



BUSINESS COUNCIL
OF ALBERTA



Advancing Pathways Alliance CCS Project Needed to Define the Decade and Beyond

Kendall Dilling
Pathways Alliance

**DEFINE
THE DECADE**

Discussion Paper Series



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About the Business Council of Alberta

The Business Council of Alberta is a non-partisan, for-purpose organization dedicated to building a better Alberta within a more dynamic Canada. Composed of the chief executives and leading entrepreneurs of the province's largest enterprises, Council members are proud to represent the majority of Alberta's private sector investment, job creation, exports, and research and development. The Council is committed to working with leaders and stakeholders across Alberta and Canada in proposing bold and innovative public policy solutions and initiatives that will make life better for Albertans.

Land Acknowledgement

In the spirit of truth, reconciliation, and respect, we honour and acknowledge the lands upon which we live and work as guests, including the traditional territories of the First Nations in Treaties 6, 7, and 8 and the citizens of the Metis Nation of Alberta. We thank the First Peoples of this land, which we now call Alberta, for their generations of stewardship of the land, and we seek to walk together in the spirit of truth and reconciliation to build a shared future for all in Alberta.

This document reflects the views of the author based on their own research and expertise. This is published by the Business Council of Alberta. It may not necessarily reflect the perspective of all BCA member companies, and should not be read as the position of any one member or of the Council itself.

About the Author

As President, Pathways Alliance, Kendall is responsible for the overall coordination of technology and project development and external relations on behalf of the Alliance members.

Prior to his role at Pathways Alliance, Kendall was Cenovus Energy's Vice-President, Environment & Regulatory, where he was responsible for environmental strategy, managing the regulatory process for major approvals and leading environmental policy development efforts with various levels of government.

With nearly 30 years in the oil and gas industry, Kendall has expertise in various areas, including environment, regulatory, health and safety, Indigenous and stakeholder relations, surface land and business development. Prior to his work at Cenovus, Kendall worked for various Canadian and multi-national pipeline and energy companies.

Kendall holds a Bachelor of Science, a Bachelor of Arts and an MBA from the University of Calgary.



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Canada’s oil sands sector has a critical role to play in ensuring Canadians have access to secure and affordable energy while contributing about \$60 billion annually to Alberta and Canada’s economy.

A successful and sustainable oil sands industry is also fundamental to maintaining our high quality of life. In 2022, royalties from oil sands production were enough to pay for half of Alberta’s public health care expenses.

At the same time, operational emissions from oil sands production represent about 11 per cent of Canada’s total greenhouse gas emissions and, as such, reducing emissions from operations is an essential part of a collaborative effort to help Canada meet its climate goals.

The confluence of these three roles and responsibilities is where Alberta’s oil sands sector can help deliver long-term, sustainable prosperity for decades to come.

There is no single pathway to success. The work by oil sands producers needs to happen in parallel with the deployment of wind, solar, and other forms of renewable energy; increased investment in hydrogen; improved efficiency in the production of critical minerals; and greater advances of transformational technologies such as small modular reactors or direct air capture of carbon dioxide (CO₂).

To truly define a decade that will ensure an economically viable path to achieve Canada’s 2050 net zero ambitions, we need to start by scaling up the most readily deployable technology to sharply reduce emissions—carbon capture and storage (CCS).

CCS is a proven technology that has been successfully used in Canada and worldwide for decades to capture emissions from industries, including cement, steel, and oil and gas. Canada is already a world leader in carbon capture, with projects in Alberta and Saskatchewan storing millions of tonnes of CO₂ every year.

Alberta is fortunate to have both ideal geology for carbon sequestration, world-class regulatory oversight, and a highly experienced industry. There may not be a more suitable industry or region anywhere to build a CCS project at this scale. And the time to do so is in this decade.



CCS around the world
Visuals for illustrative purposes only

Pathways Alliance’s ambitious proposal

The Pathways Alliance—composed of Canadian Natural, Cenovus Energy, ConocoPhillips Canada, Imperial, MEG Energy and Suncor Energy—is seizing the opportunity and collaborating on a proposed CCS project that would be one of the world’s largest.

The project is designed to have the capacity to transport captured CO₂ from more than 20 oil sands facilities to a hub in the Cold Lake region for safe, permanent underground storage.

The multi-stage project is anticipated to reduce net CO₂ emissions from operations by 10 to 12 million tonnes a year from several oil sands facilities in the first stage of the plan. That’s about half of Pathways Alliance’s overall goal of reducing emissions from operations (Scope 1 and 2 emissions) by 22 million tonnes a year in that initial stage.

The potential to expand the project to reduce an additional 30 million tonnes per year in subsequent phases makes this CCS project an essential part of the Pathways' 2050 goal of net zero emissions from operations.

The project benefits from Alberta's incredibly favourable conditions for geologic storage. An enormous, deep formation of Cambrian Basal Sandstone that underlies much of the Western Canadian Sedimentary Basin has the necessary natural seals and cap rock ideal for permanent storage of large volumes of CO₂.

It's a major reason why Alberta is a leader in CCS and has a strong track record of successfully deploying the technology.

Proven technology

CCS is a proven process resulting from more than 50 years of scientific and technical innovation in the energy sector and other industries.

The International Energy Agency (IEA), the International Renewable Energy Agency (IRENA), and the UN Intergovernmental Panel on Climate Change (IPCC) all say investment in large-scale CCS is essential to addressing the climate challenge.

Alberta is one of the places leading the way.

The Quest project (70 per cent owned by Pathways member Canadian Natural) and the Alberta Carbon Trunk Line project (50 per cent owned by Canadian Natural) have safely captured, transported, and stored more than 10 million tonnes of CO₂.

The area near Cold Lake, where Pathways is currently conducting test drilling, is estimated to have enough storage capacity—roughly a gigatonne—to store all the CO₂ from our existing oil sands operations.



Responsible advancement of CCS projects

Recognizing Alberta's immense potential to reduce CO2 emissions and help accelerate the development of CCS technology, the Government of Alberta allocated carbon sequestration evaluation rights to Pathways Alliance and other entities in 2022 through a competitive process.

Detailed evaluation of the proposed Pathways Alliance storage reservoir is nearing completion.

Hundreds of experts from Pathways member companies and engineering firms are conducting pre-engineering and detailed evaluation work for the project. This includes identifying potential risks and developing plans to prevent them from happening.

The plans leverage the industry's extensive knowledge of Alberta's geology and how to safely capture, transport and inject CO2. The plans include measurement, monitoring, and verification technologies and will all be part of the formal regulatory application Pathways will file with the Alberta Energy Regulator.

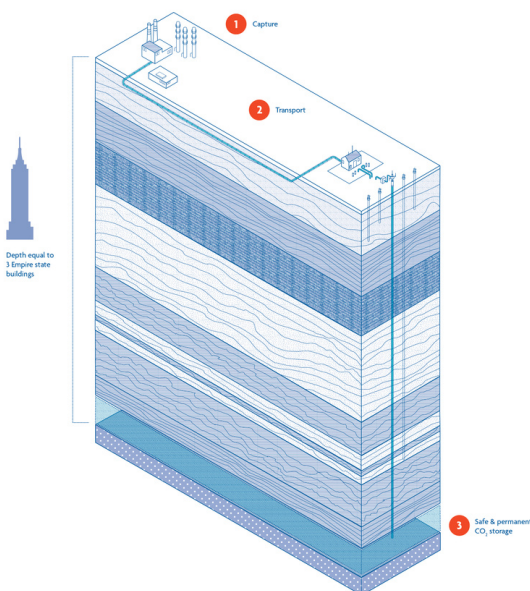
Along with the industry's extensive sub-surface and operations experience, there's another reason why CCS technology is ideally suited for the industry's emission reduction efforts.

The emissions from oil sands operations are highly concentrated at a handful of central processing facilities and oil sands mine sites. This means the engineering challenge of capturing emissions is far easier than for industries with many small and geographically distributed emission sources.

It's also recognized that communities and Indigenous groups near the Pathways Alliance proposed CCS network will need more than just reassurances that a project of this magnitude will be safely constructed and operated.

Formal consultation gets underway this summer. This follows two years of early engagement with about 25 Indigenous groups in Northeastern Alberta.

As the project advances along the regulatory process, this meaningful engagement will increase and continue throughout the life of the project. The relationships already in place between Pathways' companies and Indigenous and other communities will continue to strengthen as we work collectively to responsibly develop Alberta's oil sands resources and position the province as a world leader in low-carbon energy.



Three step process

Visuals for illustrative purposes only

How will these projects be funded?

The CCS projects showing early success globally, including those in Norway, the Netherlands, the United States, and Canada, have used a collaborative model where governments are co-investing in the projects alongside industry.

To meet Canada's emissions targets, a high level of collaboration is essential to enable investment in CCS projects that will continue to support Alberta's economic prosperity for decades. Together with anticipated fiscal supports from governments, total investment is expected to reach \$16.5 billion for the Pathways foundational project, including member CCS projects by 2030.

These are big commitments but at current production levels, the oil sands industry is expected to contribute as much as \$3 trillion to the Canadian GDP between 2020 and 2050. Construction of the Pathways project could add more than 100,000 Canadian jobs during the multi-year construction period.

For Canada to be a world leader in reducing emissions through carbon capture, industry must be competitive with other energy-producing jurisdictions.

CCS projects in other countries are receiving significant government support. Norway, for example, has developed investment incentives that cover two-thirds of the cost to build projects and 100 per cent of operating costs for 10 years. The United States created generous financial incentives to build major CCS projects in the 2022 U.S. Inflation Reduction Act.

Pathways Alliance is working collaboratively with governments to ensure Canada also has the appropriate policy levers in place to incentivize development and deployment of clean tech in all of Canada's regions and industrial sectors. Alignment between government, industry, and policy is key to moving projects forward that advance pathways to a global low-carbon future.

Other technologies

Pathways member companies are doing their part to ensure they remain a critical driver for Canada's economy while continually lowering emissions from their operations.

They are building on decades of innovation and experience to advance more than 70 new technologies or new applications of technology to support the path to net zero emissions from operations.

Some technologies being explored or implemented include:

- use of solvents to reduce natural gas combusted to make the steam for in situ operations;
- electrification of mine trucks to reduce onsite vehicle emissions;
- natural gas decarbonization and increased use of hydrogen to remove carbon prior to combustion in facilities;
- advancement of approaches to manage fugitive emissions;
- exploration of in-pit extraction processes to minimize emissions from mine trucks;
- research into direct air capture technology to remove CO₂ from the ambient air for storage and/or conversion to liquid fuels; and
- assessing the viability of small modular reactors—safe, versatile, and scalable technology that could supply zero-emissions energy for oil sands applications.

Canada's oil sands industry is proud of its role in helping to transform Canada's energy systems. When we all work together—industries, governments, Indigenous communities, and non-governmental organizations alike—Alberta and Canada will be able to define the decade, achieving our energy security needs, our economic potential, and our net zero goals.



1600, 635 8th Ave SW
Calgary, AB T2P 3M3

BusinessCouncilAB.com
info@businesscouncilab.com

Define the Decade is a vision for the future of Alberta and a roadmap to get there. To learn more about this project and how you can get involved, please visit DefinetheDecade.com