (transportation of employees for business-related activities in vehicles not owned or operated by Pembina). Scope 3 emissions were estimated based on supplier data, which was estimated to cover approximately 60% of Pembina's business travel.

**Employee commuting**

---

**Evaluation status**

Relevant, calculated

**Emissions in reporting year (metric tons CO<sub>2</sub>e)**

2,975

**Emissions calculation methodology**

Average data method

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

0

**Please explain**

The Greenhouse Gas Protocol Quantis Scope 3 Evaluator online tool was used to estimate employee commuting emissions for an organization of 1,001 to 2,500 employees. This scope 3 category contributes a relatively small amount of emissions compared to other categories. Additional Pembina-specific information will be used to improve this estimation in future years.

**Upstream leased assets**

---



**Evaluation status**

Relevant, calculated

**Emissions in reporting year (metric tons CO2e)**

2,963

**Emissions calculation methodology**

Fuel-based method

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

100

**Please explain**

Emissions in this category is limited during this reporting year to those associated with our corporate headquarters in Calgary.

**Downstream transportation and distribution**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Further assessment of transportation and distribution of any products sold by Pembina to the end customer is required.

**Processing of sold products**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Further assessment of downstream processing of intermediate products sold is required.

**Use of sold products**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Further assessment of end use of goods and services sold by Pembina is required.

**End of life treatment of sold products**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Pembina is engaged primarily in the provision of transportation and midstream services and not the sale of products. Further assessment is required.

## Downstream leased assets

---

### Evaluation status

Relevant, not yet calculated

### Please explain

Further assessment of downstream leased assets by Pembina is required.

## Franchises

---

### Evaluation status

Not relevant, explanation provided

### Please explain

Pembina does not have any franchises.

## Investments

---

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

984,068

### Emissions calculation methodology

Investment-specific method

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

100

### Please explain

Scope 1 and 2 emissions were reported to Pembina by our partners for two significant investments and these have been prorated to Pembina's ownership interest.

## Other (upstream)

---

### Evaluation status

### Please explain

## Other (downstream)

---

### Evaluation status

### Please explain

## C6.5a

(C6.5a) Disclose or restate your Scope 3 emissions data for previous years.

### Past year 1

---

**Start date**

January 1, 2020

**End date**

December 31, 2020

**Scope 3: Purchased goods and services (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Capital goods (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)  
(metric tons CO<sub>2</sub>e)**

0

**Scope 3: Upstream transportation and distribution (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Waste generated in operations (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Business travel (metric tons CO<sub>2</sub>e)**

135.25

**Scope 3: Employee commuting (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Upstream leased assets (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Downstream transportation and distribution (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Processing of sold products (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Use of sold products (metric tons CO<sub>2</sub>e)**

0

**Scope 3: End of life treatment of sold products (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Downstream leased assets (metric tons CO<sub>2</sub>e)**

0

**Scope 3: Franchises (metric tons CO2e)**

0

**Scope 3: Investments (metric tons CO2e)**

0

**Scope 3: Other (upstream) (metric tons CO2e)**

0

**Scope 3: Other (downstream) (metric tons CO2e)**

0

**Comment**

Only category 5, business travel was reported for 2020.

**Past year 2**

---

**Start date**

January 1, 2019

**End date**

December 31, 2019

**Scope 3: Purchased goods and services (metric tons CO2e)**

0

**Scope 3: Capital goods (metric tons CO2e)**

0

**Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)  
(metric tons CO2e)**

0

**Scope 3: Upstream transportation and distribution (metric tons CO2e)**

0

**Scope 3: Waste generated in operations (metric tons CO2e)**

0

**Scope 3: Business travel (metric tons CO2e)**

0

**Scope 3: Employee commuting (metric tons CO2e)**

0

**Scope 3: Upstream leased assets (metric tons CO2e)**

0

**Scope 3: Downstream transportation and distribution (metric tons CO2e)**

0

**Scope 3: Processing of sold products (metric tons CO2e)**

0

**Scope 3: Use of sold products (metric tons CO2e)**

0

**Scope 3: End of life treatment of sold products (metric tons CO2e)**

0

**Scope 3: Downstream leased assets (metric tons CO2e)**

0

**Scope 3: Franchises (metric tons CO2e)**

0

**Scope 3: Investments (metric tons CO2e)**

0

**Scope 3: Other (upstream) (metric tons CO2e)**

0

**Scope 3: Other (downstream) (metric tons CO2e)**

0

**Comment**

Pembina has not estimated or reported Scope 3 emissions for 2019.

**Past year 3**

---

**Start date**

January 1, 2018

**End date**

December 31, 2018

**Scope 3: Purchased goods and services (metric tons CO2e)**

0

**Scope 3: Capital goods (metric tons CO2e)**

0

**Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)  
(metric tons CO2e)**

0

**Scope 3: Upstream transportation and distribution (metric tons CO2e)**

0

**Scope 3: Waste generated in operations (metric tons CO2e)**

0

**Scope 3: Business travel (metric tons CO2e)**

0

**Scope 3: Employee commuting (metric tons CO2e)**

0

**Scope 3: Upstream leased assets (metric tons CO2e)**

0

**Scope 3: Downstream transportation and distribution (metric tons CO2e)**

0

**Scope 3: Processing of sold products (metric tons CO2e)**

0

**Scope 3: Use of sold products (metric tons CO2e)**

0

**Scope 3: End of life treatment of sold products (metric tons CO2e)**

0

**Scope 3: Downstream leased assets (metric tons CO2e)**

0

**Scope 3: Franchises (metric tons CO2e)**

0

**Scope 3: Investments (metric tons CO2e)**

0

**Scope 3: Other (upstream) (metric tons CO2e)**

0

**Scope 3: Other (downstream) (metric tons CO2e)**

0

**Comment**

Pembina has not estimated or reported Scope 3 emissions for 2018.

## **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**

0.00036

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO<sub>2</sub>e)**

3,135,454

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

8,627,000,000

**Scope 2 figure used**

Location-based

**% change from previous year**

31

**Direction of change**

Decreased

**Reason for change**

2021 total revenue was significantly higher than 2020, while the 2021 gross combined Scope 1 + Scope 2 emissions were marginally higher than 2020 primarily due to increased volumes.

Total revenue is based on Pembina's revenue as disclosed in the Pembina Pipeline Corporation Annual Report to Shareholders.

---

**Intensity figure**

0.00297

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO<sub>2</sub>e)**

3,135,454

**Metric denominator**

barrel of oil equivalent (BOE)

**Metric denominator: Unit total**

1,057,422,255

**Scope 2 figure used**

Location-based

**% change from previous year**

2.3

**Direction of change**

Decreased

**Reason for change**

2021 gross combined Scope 1 + Scope 2 emissions were marginally higher than 2020 however this was offset by a proportionally larger increase in throughput volumes.

**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)**

Other, please specify  
Barrels of oil equivalent

**Metric tons CO2e from hydrocarbon category per unit specified**

0

**% change from previous year**

2

**Direction of change**

Increased

**Reason for change**

We expect to see some annual variation in this intensity since Scope 1 emissions at our operations are not always directly correlated to throughput at a 1:1 ratio.

**Comment**

0.00173tCO2e Scope 1/BOE in 2021

**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**

Midstream

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

2.1

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

0

**Comment**



Reported as methane emissions (tCH4) over natural gas (BOE) 2.1%  
 Reported as methane emissions (tCH4) over total (BOE) 0.0004%

## 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	1,671,891	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	37,275	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	118,482	IPCC Fourth Assessment Report (AR4 - 100 year)
HFCs	69	IPCC Fourth Assessment Report (AR4 - 100 year)
SF6	76	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**

Midstream

**Product**

Unable to disaggregate

**Gross Scope 1 CO2 emissions (metric tons CO2)**

1,314,507

**Gross Scope 1 methane emissions (metric tons CH4)**

2,853

**Total gross Scope 1 emissions (metric tons CO2e)**

1,421,416

**Comment**

---

**Emissions category**

Flaring

**Value chain**

Midstream

**Product**

Unable to disaggregate

**Gross Scope 1 CO2 emissions (metric tons CO2)**

305,049

**Gross Scope 1 methane emissions (metric tons CH4)**

823

**Total gross Scope 1 emissions (metric tons CO2e)**

326,646

**Comment**

---

**Emissions category**

Venting

**Value chain**

Midstream

**Product**

Unable to disaggregate

**Gross Scope 1 CO2 emissions (metric tons CO2)**

29,660

**Gross Scope 1 methane emissions (metric tons CH4)**

575

**Total gross Scope 1 emissions (metric tons CO2e)**

44,041

**Comment**

---

**Emissions category**

Fugitives

**Value chain**

Midstream

**Product**

Unable to disaggregate

**Gross Scope 1 CO2 emissions (metric tons CO2)**

270

**Gross Scope 1 methane emissions (metric tons CH4)**

486

**Total gross Scope 1 emissions (metric tons CO2e)**

12,416

**Comment**

---

**Emissions category**

Other (please specify)

Other including mobile

**Value chain**

Midstream

**Product**

Unable to disaggregate

**Gross Scope 1 CO2 emissions (metric tons CO2)**

13,311

**Gross Scope 1 methane emissions (metric tons CH4)**

3

**Total gross Scope 1 emissions (metric tons CO2e)**

23,274

**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	1,516,965
United States of America	310,828

### C7.3

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

By business division

### C7.3a

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

Business division	Scope 1 emissions (metric ton CO2e)
Corporate	13,863
Facilities	1,790,719
Pipelines	23,211

### 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)	0	
Oil and gas production activities (midstream)	1,827,793	Pembina is a midstream operator.
Oil and gas production activities (downstream)	0	

### 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	1,186,895	
United States of America	120,765	

## C7.6

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

By business division

### C7.6a

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

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Corporate	168	
Facilities	790,361	
Pipelines	517,132	

## 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		
Oil and gas production activities (midstream)	1,307,661		Pembina is a midstream operator.
Oil and gas production activities (downstream)	0		

## 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	There was no change in renewable energy consumption that resulted in a change in Scope 1 & 2 emission in 2021.
Other emissions reduction activities	1,128	Decreased	0.04	Please refer to response C4.3b
Divestment	0	No change	0	There were no divestments that resulted in a change in Scope 1 & 2 emissions in 2021.
Acquisitions	0	No change	0	There were no acquisitions that resulted in a change in Scope 1 & 2 emissions in 2021.
Mergers	0	No change	0	There were no mergers that resulted in a change in Scope 1 & 2 emissions in 2021.
Change in output	46,000	Increased	2.5	Estimated based on a 2.5% increase in physical volumes processed.
Change in methodology	0	No change		
Change in boundary	0	No change		
Change in physical operating conditions	0	No change		
Unidentified	54,290	Decreased		Majority of this decrease is likely due to grid greening in other jurisdictions in which we operate.
Other	54,500	Decreased	1.7	Scope 2 emissions associated electrical consumption reduced due to greening of the grid in Alberta.

## 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 35% but less than or equal to 40%

### 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	Yes
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)	Unable to confirm heating value	0	5,644,983	5,644,983

Consumption of purchased or acquired electricity		29,734	2,417,568	2,447,302
Consumption of purchased or acquired heat			547,039	547,037
Consumption of self-generated non-fuel renewable energy				
Total energy consumption		29,734	8,609,590	8,639,324

### C8.2b

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

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
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**

HHV

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

**MWh fuel consumed for self-generation of heat**



**MWh fuel consumed for self- cogeneration or self-trigeneration**

**Comment**

Not a relevant fuel type for Pembina in 2021

**Other biomass**

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

**MWh fuel consumed for self-generation of heat**

**MWh fuel consumed for self- cogeneration or self-trigeneration**

**Comment**

Not a relevant fuel type for Pembina in 2021

**Other renewable fuels (e.g. renewable hydrogen)**

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

**MWh fuel consumed for self-generation of heat**

**MWh fuel consumed for self- cogeneration or self-trigeneration**

**Comment**

Not a relevant fuel type for Pembina in 2021

**Coal**

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

**MWh fuel consumed for self-generation of heat**

**MWh fuel consumed for self- cogeneration or self-trigeneration**

**Comment**

Not a relevant fuel type for Pembina in 2021

## Oil

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

**MWh fuel consumed for self-generation of heat**

**MWh fuel consumed for self- cogeneration or self-trigeneration**

**Comment**

Not a relevant fuel type for Pembina in 2021

## Gas

---

**Heating value**

Unable to confirm heating value

**Total fuel MWh consumed by the organization**

5,574,158

**MWh fuel consumed for self-generation of electricity**

267,977

**MWh fuel consumed for self-generation of heat**

225,511

**MWh fuel consumed for self- cogeneration or self-trigeneration**

985,155

**Comment**

Estimated fuel consumptions have been provided based on the best available data at this time. Inclusive of natural gas and propane. Unable to provide a single heating value due to mix of fuel types.

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

---

**Heating value**

Unable to confirm heating value

**Total fuel MWh consumed by the organization**

70,825

**MWh fuel consumed for self-generation of electricity**

**MWh fuel consumed for self-generation of heat**

**MWh fuel consumed for self- cogeneration or self-trigeneration**

**Comment**

Estimated fuel consumptions have been provided based on the best available data at this time. Inclusive of diesel, gasoline and jet fuel. Unable to provide a single heating value due to mix of fuel types.

#### **Total fuel**

---

**Heating value**

Unable to confirm heating value

**Total fuel MWh consumed by the organization**

5,644,983

**MWh fuel consumed for self-generation of electricity**

269,977

**MWh fuel consumed for self-generation of heat**

225,511

**MWh fuel consumed for self- cogeneration or self-trigeneration**

985,155

**Comment**

Estimated fuel consumptions have been provided based on the best available data at this time. Unable to provide a single heating value due to mix of fuel types.

## **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	346,547	155,267	43,531	0
Heat	534,261	534,261		
Steam				
Cooling				

## C8.2g

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

---

### Country/area

Canada

#### Consumption of electricity (MWh)

2,087,956,079

#### Consumption of heat, steam, and cooling (MWh)

547,039

#### Total non-fuel energy consumption (MWh) [Auto-calculated]

2,088,503,118

---

### Country/area

United States of America

#### Consumption of electricity (MWh)

2,417,568,290

#### Consumption of heat, steam, and cooling (MWh)

0

#### Total non-fuel energy consumption (MWh) [Auto-calculated]

2,417,568,290

## C9. Additional metrics

### C9.1

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

**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	Pembina sees tremendous value in advancing new technologies which could have a positive impact on climate-related issues. Pembina is actively exploring new technologies centered around a lower carbon economy.

**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
Infrastructure	Basic academic/theoretical research	81-100%		Pembina has partnered with TC Energy to jointly develop a world-scale carbon transportation and sequestration system, the ACG. Developing the ACG will allow Pembina to play a vital role in helping Alberta-based industries effectively manage emissions. Further, for Canada to achieve its national climate targets, carbon transportation and sequestration technology and infrastructure will need to play a vital role. Pembina and TC Energy are uniquely positioned to take a leadership role in the transportation of carbon emissions given their collective

				skills and extensive network of existing pipeline infrastructure. By leveraging existing pipelines and a newly developed sequestration hub, the ACG represents the infrastructure platform needed for Alberta-based industries to effectively manage their emissions and contribute positively to Alberta's lower-carbon economy and create sustainable long-term value for Pembina and TC Energy stakeholders.
Renewable energy	Basic academic/theoretical research	≤20%		Pembina has been investigating the potential of integrating renewable energy technologies into our business to reduce the Scope 2 emissions footprint of our assets. For example, Pembina is exploring a behind the meter solar pilot at Empress, replacing higher carbon intensity grid supplied power with more renewable sources. If successful, additional locations have been identified for a larger program of projects.

## 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**

Limited assurance

**Attach the statement**

 Pembina 2021 Assurance Statement Final\_July 20 2022.pdf

**Page/ section reference**

**Relevant standard**

**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**

Limited assurance

**Attach the statement**

 Pembina 2021 Assurance Statement Final\_July 20 2022.pdf

**Page/ section reference**

**Relevant standard**

**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?**

No, we do not verify any other climate-related information reported in our CDP disclosure

## 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
- BC carbon tax
- Canada federal fuel charge
- Saskatchewan OBPS - ETS

### 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**

70

**% of Scope 2 emissions covered by the ETS**



0

**Period start date**

January 1, 2021

**Period end date**

December 31, 2021

**Allowances allocated**

99,780

**Allowances purchased**

46,671

**Verified Scope 1 emissions in metric tons CO<sub>2</sub>e**

1,277,900

**Verified Scope 2 emissions in metric tons CO<sub>2</sub>e**

0

**Details of ownership**

Other, please specify

Multiple facilities within Pembina's operational control, regardless of ownership

**Comment**

Scope 2 emissions are not directly verified under Alberta TIER.

**Saskatchewan OBPS - ETS**

---

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

0.6

**% of Scope 2 emissions covered by the ETS**

**Period start date**

January 1, 2021

**Period end date**

December 31, 2022

**Allowances allocated**

0

**Allowances purchased**

0

**Verified Scope 1 emissions in metric tons CO<sub>2</sub>e**

10,056.23

**Verified Scope 2 emissions in metric tons CO<sub>2</sub>e**

0

**Details of ownership**

Facilities we own and operate

**Comment**

Our reporting period for assets under this ETS is for 2021 and 2022 calendar years combined. No compliance verification or ETS activity in 2021. Preliminary 2021 emissions data is included above. Scope 2 emissions are not directly verified under Saskatchewan OBPS.

**C11.1c**

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

**BC carbon tax**

---

**Period start date**

January 1, 2021

**Period end date**

December 31, 2021

**% of total Scope 1 emissions covered by tax**

11

**Total cost of tax paid**

9,968,754

**Comment**

Includes carbon taxes paid on stationary combustion, flaring and products placed into market.

**Canada federal fuel charge**

---

**Period start date**

January 1, 2021

**Period end date**

December 31, 2021

**% of total Scope 1 emissions covered by tax**

1

**Total cost of tax paid**

1,901,815

**Comment**

Includes stationary combustion, and flaring from assets outside of AB TIER and SK OBPS.

## C11.1d

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

Pembina operated facilities that are regulated under an emission trading system strive to meet the regulatory performance benchmarks and/or operate as efficiently as possible to mitigate exposure to carbon compliance obligations. When a facility cannot meet carbon performance benchmarks, the facility will utilize project-based or market carbon credits to offset compliance obligations to the extent permitted by regulation or purchase carbon credits through the appropriate government fund.

Pembina is also investing and implementing lower carbon technology (i.e. cogeneration plants) to further improve emission intensity performance relative to the regulatory benchmarks and earn performance credits when available.

## 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 origination

##### Project type

Wind

##### Project identification

Garden Plains PPA

##### Verified to which standard

Other, please specify  
Alberta Carbon Registry

##### Number of credits (metric tonnes CO<sub>2</sub>e)

11,002

##### Number of credits (metric tonnes CO<sub>2</sub>e): Risk adjusted volume

##### Credits cancelled

No

**Purpose, e.g. compliance**

Other, please specify

Various

## C11.3

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

No, and we do not currently anticipate doing so in the next two years

## C12. Engagement

### C12.1

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

Yes, our suppliers

Yes, other partners in the value chain

### C12.1a

**(C12.1a) Provide details of your climate-related supplier engagement strategy.**

---

**Type of engagement**

Information collection (understanding supplier behavior)

**Details of engagement**

Collect climate change and carbon information at least annually from suppliers

**% of suppliers by number**

100

**% total procurement spend (direct and indirect)**

100

**% of supplier-related Scope 3 emissions as reported in C6.5**

**Rationale for the coverage of your engagement**

Pembina recognizes the need to engage with its suppliers on climate-related issues. As part of the pre-qualification and renewal process as well as our standard supplier contract, suppliers are asked to maintain a statement of compliance with Pembina's HSE policy. More recently we have implemented a supplier code of conduct as part of Pembina's supplier on-boarding and compliance program. Included in this code are details of Pembina's environmental stewardship commitments. Furthermore, beginning in 2022 all of Pembina's suppliers are asked to comply with the supplier code of conduct and complete the standard ISN ESG questionnaire, which includes topics important to Pembina, including climate-related issues.

### **Impact of engagement, including measures of success**

Pembina is committed to protecting the health and safety of workers, the public and safeguarding the environment affected by Pembina's activities. Suppliers are an important extension of Pembina's business and Pembina wants to ensure that suppliers understand what Pembina expects from them with regards to our HSE policy and supplier code of conduct, including climate issues. We initially plan to measure our success in this area through the number of suppliers who complete the ESG questionnaire by the end of 2022. Furthermore, we expect to see increased awareness and engagement with our suppliers in addition to an expanded understanding of our total scope 3 emissions as a result of these efforts.

### **Comment**

## **C12.1d**

### **(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.**

Pembina shares information on the performance as well as compliance around emissions with Pembina's owner partners at certain large facilities. In addition, Pembina participates in discussions around any major investment decisions related to climate or emissions technology. Finally, Pembina also engages with its owner partners in the decision making process around the use of carbon credits.

In addition, Pembina participates in discussions with landowners around the environmental impacts, including climate change, of Pembina's projects. Pembina consults with local Indigenous communities, landowners and other local stakeholders to minimize Pembina's environmental footprint. By working closely with Indigenous communities and local stakeholders to identify potential risks and or areas of concerns, Pembina is able to incorporate their input into project design and future operating plans. This helps to reduce potential for future harm to the environment.

As an example, in 2021, Pembina and the Haisla Nation announced a partnership agreement whereby Pembina will become the Haisla Nation's partner in the development of the proposed Cedar LNG Project. The Cedar LNG Project is strategically positioned to leverage Canada's abundant natural gas supply and British Columbia's growing liquified natural gas ("LNG") infrastructure to produce industry-leading low carbon, low-cost Canadian LNG for overseas markets. The Cedar LNG Project will be the largest First Nation-owned infrastructure project in Canada and will have one of the cleanest environmental profiles in the world. This partnership is the result of meaningful collaboration, with a focus on environmental stewardship, Indigenous prosperity and inclusion and mutual economic benefit. The project's floating design offers significantly less environmental impact on the Douglas Channel coastline and the facility will be interconnected to the existing BC Hydro transmission system, utilizing renewable electricity to make the Cedar LNG Project one of the lowest emission intensity LNG facilities globally. Cedar LNG expects to make a final investment decision in 2023 and subject to

additional factors, including regulatory and environmental approvals, the expected in-service date for the project is planned for 2027.

## C12.2

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

No, but we 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 through trade associations

**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**

Pembina's External Affairs unit is responsible for ensuring that all engagement with government and public sector stakeholders on matters of legislative, regulatory, or policy development related to climate change is conducted in a manner that is aligned to our business's overarching climate change strategy. We develop robust engagement plans on an annual basis with all priority stakeholder groups and identify issues upon which we can engage to advance of our climate change strategy.

## 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**

Mandatory climate-related reporting

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

Alberta's Technology Innovation and Emissions Reduction Regulation

**Policy, law, or regulation geographic coverage**

Sub-national

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

Canada

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

Support with minor exceptions

**Description of engagement with policy makers**

Pembina recognizes the need to transition to a cleaner economy while supporting growth and innovation of the global energy sector.

Pembina has engaged with Canadian federal and provincial governments on policies that guide Canada's transition to a lower carbon economy, including emissions reporting regulations such as the provincial TIER (Technology, Innovation and Emission Reduction) regulation (Alberta) and will continue this engagement in 2022.

Pembina has consistently and proactively interacted with regulators and provincial and federal policymakers to seek clarification on current or emerging emission reporting requirements and standards.

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

Pembina believes in a balanced approach to transitioning towards a lower carbon economy - one that addresses society's needs for affordable and reliable energy, while mitigating the risks associated with climate change. Pembina has advocated for regulatory frameworks within Alberta that support effective and outcome-based regulations for the management and reduction of carbon emissions through the lifecycle of the midstream. Pembina encourages policies and regulations that promote Alberta based solutions to transitioning to a lower carbon economy, while supporting market competitiveness, innovation and regulatory effectiveness.

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

Yes, we have evaluated, and it is aligned

---

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

Methane emissions

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

Alberta's Methane Emission Reduction Regulation; Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting; Directive 017: Measurement Requirements for Oil & Gas Operations

**Policy, law, or regulation geographic coverage**

Sub-national

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

Canada

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

Support with minor exceptions

**Description of engagement with policy makers**

In the past several years, Pembina has been in regular contact with federal and provincial policymakers and regulators and provided input on the evolving regulations of methane emissions in Canada.

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

Pembina has advocated for a policy approach that ensures reduction of methane emissions from the midstream sector is cost effective, promotes innovation, and does not undermine competitiveness.

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

Yes, we have evaluated, and it is aligned

---

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

Other, please specify  
Hydrogen

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

Hydrogen Strategy for Canada

**Policy, law, or regulation geographic coverage**

National

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

Canada

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

Support with minor exceptions

**Description of engagement with policy makers**

In 2021, Pembina continued engaging with policymakers in Canada to provide its early views and perspectives on emerging hydrogen policies that position hydrogen as a lower emission energy solution. Pembina is well positioned to support the growth of the hydrogen sector in Alberta and as the policy process evolves further, Pembina will seek opportunities to discuss areas of collaboration to support the development of this emerging lower carbon fuel.



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

For Alberta to capture its hydrogen advantage, Pembina encourages policy options and a strategic approach that will help overcome technical and commercial challenges and allow hydrogen to be more broadly adopted for use in industrial processes, transportation and power generation.

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

Yes, we have evaluated, and it is aligned

---

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

Other, please specify  
Clean Fuels Standard

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

Clean Fuels Standard

**Policy, law, or regulation geographic coverage**

National

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

Canada

**Your organization’s position on the policy, law, or regulation**

Neutral

**Description of engagement with policy makers**

The Clean Fuel Standard is an important part of the Canadian federal government’s plan to tackle climate change and reduce emissions. In the past several years, Pembina has participated in conversations with policymakers, industry peers and other stakeholders to understand the impact of the Clean Fuel Standard on industry and provide input on the development of the regulations where relevant.

**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

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

Other, please specify

Carbon Capture, Utilization & Storage (CCUS)

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

Canada's CCUS Strategy

**Policy, law, or regulation geographic coverage**

National

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

Canada

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

Support with no exceptions

**Description of engagement with policy makers**

Carbon Capture, Utilization and Storage (CCUS) has been seen by many as an important technology to reduce GHG emissions. In Canada, federal and provincial governments measures have allowed the deployment of several world-class CCUS projects.

In the past year, Pembina started examining the role it can play in the commercialization of CCUS in Alberta and leveraging the technology to drive down industrial emissions in the province. In 2021, Pembina announced that it had partnered with TC Energy to jointly develop a world-scale carbon transportation and sequestration system, the ACG. When fully constructed, ACG will be capable of transporting more than 20 million tonnes of carbon dioxide annually. By leveraging existing pipelines and a newly developed sequestration hub, the ACG will offer the infrastructure platform needed for Alberta-based industries to effectively manage their emissions and contribute positively to Alberta's lower-carbon economy.

Pembina is working with the federal and provincial governments to evaluate policies, regulations and programs currently in place that can support future CCUS investment in Canada and Alberta. In 2021, the company was invited to sit on the Government of Alberta's CCUS Industry Advisory Group and has engaged with many government agencies on the growth of the CCUS industry in the province. Pembina is also collaborating with Finance Canada on the design of a CCUS tax measure to support and accelerate the development of CCUS technologies in the country.

**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?**

Yes, we have evaluated, and it is aligned

## C12.3b

**(C12.3b) Provide details of the trade associations your organization engages with which are likely to take a position on any policy, law or regulation that may impact the climate.**

---

**Trade association**

Other, please specify  
Canadian Propane Association (CPA)

**Is your organization's position on climate change consistent with theirs?**

Mixed

**Has your organization influenced, or is your organization attempting to influence their position?**

We are not attempting to influence their position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

CPA is the national association for Canada's propane industry, dedicated to promoting propane as an essential energy solution. CPA works with governments and regulators on policy issues that have ramifications for the propane industry in Canada, including the recently released Clean Fuel Standard regulations. Pembina participates in and supports CPA's advocacy work on issues of relevance to Pembina, such as the Clean Fuel Standards regulations. The company is represented on CPA's board of directors, on CPA's committees responsible for government engagement, policy analysis and advocacy work.

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

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

Yes, we have evaluated, and it is aligned

---

**Trade association**

Other, please specify  
Alberta Industrial Heartland Association (AHIA)

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

AIHA is a municipal economic development partnership that encourages sustainable industrial development in the northeast Edmonton capital region. AIHA seeks to position itself as a globally recognized, diversified, eco-industrial cluster, with a world-leading hydrocarbon processing industry, that sets the global standard for industrial ESG leadership. The organization promotes low-carbon industrial growth opportunities based on access to two large carbon capture and storage, and two hydrogen infrastructure systems positioned within the industrial region. AIHA acknowledges the important role heavy industry must play in helping Canada achieve its net-zero aspirations and is consistently seeking opportunities to partner with industry and government to reduce the region's overall climate impact. Based on expertise from industrial operators active within the region, AIHA regularly works with all three levels of government to ensure a healthy policy, program, regulatory, and legislative environment for a competitive framework for industry to grow, innovate, and pursue carbon reduction opportunities. AIHA encourages government to return carbon tax revenues to the industrial job-creators so as to support the necessary technological investments that further reduce emissions and maintain global competitiveness.

Pembina regularly partners with AIHA to host government delegations seeking to learn more about Pembina's operations in Alberta's Industrial Heartland, including carbon reduction opportunities and challenges. Through its work in the Northeast Capital Industrial Association (NCIA), as well as independently, Pembina staff consistently help inform AIHA's advocacy, engagement, and regulatory positions pertaining to climate change. Pembina also partners with AIHA to attract new companies into the region whose investment has the ability to grow advanced manufacturing capacity while at the same time reducing the overall carbon footprint of production on a per unit basis.

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

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

Yes, we have evaluated, and it is aligned

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**Trade association**

Other, please specify

Northeast Capital Industrial Association (NCIA)

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We are not attempting to influence their position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

NCIA is an Alberta-based association that seeks to promote sustainable industrial growth through environmental, socio-economic, and public safety programs. The NCIA represents the interests of industry in Alberta's Industrial Heartland area and works with government organizations and community groups at the provincial, regional, and local levels to address environmental, health, safety, infrastructure, and community issues.

Pembina participates in and supports NCIA's advocacy work on issues of relevance to the company, including issues related to climate policies. A representative of Pembina is currently the Chair of the board of directors of the NCIA.

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

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

Yes, we have evaluated, and it is aligned

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**Trade association**

Other, please specify

Strathcona Industrial Association (SIA)

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We are not attempting to influence their position

**State the trade association’s position on climate change, explain where your organization’s position differs, and how you are attempting to influence their position (if applicable)**

SIA is an industry association representing east Edmonton and Strathcona County heavy industrial operators in Alberta, that provides a common voice for industry. SIA members share a commitment to safe and environmentally responsible operations. By consistently monitoring and measuring performance, the SIA assesses the effects of industry and gathers scientifically valid data about current local air quality and long-term trends. This information is shared through ongoing reporting to Alberta Environment and Parks.

Pembina has representatives on the Board of Directors and the Environment Committee of the SIA. Pembina supports SIA’s work on advancement in the areas of environmental monitoring, including current local air quality and long-term trends, performance, safety promotion, public engagement and community well-being.

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization’s funding**

**Have you evaluated whether your organization’s engagement with this trade association 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).**

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**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

 2022-Information-Circular.pdf

**Page/Section reference**

Page 3, 33, and 54

**Content elements**

Emission targets

**Comment**

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**Publication**

In voluntary sustainability report

**Status**

Underway – previous year attached

**Attach the document**

 Performance-Data-tables-for-2021.pdf

**Page/Section reference**

Page 2 to 6

**Content elements**

Emissions figures

Other metrics

**Comment**

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**Publication**

In voluntary communications

**Status**

Complete

**Attach the document**

 Pembina-AnnualSummary-2021.pdf

**Page/Section reference**

4,7 and 8

**Content elements**

Governance

Strategy

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	Senior Vice President, External Affairs & Chief Legal and Sustainability Officer	Other C-Suite Officer

## 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