The Pathways Alliance Vision

Pathways Alliance

January 2023

The Pathways Alliance

- The **Oil Sands Pathways to Net Zero Alliance** consists of Canada's six largest oil sands producers, who operate facilities accounting for 95% of oil sands production.
- The **Pathways Alliance goal**, working collectively with the Federal and Alberta governments, is to achieve **net zero greenhouse gas (GHG) emissions from oil sands operations by 2050** to help Canada meet its climate goals, including its Paris Agreement commitments and 2050 net zero aspirations.
- Our plan includes reducing current oil sands GHG emissions by about **22 Mt of CO_2e/yr** by 2030 towards achieving net zero 2050.

Canadian Natural

cenovus ENERGY

ConocoPhillips Canada

Imperial

MEG Energy

Suncor

A phased approach

Phase 1
2021-2030

- Enable a carbon capture network, CO_2 transportation line and carbon storage hub in Cold Lake
- Execute CO_2 capture on oil sands facilities
- Advance innovative in situ oil sands recovery technologies (e.g. use of solvents such as propane)
- Make significant additional R&D investment to lower the costs of GHG-reduction technologies
- Continue deployment of energy efficiency & cogeneration projects

Phase 2
2031-2040

- Expand carbon capture within infrastructure corridor
- Expand application of low GHG intensity in situ oil sands recovery/process improvements
- Advance R&D on potential use of hydrogen or small modular reactors for oil sands power generation

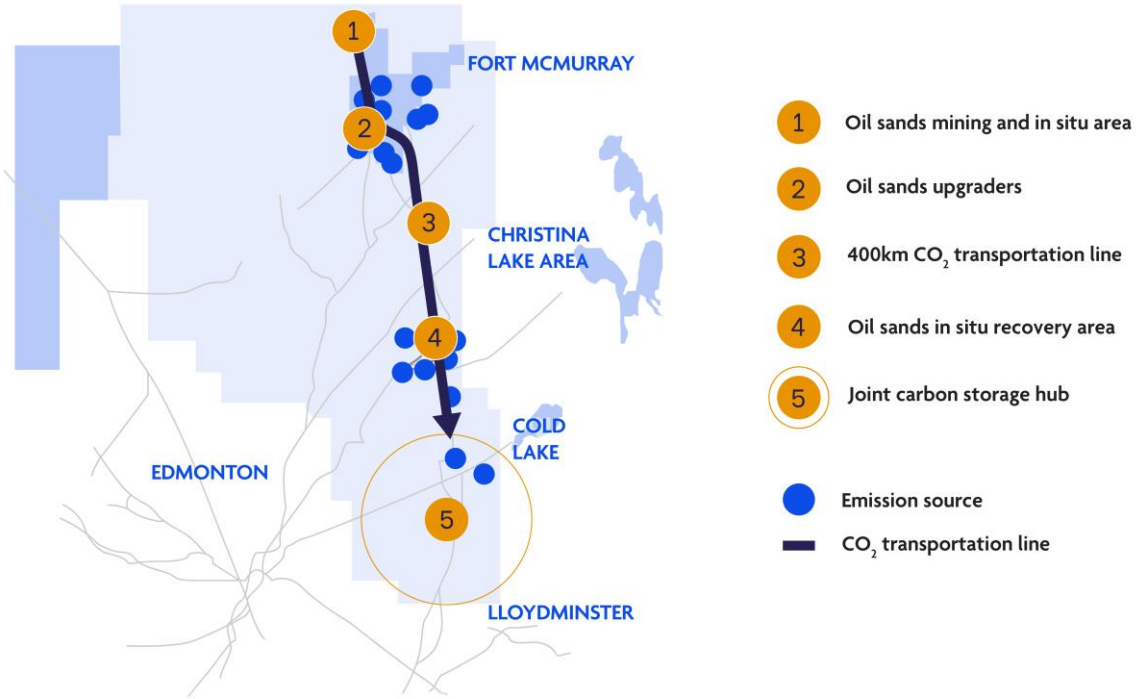
Phase 3
2041-2050

- Further expand carbon capture on remaining accessible streams
- Continue process improvements and innovations including, energy efficiency, fuel switching and electrification projects
- Advance emerging technologies, including direct air capture
- Expand hydrogen or small modular reactor capacity if successful

The Pathways foundational project – the “anchor”

- The Pathways vision is anchored by a **major carbon capture utilization and storage (CCUS)**[1] **system including capture facilities and a transportation line** connecting oil sands facilities in the Fort McMurray, Christina Lake and Cold Lake regions to a **carbon storage hub** near Cold Lake.
- Benefits of the foundational project
  - Enables technology development to lower the cost of carbon capture projects
  - Accelerates opportunities to deploy innovative capture solutions and positions Canada to export this technology and expertise
  - The same infrastructure is also a key enabler for other industries The first stage of the plan includes about $16.5B of investment by 2030 for the CCS project
- The CCS transportation line would be able to be expanded in phases to gather captured CO_2 from 20+ oil sands facilities.
  - Phase 1 - volumes of 10-12 Mt/yr from 14 facilities
  - Phases 2/3 - expansion capability for a total of up to 40 Mt/yr

Proposed Transportation Line



[1] CCUS involves using safe and proven technologies to capture CO_2 from fuel combustion or industrial processes, transport it via pipeline or other methods and use the CO_2 to create valuable products or permanently store it deep underground in geological formations.

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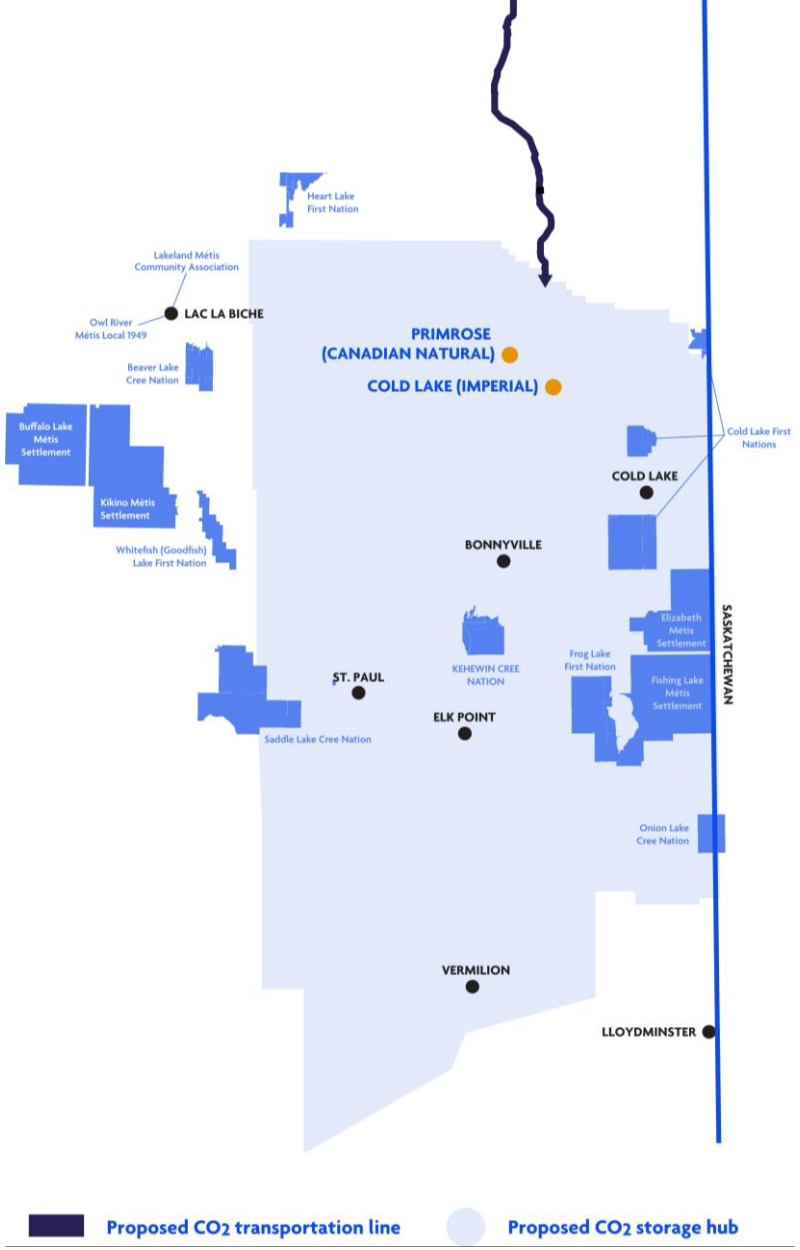
Foundational Project – work to date

- Early engagement with more than 20 Indigenous communities along the proposed transportation and storage network corridor
- Selected by the Government of Alberta to continue exploratory work on the CCS hub to safely and permanently store CO_2 captured from oil sands operations and other interested industries.
- Conducting Engineering studies for the Phase 1 CO_2 capture facilities.
- Nine feasibility studies completed on oil sands sites with engineering work advancing.
- Completed pre-engineering work on the 400-kilometre pipeline that will carry captured CO_2 to the storage hub; more detailed engineering work is about to begin.
- Environment field programs underway to support regulatory application submissions.



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Additional major projects

- The Pathways Alliance plans to spend an additional $7.6 billion on other significant emissions reduction projects by 2030. They are also key our goal of a 22MT reduction by the end of the decade.
- This planned funding would be for major decarbonization projects advanced by member companies such as:
    - Wider use of solvents in production
    - Increased energy efficiency
    - Additional cogeneration and electrification projects.
- Pathways members are also investing in R&D to enable future phases of the path to net zero to be achieved.

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Additional technologies

Technical working groups are studying and advancing more than 80 technologies that could potentially be deployed to help further reduce emissions in later phases of its plan.

Examples include:

- A pilot project on molten carbonate fuel cell technology to concentrate CO2 streams for more efficient capture.
- Development of direct air capture technology to remove CO2 from the ambient air for underground storage and/or conversion to liquid fuels.
- Continued commercial and pilot projects on the use of solvent injection to reduce the amount of steam needed to extract oil.
- More extensive use of clean-burning hydrogen fuel in oil sands operations.
- Advancement of natural gas decarbonization technologies for in situ operations.
- Studies on the potential for using low-emission deep geothermal energy in the oil sands.
- Alternative bitumen extraction methods such as in-pit extraction that separates bitumen in the mine pit, and showing substantial emissions reduction potential by minimizing transportation
- Electrification of mining trucks to move materials more efficiently and reduce emissions.

The world will continue to require oil

IEA's Net Zero by 2050 scenario shows a significant oil demand and incremental oil supply required to meet demand

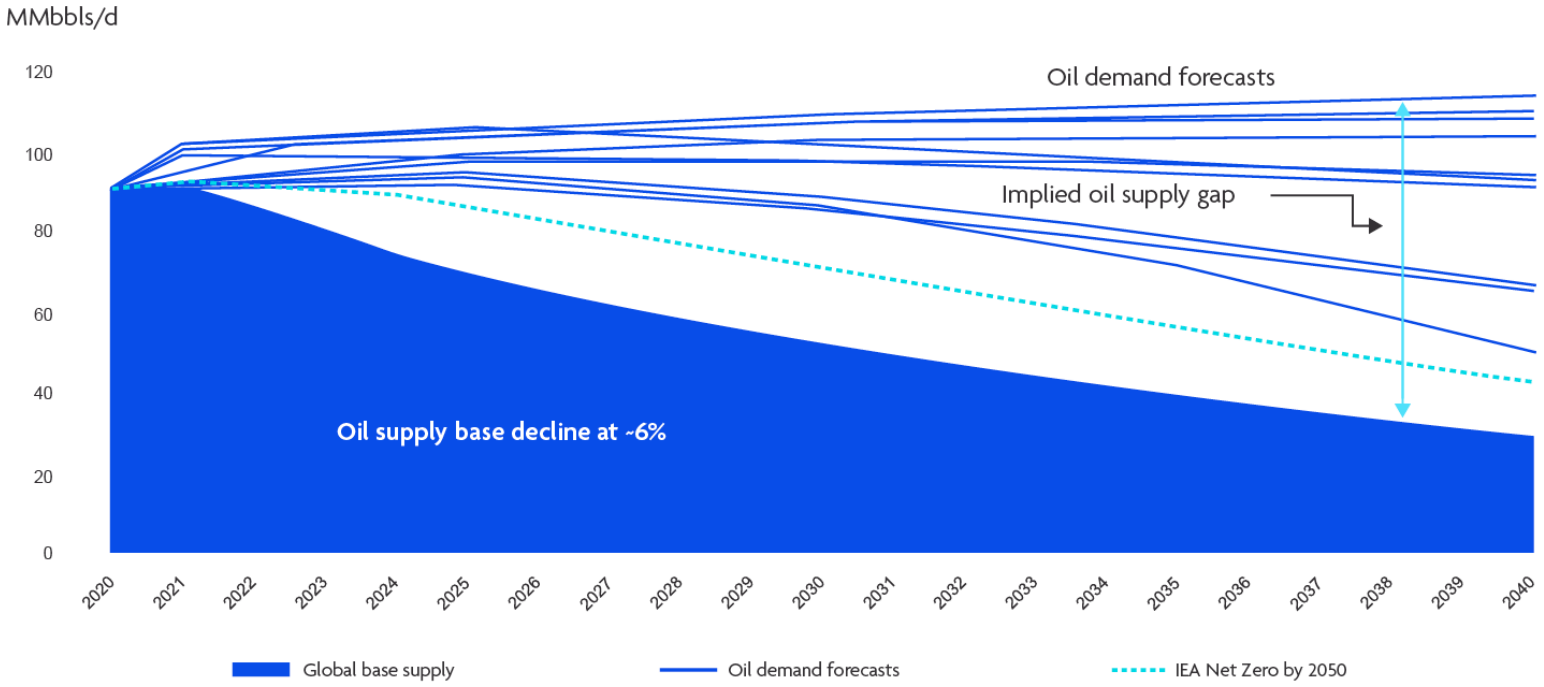
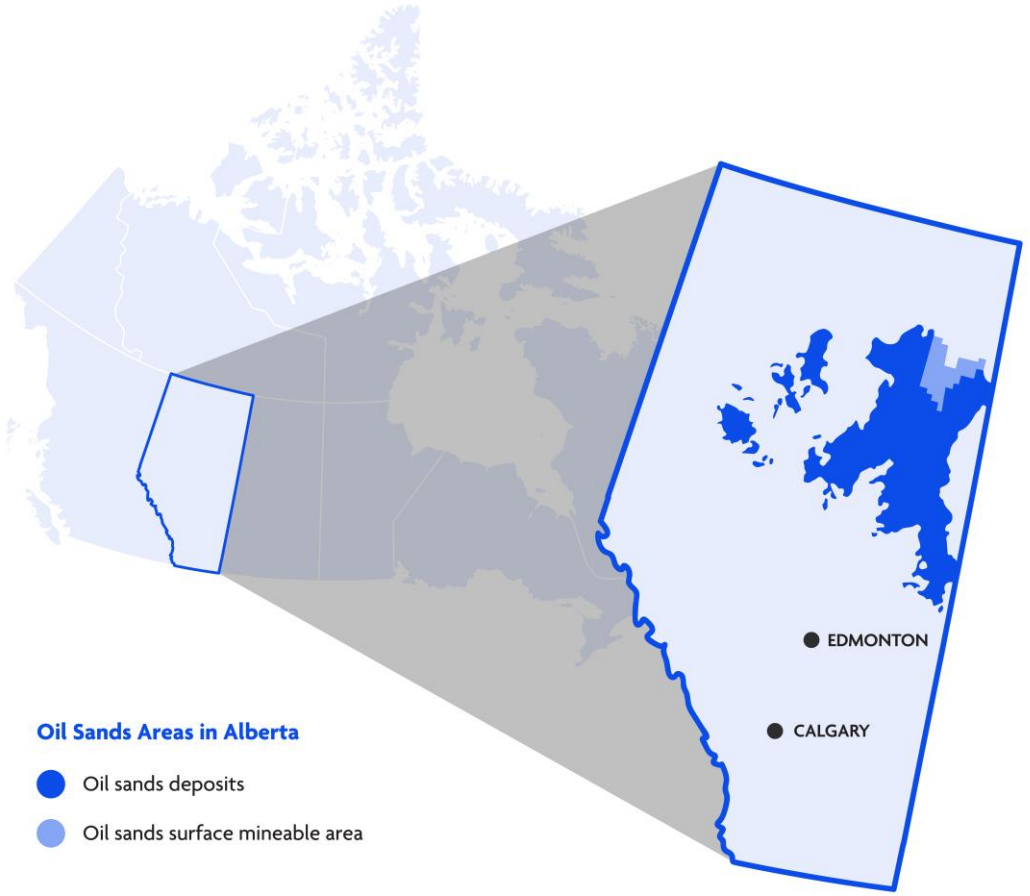


Chart sources: BMO Capital Markets, BP Plc, Equinor, Exxon Mobil, IHS Markit, IEA, OPEC, Shell (2021). [1]U.S. Energy Information Administration, October 2021.

Canada's oil sands are produced responsibly

- 80% of resource recoverable using in situ methods[1], including steam-assisted gravity drainage (SAGD).
- Working to reduce emissions and water use; accelerate land reclamation.
- Investing in potentially game-changing technologies.
- Operating under stringent environmental and governance regulations.
- Through new technologies and innovations, GHG emissions intensities have dropped 22% (average per barrel) between 2011 and 2019[2].



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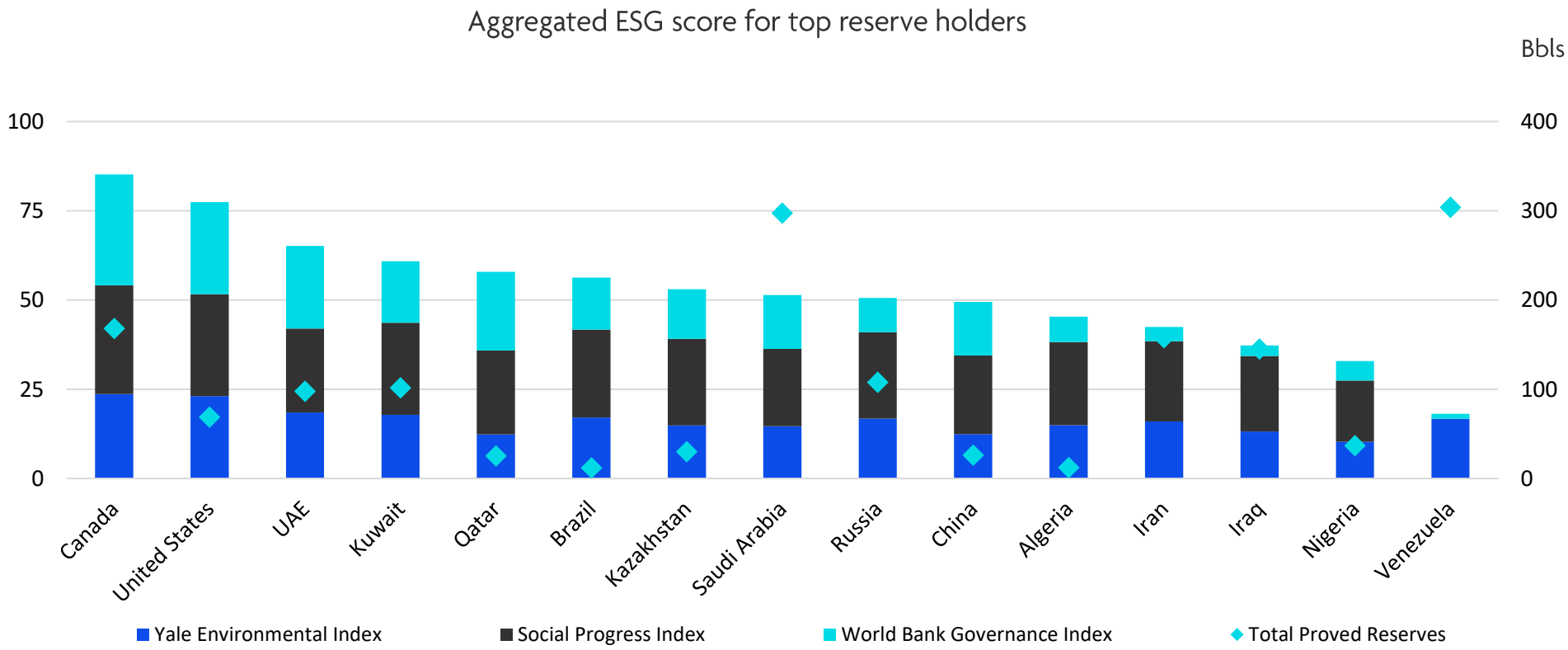
Sources: 1. Government of Alberta (https://www.alberta.ca/oil-sands-101.aspx#:~:text=Approximately%2080%25%20of%20oil%20sands,recovered%20through%20in%2Dsitu%20production); 2. Government of Alberta 2021-24 Fiscal Plan (Alberta Budget 2021) - February 25, 2021

Canadian oil should be preferred barrel globally



Sources: ESG Scores – aggregation using an equal weighting (1/3) for each of Yale Environmental Performance Index, Social Progress Index and World Bank Governance Index. Reserves - BP Statistical Review of World Energy 2021 based on government and published data.

Canada is tackling emission reduction

An economy-wide target to reduce GHG emissions in Canada by **40-45%** from 2005 levels by 2030 and a commitment to net zero by 2050.

A target to reduce methane emissions **75%** below 2012 levels by 2030, and commitment to join the Global Methane Pledge.

A price on carbon ($50/t in 2022, rising to $170/t in 2030).

Alberta led on carbon pricing – first province to implement output-based pricing in 2007.

Alberta has cap on oil sands emissions; federal commitment to cap all oil and gas emissions.

Alberta directs industry Technology Innovation and Emissions Reduction regulation payments to potential emissions reduction technologies.

Working with governments

Government of Canada

- Investment Tax Credit announced in the 2022 fall federal budget is a positive and welcome support for carbon capture utilization and storage.
- Other programs, such as Net Zero Accelerator/Strategic Infrastructure Fund, offer potential collaborative approaches to reduce emissions.

Province of Alberta

- Entered into an agreement with the Government of Alberta to start detailed evaluation to support the CCS hub and enable safe and permanent storage of CO2 in the Cold Lake Region.
- Actively discussing other programs with the Alberta government on emission reductions.

We will continue working in collaboration with Canadian federal and provincial governments on an effective fiscal and policy framework as we meet the world's demands for lower GHG emissions and the oil it needs as part of the energy mix.

Advisory

Cautionary Statement: Statements of future events or conditions on this presentation, including projections, targets, expectations, estimates, and business plans are forward-looking statements. Forward-looking statements can be identified by words such as achieve, aspiration, believe, anticipate, intend, propose, plan, goal, seek, project, predict, target, estimate, expect, forecast, vision, strategy, outlook, schedule, future, continue, likely, may, should, will and/or similar references to outcomes in future periods. Forward-looking statements on this presentation include, but are not limited to, references to the viability, timing and impact of the net zero plan and the development of pathways in support of a net-zero future; support for the pathways from the Government of Alberta and the Government of Canada; the ability to enable net zero emissions from oil production and preserve economic contribution from the industry; the deployment of technologies to reduce GHG emissions; the ability to create jobs, accelerate development of the clean tech sector, provide benefits for other sectors and help maintain Canadians' quality of life; and making economic investments to ensure a successful transition to a net zero world and delivering long term value to shareholders. All net-zero references on this website apply to emissions from oil sands operations (defined as scope 1 and scope 2 emissions).

Forward-looking statements are based on current expectations, estimates, projections and assumptions at the time the statements are made. Actual future results, including expectations and assumptions concerning: demand growth and energy source, supply and mix; amount and timing of emissions reductions; the adoption and impact of new facilities or technologies, including on reductions to GHG emissions; project plans, timing, costs, technical evaluations and capacities, and the ability to effectively execute on these plans and operate assets; that any required support for the pathways from the Government of Alberta and the Government of Canada will be provided; applicable laws and government policies, including climate change and restrictions in response to COVID-19; production rates, growth and mix; general market conditions; and capital and environmental expenditures, could differ materially depending on a number of factors. These factors include global, regional or local changes in supply and demand for oil, natural gas, and petroleum and petrochemical products and the resulting price, differential and margin impacts; political or regulatory events, including changes in law or government policy and actions in response to COVID-19; the receipt, in a timely manner, of regulatory and third-party approvals including for new technologies; lack of required support from the Government of Alberta and the Government of Canada; environmental risks inherent in oil and gas exploration and production activities; environmental regulation, including climate change and GHG regulation and changes to such regulation; availability and allocation of capital; availability and performance of third-party service providers; unanticipated technical or operational difficulties; project management and schedules and timely completion of projects; reservoir analysis and performance; unexpected technological developments; the results of research programs and new technologies, and ability to bring new technologies to commercial scale on a cost-competitive basis; operational hazards and risks; general economic conditions, including the occurrence and duration of economic recessions; and other factors referenced by the companies' in their most recent respective annual reports and management's discussion and analysis, as applicable.

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