

Final Report from Business Council of Alberta's  
Energy & Environment Committee

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# From Outsized Emissions to Outsized Opportunities

**Part Two: Policies to Support an  
Alberta Low-Carbon Industrial  
Strategy**

March 2022



**BUSINESS  
COUNCIL  
OF ALBERTA**





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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 Business Council of Alberta based on our own research and on engagement with members and stakeholders. Alberta is a diverse place. In many cases, there are a range of views on an issue within the Council membership. This piece may not necessarily reflect the perspective of all BCA member companies, and should not be read as the position of any one member.*

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# Introduction

Canada's pathway to net zero runs through Alberta.

The federal government has announced ambitious targets for reducing greenhouse gas (GHG) emissions and enacted a range of policies to advance that goal. All regions of the country will need to contribute to this effort.

Alberta, in particular, has a crucial role to play in helping Canada meet its 2030 and 2050 [Paris Agreement](#) targets. The province's distinct economic base—which stems from its key industrial and agriculture sectors and its concentration of resources—has created significant wealth and opportunity for all Canadians, but also has resulted in disproportionately higher emissions than other provinces.

However, with the right policy framework in place, the alignment of the private sector and the federal and provincial governments, and the necessary scale of ambition for the challenge at hand, the Business Council of Alberta (BCA) believes Alberta's key sectors can seize a once-in-a-lifetime opportunity to build a sustainable and [prosperous future](#) for Alberta and Canada.

The time for contemplating action is over. Canada's climate policy cannot afford to become trapped in a loop of establishing targets, failing to follow through, and then setting even more stringent targets. Its regulatory processes cannot continue to impede its own GHG reduction goals. Passing net zero legislation, introducing sectoral emissions caps, and establishing government advisory bodies won't cut it. Neither will tightening the regulatory screws, which risks capital flight, carbon leakage, and destabilizing Alberta's electricity market. If Canada is to achieve its 2030 and 2050 goals, collective action with great pace and scale needs to start today.

This will not be easy. We need a plan that advances progress towards Canada's net zero ambitions while enabling Alberta's key industries to thrive—for a cleaner environment, for a more productive and competitive economy, and for prosperity today and well into the future. This is what an Alberta Low-Carbon Industrial Strategy must accomplish.



# Why a Low-Carbon Industrial Strategy for Alberta?

This paper is the second in a two-part project on creating a Low-Carbon Industrial Strategy for Alberta. Part one, *From Outsized Emissions to Outsized Opportunities: Laying the Groundwork for an Alberta Low-Carbon Industrial Strategy*, established the need for such a strategy and highlighted areas where action is already taking place and where additional opportunities exist.

Alberta needs a Low-Carbon Industrial Strategy because our emissions structure and economic base are unique within Canada. Alberta's industrial and agriculture sectors—including heavy industry, oil and gas, and electricity generation—make up 77% of total provincial emissions (211 megatonnes) and 29% of Canada's total emissions. Compounding these challenges, Alberta has not historically had access to cheap, low-carbon baseload and peaking power. Instead, the province relies on its abundance of low-cost natural gas, meaning that carbon-free electrification options are limited in the near term.

At the same time, Alberta's industrial and agriculture sectors have been an important historical driver of Canadian economic growth. These sectors have been central to improving Canadians' lives and advancing economic reconciliation with Indigenous Peoples, and they will continue to be vital to help finance our climate ambitions.

Alberta businesses know that the prosperity they generate is not an open invitation to increase GHGs unabated. The province's industrial and agriculture sectors have been successful at reducing their emissions intensity, and the phase-out of coal-fired electricity generation has significantly lowered emissions in that industry. However, dramatic additional GHG cuts across all sectors are required at speed and scale in order for Canada to meet its 2030 and 2050 GHG reduction targets.

The challenge is that a one-size-fits-all climate policy simply cannot work in a country as large and geographically diverse as Canada. The same priorities and policies that will help British Columbia, Manitoba, Quebec, or Ontario contribute to a prosperous and sustainable low-carbon Canada will not necessarily work in Alberta.

However, with the right policies in place, Alberta can:

- maximize the full potential of its assets and capabilities;
- play a leadership role in reducing domestic and global emissions; and
- create and export technology and energy solutions.

By so doing, we can build a prosperous and sustainable low-carbon future for all Canadians.

# Defining an Alberta Low-Carbon Industrial Strategy

An Alberta Low-Carbon Industrial Strategy (LCIS) is about recognizing the imperative of dramatically reducing anthropogenic GHG emissions in the valuable, but hard-to-decarbonize, energy-intensive industries that are concentrated in Alberta. It is about addressing the unique compliance challenges Alberta faces within the federation, understanding that these same challenges plague natural resource- and industrial-based economies around the world; and about adopting a challenge-driven approach to solve these major global problems right here in Alberta.

An LCIS is not meant to lay out a step-by-step plan for how Alberta's key sectors will account for each volume of GHG emissions they need to cut, nor is it meant to outline the sum totality of policy measures and private sector actions needed to achieve Paris targets.

Rather, an Alberta LCIS is about two things:

- » **Establishing the right set of enabling policies to maximize Alberta's industrial and agriculture sectors' ability to act boldly to contribute to, and flourish within, a Paris Agreement-aligned low-carbon Canadian economy; while also**
  - » **Positioning these sectors as the preferred global suppliers of new and existing in-demand products.**
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# Goals

Alberta's industrial and agriculture sectors are committed partners in pursuing Canada's climate objectives. Together, industry and government can deliver better outcomes for the environment, for Canadians, and for the future. But this will require acting boldly to build the next generation of energy and technologies while also decreasing the carbon emissions from our energy systems and exports today. To these ends, an Alberta LCIS is about achieving three specific, overlapping goals:

## 1. To meaningfully contribute to federal short- and long-term climate ambitions

Canada set ambitious goals under the [Paris Agreement](#) to reduce GHGs by 40-45% (below 2005 levels) by 2030 and achieve net zero by 2050. As 2030 is less than 8 years away, a rapid deployment of currently available decarbonization technology is needed to meet the earlier target. To contribute to net zero by 2050, new technologies that transform entire energy systems must be developed.

Reducing the 29% of Canadian emissions coming from Alberta's industrial and agriculture sectors will not be easy. The federal and provincial governments must partner with these sectors to enable the scale of investments needed and at the pace required to reduce emissions now and enable the infrastructure buildout and technology innovation necessary for 2050.

## 2. To meaningfully contribute to global climate solutions

While Canada is one of the largest [per capita emitters](#) in the world, climate change is a global challenge requiring collective action. Reducing GHGs in Canada is important, but it isn't enough.

Alberta can contribute to global GHG reductions in two ways. First, by decarbonizing industries at home while spurring innovation and preserving international competitiveness. In this way, the province can position itself as the lowest-emitting supplier of in-demand energy, goods, and services worldwide. [Norway](#) provides a useful model of this plan in action.

And second, Alberta can play a pivotal role in developing, commercializing, and exporting low-carbon technologies, solutions, and intellectual property. These high-value activities would yield significant economic gain and help make true progress on solving the global emissions challenge.



**Alberta can be a major contributor to short-term global climate solutions by exporting lower-carbon energy. To do so, however, we first need to dramatically reduce our production emissions. Doing this requires government support. But the benefits will be considerable: lower global emissions, economic growth, job creation, and higher government royalties and tax revenue.**

### 3. To create and maintain a prosperous Alberta economy now and in the future

Alberta's industrial and agriculture sectors have historically made an outsized contribution to wealth and job creation, investment across the country, and Indigenous prosperity. This must continue to be the case in a new, low-carbon economy.

Every province should create and maintain prosperity in ways that leverage their existing natural and human assets and their areas of expected comparative advantage. Financial markets and policymakers have made it abundantly clear that future prosperity is linked to the societal expectation that businesses contribute to climate change mitigation.

This is no different in Alberta, where near-term prosperity will be driven by the capacity for GHG reductions in its industrial and agriculture sectors while maintaining competitiveness. While less clear, the path to long-term prosperity requires continued GHG cuts in traditional industries and seizing emerging opportunities that fit within a low-emissions economy.

Alberta already has the natural assets and talent it needs to get started. But the broader policy environment—not just climate-specific policy—must spur economic growth, attract investment, and create jobs alongside emission cuts.



**Alberta's industrial and agriculture sectors are committed partners in pursuing Canada's climate objectives. Together, industry and government can deliver better outcomes for the environment, for Canadians, and for the future.**



# Lessons from the global energy transition #1:

## Aligning domestic GHG reduction goals with other key values

The transition towards a low-carbon economy will be fraught with challenges, unforeseen events, and unexpected consequences. Anticipating and reacting effectively as these arise is critically important for Canada to reduce emissions while avoiding significant negative economic and social impacts along the way.

To that end, Canada should always be looking abroad for lessons from other jurisdictions—both in terms of effective policy to emulate and mistakes to avoid.

One such example is the ongoing energy crisis in the European Union (EU) and the United Kingdom (UK). A confluence of events and policy decisions led to natural gas prices soaring in Europe. Households are facing enormous increases in energy and home heating costs. Utility companies are struggling. And energy-intensive businesses are cutting output and closing facilities.

At its core, this crisis results from policies that have reduced the region's ability to generate electricity from traditional, reliable power sources. The EU is facing a natural gas shortage brought on by declining production and dwindling local reserves. At the same time, the region has been phasing out coal-fired electricity and countries like Germany are retiring nuclear power plants.

Those policies left Europe ill-equipped to handle lower-than-normal winds in 2021, which reduced renewable electricity generation and added pressure on natural gas to make up the shortfall.

However, without adequate domestic supply or reserves, that natural gas had to be imported from Russia. But Russia is not always a friendly, reliable partner, and they aren't in a rush to come to Europe's aid by increasing exports. In the meantime, European governments are left scrambling to ramp up domestic natural gas production and protect consumers from historic price increases.

As a result, European households and businesses are suffering, emissions will rise as coal generators are fired up, and the region's energy security is at risk—especially given the growing conflict between Russia and Ukraine. And while the region's climate policies have successfully helped reduce emissions, high energy prices risk fueling a populist backlash and undermining societal support for further GHG cuts.

### Lessons for Canada

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1. Affordability matters: Policy that creates high energy prices hampers industrial competitiveness.
  2. Social license matters: Policy that creates high energy prices can erode popular support for decarbonization plans.
  3. Domestic energy security matters: Canada should not cede its domestic energy supply—nor its ability to export in-demand energy—to foreign nations
  4. The energy mix matters: Policy must consider the current technological limitations of low-carbon energy systems and plan accordingly while science and technology play catch-up.
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# Challenges to Achieving Climate Targets

Achieving the three goals of an Alberta LCIS will not be easy. It will require an all-hands-on-deck approach from policymakers, the private sector, and financial markets. It will require overcoming significant hurdles at an unprecedented pace and scale. It will require facing up to the sheer magnitude of the effort needed. And it will mean transforming talk into action.

But taking action requires understanding what those challenges are.

## Policy implementation challenges

Crafting and implementing policies to mitigate climate change and drive prosperity is not an easy task. Obstacles that must be overcome range from political to technical to economic and everything in between. The following are a sample of the hurdles to decarbonization:

### Realities of a sparsely populated and cold country

Canada is a large and cold country requiring higher energy consumption for residential and industrial heating needs. This cold decreases fuel efficiency, lowers the capacity for blending renewable fuels, and reduces the range of electric vehicles. Furthermore, the distribution of Canada's sparse population, mostly along a narrow east-west strip near the US border, creates long travel distances, higher energy consumption, and less energy efficiency for building vital pan-Canadian infrastructure than in higher density countries.

## Scale of investment required

At present, the vast majority of Canada's built environment—our industry, homes, commercial buildings, public infrastructure, and supply chains—is designed around energy systems that produce emissions. As such, getting to net zero means a complete transformation of every aspect of Canadian life.

Simply put, more private and public capital needs to be deployed towards activities that contribute to 2030 and net zero targets. One study suggests that Canada needs to deploy about \$60 billion per year to reduce emissions by 75% by 2050. Another suggests that a \$201 billion total investment is required to reach our upcoming 2030 reduction target.

While estimates vary, there is agreement that reaching Canada's targets will not be cheap. Investments to date have not been sufficient, and private and public capital deployment must be scaled up tremendously fast. And, as COVID-19 spending constrains future public investment capacity, the burden shifts increasingly to the private sector.

## Preserving competitiveness while avoiding carbon leakage

Reducing GHG emissions can impose significant costs on businesses and consumers. If business activity becomes more expensive than in other jurisdictions, this production and the associated emissions could relocate to countries with less stringent climate policies. Not only would this undermine global climate action, but Canada's ability to finance the transition to a low-carbon economy would be severely hampered if businesses relocate and tax revenues decline.

As existing policies become more stringent, their ability to maintain business competitiveness can become less effective. Accordingly, optimal policy must thread the needle, creating global competitiveness while reducing emissions.

## Interprovincial jurisdictional cooperation challenges

While Canada's decentralized federal system has served this country well, competing regional interests and policy frameworks can make inter-provincial climate policy cooperation difficult. This has made the national integration of energy systems and the ability to build climate-friendly linear infrastructure projects very challenging.

Within their constitutional capabilities, the federal and provincial governments must work together to efficiently achieve GHG cuts and create prosperity. Cooperation can, and should, produce mutually beneficial climate results.

## Regulatory approval processes

Whether it is seeking approval to build major projects or simply receiving construction permits, approval processes in Canada take a very long time. According to the [World Bank](#), Canada ranks 33rd out of 34 high-income OECD nations in the average amount of time it takes to receive a construction permit (249 days), more than three times as long as in the United States (81 days).

## Identifying low-carbon investment opportunities

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Environmental, social, and governance (ESG) investing practices are in part designed to identify low-carbon investment opportunities. The federal government has established a [Sustainable Finance Action Council](#) to provide input on how Canada's financial market design can bolster investment in low-carbon opportunities.

However, there is considerable debate about what counts as a sustainable investment. The European Union is designing a [taxonomy](#) to define what a sustainable economic activity is. Similarly, private sector efforts are underway in Canada to design a [transition taxonomy](#) for investments in traditionally heavy-emitting activities that align with moving towards a low-carbon future. These efforts are intended to help direct private capital towards investments that are compatible with Paris Agreement climate ambitions. But until definitions are consolidated, businesses are left navigating increasingly complex capital markets and face onerous, duplicative reporting standards that make access to capital a moving target.

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Simply put, Canada's reputation as a place where even basic infrastructure projects are too difficult to build is not compatible with achieving climate targets. 2030 is less than 8 years away. Under current regulatory and permitting processes, building the clean tech infrastructure needed to achieve Canada's 2030 target will be exceptionally challenging. For each planned project currently facing regulatory delays, others never get off the ground for the same reasons. Poor regulatory processes create investment uncertainty and decrease access to capital, including for investments in decarbonization. Businesses looking to scale up clean technology—even if it is made in Canada—may choose to deploy their resources where timelines are faster.

## Uncertain pathways to net zero

The pathway to net zero by 2050 is unclear. Technologies need to come down the cost curve before mass adoption and deployment are possible. Technical barriers must be overcome, and many technologies do not exist yet. Furthermore, Canadian policy cannot control global market forces. Commodity price trends and global climate policy will dictate how Canada fits into the low-carbon future.

Domestic policy cannot rest on a narrow set of assumptions about the path to net zero. It needs to be flexible and adaptable to unexpected future developments while enabling innovators to address GHG cuts efficiently. Policy should enable a wide portfolio of technologies to achieve the desired outcome rather than opt for prescriptive solutions.

## Lack of harmonized global climate policy

Climate change is one of the largest collective action problems ever. While global cooperation on complementary policy solutions is ideal, international solutions have not been able to smooth over the competitiveness implications of mismatched policy stringency. These policy discrepancies impact where investment flows, where businesses locate, and whether climate action is mutually beneficial or exclusive between jurisdictions.

There are policies where it makes sense for Canada to take a leadership role and others where harmonization can drive better results for the environment, the economy, and for security. For Alberta, harmonized policy with the United States is particularly important, especially for trade-exposed industries.

## Challenges specific to Alberta

Alberta has a unique economic base and emissions profile that creates its own distinct challenges in contributing to a net zero Canada while continuing to create prosperity:

### Alberta's resource endowment, industrial, and regulatory structure

From its abundant oil and gas deposits to its rich agricultural lands, Alberta's economy is uniquely structured around extracting, manufacturing, and growing products that are both energy-intensive and in high global demand.

Alberta's competitive electricity market framework, which supports Alberta's economic base, is also unique among Canadian provinces. In Alberta, the private sector invests in power generating capacity on an at-risk basis in response to market and carbon pricing signals. In contrast, other provinces have a single, central utility responsible for all aspects of generation, distribution, and transmission.

The province's distinct economic base—which stems from its key industrial and agriculture sectors and its concentration of resources—has created significant wealth and opportunity for all Canadians, but also has resulted in disproportionately higher emissions than other provinces.



## Technical GHG abatement difficulties

Some large-scale industries are harder to decarbonize with existing technologies than others, and Alberta is home to many of them.

While there are some low-cost opportunities—fugitive emissions in the oil and gas sector, for example—meaningful GHG cuts in refining, upgrading, and extracting processes are expensive given their combined heat and power requirements and existing technological limitations. Electricity is on average the second most costly sector to decarbonize per tonne of CO<sub>2</sub>eq. Heavy industry often requires fossil fuel feedstock, high temperatures, and carbon-intensive chemical reactions as part of the production process. And, if the federal government's climate plan is an indication, the agriculture sector's projected GHG cuts by 2030 suggest that few deep decarbonization options are currently seen as feasible in the near term.

## International trade exposure

Alberta's economy is heavily driven by its success in scaling its industrial and agricultural production to meet growing global demand. Exports in 2019 accounted for 41% of provincial GDP (compared to 32% for Canada as a whole), largely due to the oil and gas industry. While the emissions intensity of these exports has been declining, global demand for these products has outpaced this reduction, leading to higher overall absolute emissions—a challenge all trade-exposed economies face.

Domestic policy should help reduce emissions in trade-exposed industries without triggering production cuts beyond what global demand dictates; trade-exposed industries do not have the advantage of being able to pass along climate policy-related costs to captive domestic consumers.



## Lessons from the global energy transition #2:

# How much government support is needed?

Alberta is home to many difficult-to-decarbonize sectors that must compete globally and cannot pass along price increases to a captured domestic consumer base. This combination means that government must play a role in reducing these industries' emissions. But how much support is reasonable?

The Netherlands and Norway provide relevant examples of governments partnering with industry to support major decarbonization projects that, on their own, do not produce a return on investment.

The Dutch government realized that its goal of reducing emissions by 49% (below 1990 levels) by 2030 requires significant GHG reductions from its heavy industry. The government of the Netherlands has committed to providing top-up subsidies for 15 years to the [Port of Rotterdam CCUS project](#) that will make the project economically viable until European carbon pricing can make it viable on its own.

Similarly, the Norwegian government has committed to paying around [three-quarters of the capital and operational costs](#) for the Northern Lights and Norcom parts of the Longship CCUS project for approximately 10 years. Similar to the Dutch government, the Norwegian government views this funding as supporting their key climate objectives.

## Lessons for Canada

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1. Heavy-emitting industrial activities can fit within ambitious national carbon reduction plans.
  2. Significant government support for projects that do not yet offer a return on investment is necessary, especially in the short-term.
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# Implementation Principles for an Alberta Low-Carbon Industrial Strategy (LCIS)

While difficult, the challenges noted above can be overcome—even within a low-carbon future that aligns with our three stated goals for an Alberta LCIS. A guiding set of principles and objectives are needed to inform the development of policies that can help bridge the gap between these challenges and the three goals. For BCA, these implementation principles are as follows:

## **Federal and provincial climate policies should be stable, consistent, and reflect Alberta’s unique industrial structure**

Contributing to Canada’s net zero goal requires significant investments into potentially risky yet transformative technologies as well as new and replacement infrastructure. The policy environment must attract and deploy decarbonization-focused private capital at great pace and scale and where Alberta and Canada need it most.

Accomplishing this requires a regulatory landscape that creates long-term investment certainty. Alberta businesses need 5, 10, and 20-plus year policy clarity to accurately conduct cost-benefit analyses over the entire lifetime of major proposed decarbonization projects. As such, climate policy must be predictable, consistent, and able to withstand disruptions, including changes in government.

## **Federal and provincial climate policy should be aligned and be created in partnership with industry**

Canada’s federal system creates overlapping and shared responsibilities between provincial and federal governments on climate policy and infrastructure buildouts. Unfortunately, these divisions have created a patchwork of siloed, multilayered policies with inconsistent priorities and differing underlying values, resulting in long-term investment uncertainty when certainty is needed most.

Collective success requires significantly more alignment between federal and provincial governments and industry on policy vision and design. While climate policy must reflect Alberta’s unique industrial base, policy mechanisms must allow GHG reductions in Alberta to have value in the rest of the country. Close three-way cooperation between the provinces, industry, and the federal government is key.



## **Indigenous individuals and communities should be full participants in the opportunities afforded by decarbonization efforts**

Reconciliation has been, and will continue to be, an ongoing journey. The positive relationships forged between industry and many Indigenous communities—such as with natural resource projects—have provided high-value business and employment opportunities where they may not have otherwise existed. These opportunities, in turn, enable greater independence of Indigenous communities and an enhanced ability to shape their own futures.

Achieving Canada’s climate ambitions will require unprecedented investments in infrastructure, technology, and natural carbon sinks. Indigenous individuals and communities should be full participants in these opportunities, including through the work of Indigenous-led businesses, equity partnerships, wealth-sharing agreements, providing input into project design, and helping steer climate stewardship efforts. Together, Indigenous people, governments, and industry can help build a better and more prosperous future for everyone, a process that will advance reconciliation and the Truth and Reconciliation Calls to Action.

## **No province or region of Canada should experience disproportionate economic harm as a result of national emissions-reduction policies**

The federal government’s dual emphasis on reducing emissions and creating prosperity should hold true at both the national and provincial levels.

In doing so, policy should consider the distribution of costs and opportunities imposed at a regional level, including impacts on competitiveness, required infrastructure buildout, employment rates, and opportunities for new economic activity.

Accordingly, national climate policy should be paired with a commitment to creating prosperity in Alberta and in regions where the costs of energy system upheaval and infrastructure buildouts are disproportionately high. An LCIS should seize Alberta’s natural advantages to drive prosperity-creating opportunities while smoothing over regional inequities. A “just transition” agenda to assist workers facing job losses is needed but insufficient to fully seize these opportunities.

## **Alberta should be the centre of Canada’s R&D, scaling, and commercialization efforts to reduce emissions and create low-carbon solutions**

The GHG reduction challenges associated with Alberta’s economic base ought to make this province the natural home for developing and applying clean technology and low-carbon solutions. Alberta is already home to many groundbreaking clean tech solutions and the highly technical workforce necessary to deploy them. Canada needs to embrace this strength and make Alberta the country’s “living lab” for solving domestic and global industrial GHG challenges.

To do so, policymakers should help supercharge Alberta’s existing and emerging decarbonization innovation initiatives, challenging and enticing them to help cut GHGs here in Alberta. This will involve forging private-public partnerships within Alberta’s innovation ecosystems to support innovation along the entire [technological readiness scale](#)—from initial research to prototyping and eventual commercial deployment in the field.

## **Climate policy should encourage Alberta's major industries to seize cross-sectoral decarbonization opportunities**

The intertwined nature of industries and energy systems often means that climate action in one sector can reduce emissions and/or create economic opportunities in others. These dynamics necessitate a broad, multi-sector vision for reducing GHGs.

For example, continuing to reduce Alberta's electricity sector GHGs will help decarbonize large swaths of the Alberta economy. Similarly, the agriculture sector can help offset emissions or provide the necessary bio-feedstock for low-carbon biofuel mixing in other sectors. Further, carbon capture, utilization and storage (CCUS) infrastructure projects can connect large point-source emitters in multiple sectors while helping produce low-carbon hydrogen.

As much as is feasible, policymakers should be planning to connect these sectors' efforts to cut GHGs, develop innovative energy solutions, and contribute to Canada's climate targets.

## **By 2030, Alberta should become a leading producer and exporter of low-carbon fossil fuels**

Though scenario analyses differ significantly about when the decline in global demand for fossil fuels will come, there is general agreement that oil and natural gas will continue to play a large part in future energy consumption. Global energy system transformation will take time; until replacements for fossil fuels exist across the entire range of products and processes requiring them, the world will benefit from decarbonizing their production.

As long as fossil fuel demand exists, Alberta's oil and gas industry must strive to become a leading producer and exporter of the lowest GHG-intensive products possible. Markets demand as much, and Alberta's producers must respond even as their much-larger state-owned competition does not need to.

Accordingly, Canadian policymakers should help the industry leverage commercially ready technologies and become the low-carbon supplier of choice by 2030. This would be a prudent hedge against a future scenario where global oil and gas demand remains high for reasons outside of Canada's control, and buyers prefer lower-carbon sources of that energy.

## **By 2050, Alberta should become a leading producer and exporter of clean energy and technology solutions for global emissions reductions**

The transition to a low-carbon economy will inherently create opportunities to generate prosperity in new economic activities, including through demand for products and materials that Alberta is already well-positioned to provide. Likewise, intellectual property linked to reducing GHGs from hard-to-decarbonize sectors will have global value.

For example, energy and materials like carbon fibre, hydrogen, biofuels, plastics, asphalt, liquefied and renewable natural gas, and other petrochemicals will likely see increased demand. Similarly, decarbonization technologies such as CCUS, small modular nuclear reactors, emerging lithium extraction techniques, and direct air capture have obvious application and scalability in Alberta's industrial and agriculture sectors.

Policy should propel Alberta to become a global leader in these areas, enabling and incentivizing businesses to seize these opportunities. Governments must articulate the steps Alberta will take to become a first mover rather than a follower.

## **Alberta has the skills and workforce in place to develop a competitive and innovative low-carbon economy**

Many decarbonization solutions require technical expertise in geological and chemical engineering, pipeline planning, construction, carbon management, agricultural and environmental sciences, and the skilled trades—all key strengths inherent in Alberta’s existing workforce. This key competitive advantage, however, can and should be strengthened.

Alberta needs to train and attract the talent that can advance solutions from the research, design, and development stage of technological innovation, to the eventual business planning, project development, and implementation stage of world-leading industrial-scale clean tech solutions.

The province will be competing globally to attract and retain this labour. An inadequate supply of forward-thinking, in-demand talent will create a bottleneck to Alberta becoming a global climate solutions leader.







# Elements of an Alberta Low-Carbon Industrial Strategy

While a Low-Carbon Industrial Strategy cannot be static, BCA believes the following set of policies are the first steps needed for Alberta's industrial and agriculture sectors to contribute to, and flourish within, a Paris Agreement-aligned low-carbon Canadian economy.

## Foundational and enabling policies

Foundational and enabling policies form the necessary blocks upon which all other climate change policy measures are built. Successful foundational policies create the type of long-term certainty needed to drive major private sector decarbonization investments. They send the right market signals, mobilize the necessary capital, and enable the system-wide technological changes required for Alberta to contribute to net zero targets.

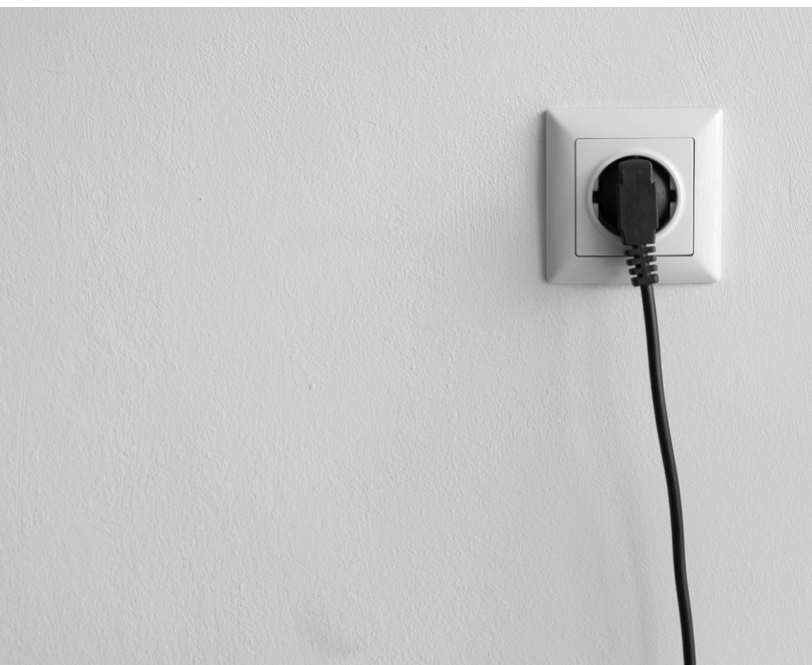
## Allocate federal dollars in proportion to where they are needed

Climate mitigation and economic harm reduction spending needs to be allocated in proportion to the required level and cost of emissions reduction. Since Alberta is the largest source of emissions, it will require the most investment in Canada.

Moreover, because of differing industrial structures, federal policies such as carbon pricing disproportionately impact Alberta. This is especially true for electricity generation, where the options for producing emissions-free baseload and peak load power in the near term are limited. Absent federal intervention, this will result in higher electricity costs in Alberta relative to other provinces, which in turn will mean that Alberta households and businesses are placed at a competitive disadvantage relative to their counterparts in other provinces.

## Recommendation

- **The federal government should enhance competitiveness and encourage more rapid decarbonization by focusing its support for consumers and businesses in provinces, like Alberta, that will see outsized cost impacts from energy transition.**





## Send the right message

The federal and provincial governments can help attract investment to Alberta by sending a positive message and clear signal about climate action in the province. This is not about greenwashing the fact that Alberta is a high-emitting province. Rather, it is about a strong, positive commitment to working with the business community to meet the challenges of a low-carbon economy.

And what's more, these investments cannot be hampered by misalignment between federal and provincial climate policy. Both governments need to align their public messaging and their policy directions in a way that works for Alberta's unique industrial structure.

### Recommendations

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- **The Alberta government should send a clear public signal that: it is committed to dramatically lowering GHG emissions; it supports Canada's net zero ambitions; and it will focus its policy efforts on decarbonization, clean technology, and clean energy solutions.**
  - **The federal government should send a clear public signal that it stands behind Alberta's energy sector and will support and defend its decarbonization efforts.**
  - **The federal and provincial governments should align their climate-related policy objectives and public messaging to help create policy certainty for businesses, investors, and consumers.**
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## Coordinate policy and investment strategies across stakeholder groups

Not only should governments send clear and coordinated messages on climate policy in Alberta, but the policies themselves must also be aligned and developed in concert with industry and Indigenous Peoples, including through stakeholder organizations such as the National Coalition of Chiefs. The provincial government, federal government, private sector, and Indigenous people must align in vision, purpose, and knowledge of what it will take on each of their parts to decarbonize and seize low-carbon economic opportunities.

### Recommendation

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- **The federal and provincial governments, in partnership with Indigenous Peoples and stakeholder groups like the National Coalition of Chiefs, should create a standing Advisory Body with Alberta business leaders to coordinate the development of policy that supports business investment in decarbonization and the development of new technologies. The body should test government policy ideas and create a vehicle through which businesses can communicate their ideas on advancing decarbonization in the province.**
-

## Adopt a made-in-Alberta carbon price that aligns with federal policy

Carbon pricing is the most efficient and transparent way to reduce emissions without punishing production. A simple, predictable, and transparent carbon price allows businesses to make long-term investment decisions with greater certainty. Carbon pricing helps avoid: undue market distortions, duplicative costs on businesses, administrative burdens on governments and businesses, opaque climate mitigation costs for businesses and consumers, and short- and long-term investment uncertainty.

At present, Alberta's Technology Innovation and Emissions Reduction (TIER) regulation is deemed equivalent to the federal output-based pricing system on large industrial emitters; however, the province does not have its own fuel charge on producers and distributors and is therefore subject to the federal backstop.

There are opportunities to improve the transparency of carbon pricing and to allow Alberta more policy flexibility in how the revenues from carbon pricing are allocated in the province.

### Recommendations

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- **The Alberta government should signal to businesses and consumers its intention to align carbon pricing with the federal government's plan through 2030 and jointly agree on a carbon price escalator to be used beyond 2030 that is tied to an easily measured index such as the Consumer Price Index or GDP growth.**
- **The Alberta government should adopt a carbon tax deemed equivalent to the current federal fuel charge. In addition to rebates for low-income Albertans, in order to accelerate development, a significant share of the revenues generated will need to be re-invested in researching, developing, testing, and deploying low-carbon energy solutions and technologies in Alberta.**

- **When difficulty in measuring emissions impedes the use of carbon pricing, governments should work with industry to improve emissions measurement protocols to enable the use of carbon pricing instead of other forms of regulation.**
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## Align carbon pricing standards with international peers

The Alberta economy's high trade exposure means that carbon pricing can impact business competitiveness when other similar economies do not adopt similar measures. Climate policy alignment among key trading partners is the best way to inspire collective action internationally, especially as envisioned through the climate club model—where a common carbon price and carbon import tariffs are established. Without alignment, Alberta's products risk losing either competitiveness or access to markets, and investment and emissions may leak to other jurisdictions.

### Recommendations

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- **Output-based carbon pricing measures utilized in TIER should ensure Alberta's emissions-intensive trade-exposed (EITE) industries, and those competing with them, remain competitive while encouraging global best-in-class emissions performance.**
  - **If output-based carbon pricing measures utilized in TIER can no longer drive sufficient decarbonization while protecting Alberta's export competitiveness, the federal government should seek carbon pricing and/or low-carbon emissions intensity standards alignment, paired with a shared carbon levy on imports, with key trading partners like the United States.**
-

## Develop robust domestic and international carbon offset markets

Scientifically accurate, properly accounted carbon offsets and credits are a necessary component of reducing emissions in Alberta's hard-to-decarbonize sectors. They can create GHG reduction efficiencies and help operationalize cross-border GHG reductions by exporting low-carbon fuels. However, due to a lack of coordination between carbon market regulations, there are hurdles to such mechanisms, both internationally and domestically.

### Recommendations

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- **International carbon markets:**
    - **The federal government, in cooperation with the provincial government and sector stakeholders, should work with key allies to establish and operationalize international carbon offset markets either under Paris Article 6, or through bilateral or multilateral agreements.**
  - **Domestic carbon markets:**
    - **While avoiding stranding the value of existing credits, the federal government should work with the provinces to develop mutual recognition standards that allow companies in one province to use carbon offsets and/or performance credits from any other provincial trading scheme to meet their GHG reduction obligations.**
    - **The federal and provincial governments should conduct a comprehensive review of private and public carbon offset protocols around the world to inform broadening the pool of verifiable offset protocols available in Canada's carbon market regulations, including nature-based solutions and agriculture carbon sequestration options.**
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## Create an efficient, agile, outcomes-driven project approval regulatory system

Unnecessarily lengthy project permitting and approval processes, common in Canada, create investor uncertainty and delay development. They inhibit Alberta businesses from generating the revenue needed to decarbonize and slow down the deployment of clean technology. The success of regulatory processes should be measured by outcomes, not timespans. The following recommendations from [\*Canada's Economic Strategy Tables Report: Resources of the Future\*](#) and BCA's [\*A Time For Action\*](#) reports provide solutions:

### Recommendations

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- **Canada and Alberta should coordinate to streamline permitting and approval processes by developing agile, outcomes-based regulatory systems, with legislated decision-making timelines aligned with top-performing high-income OECD countries. These climate policy-related regulatory systems should serve as pilots, with successful reforms implemented across the entire Canadian economy.**
  - **Governments should grant a "regulatory Nexus card" for fast-track project approval times to trusted operators with excellent track records on operational and environmental performance as well as for the deployment of innovative clean technologies.**
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## Create financial instruments to enable private capital deployment

Decarbonizing Alberta's key sectors will require considerable investment outlays. As much as is possible, this should come from the private sector. But private-sector investment criteria are changing: ESG (environment, social, governance) investors increasingly reward businesses compatible with success in a low-carbon future while making access to capital more difficult for those seen as incompatible. These investments often flow towards renewable power technologies.

However, more of this capital needs to flow towards Alberta's hard-to-decarbonize industries. Unfortunately, long-term project economics and a lack of market recognition for the compatibility of certain sectors with climate-conscious investment practices tend to hamper these capital flows.



## Recommendations

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- Following the advice of the Expert Panel on Sustainable Finance and the work underway by the CSA Group, the governments of Canada and Alberta should work constructively with Canadian financial institutions, the provinces and their securities regulators, and industry stakeholders to define, legitimize, and scale up transition-linked fixed income products earmarked for decarbonizing Alberta's hard-to-decarbonize sectors.
  - Following the Expert Panel on Sustainable Finance's recommendations, Finance Canada should encourage the issuance of transition bonds by reducing cost barriers for issuing bonds into the market and/or lowering bond interest payments.
  - The federal government should expand the class of assets eligible for 100% immediate capital cost deductions by including capital assets that will help reduce emissions in Alberta's hard-to-decarbonize industrial and agriculture sectors.
  - The federal and provincial governments should ensure that industrial decarbonization incentives in Alberta are competitive with current and future tax incentives in the United States.
  - As recommended by the C.D. Howe Institute, the federal government should create a significant pool of capital available through the Canada Infrastructure Bank to provide sizeable loans to private businesses looking to fund major decarbonization projects in Alberta's industrial sector. The loan repayment terms would, in effect, shift the risks on a project's return on investment posed by future changes to the carbon price trajectory from the loan's recipient to the government through a contract of differences.
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## Position Alberta as a global leader in CCUS

CCUS shows tremendous potential to help drastically reduce emissions from Alberta's hard-to-decarbonize sectors. According to the [International Energy Agency](#), as much as 13% of the world's emissions reductions may need to come from capturing carbon to limit global temperature increase to 2 degrees Celsius above pre-industrial levels.

CCUS in Alberta is [scaling up](#), but not fast enough. Federal and provincial governments are coordinating efforts through a Steering Committee to Advance CCUS, and the federal government has promised to develop a comprehensive CCUS strategy, including tax incentives for investment. But Canada is falling behind other countries. For example, the United Kingdom is [actioning plans](#) to build out CCUS at two major industrial clusters, and their most recent [carbon budget](#) suggests as much as 47 million tonnes of CO<sub>2</sub> per year may need to be captured to reach net zero.

However, capturing carbon is not a value-creating proposition at present. The scale of investment and lead time required to plan, approve, and construct a CCUS project necessitates a clear vision for how major investment in CCUS can create value. And given Canada's tight timeline to reach GHG targets by 2030, the lack of a value proposition for capturing carbon today means that significant government financial support is needed.

Alberta has the right mix of expertise and geology to become one of the world's natural homes for CCUS innovation and deployment. But unless we act quickly and decisively, this opportunity will pass us by.

## Recommendations

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- **Canada's CCUS Strategy, in partnership with the provinces, should commit a large pool of grant money earmarked for building the carbon transportation infrastructure needed to create industrial sector-wide carbon capture benefits. The grant funding should be significantly larger than what is currently available in the Net Zero Accelerator Fund; and be delivered through a streamlined process that enables Canada to meet its 2030 Paris target and enables industry for success in a net zero Canada.**
- **Canada's CCUS Strategy should incorporate [best practices from the Netherlands](#) where the government provides direct financial support for CCUS operations until the price of carbon rises to a level for the project to be economical on its own.**
- **The federal government's carbon capture tax credit should be fully refundable and set at a dollar amount that, when stacked with other policy incentives:**
  - **is commensurate with the US's 45Q;**
  - **is available for a long enough timeframe to incentivize project development; and**
  - **applies both to captured carbon that is stored or is used as feedstock.**
- **The federal and provincial governments should help create a value proposition for using captured carbon, including spurring its demand through government procurement processes or incentivizing private sector use.**

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## Establish Alberta as a global leader in industrial clean tech RD&D and exports

Research, development, and deployment (RD&D) will undoubtedly play a significant part in enabling Alberta's contributions to a net zero 2050. The province has the concentrated industry and the talent to become a "living lab" for industrial clean tech. Globally significant breakthroughs in industrial decarbonization technology can, and should, come from Alberta and contribute meaningfully to domestic and global climate solutions.

Success will require a three-pronged strategy, with government helping to help de-risk and fund industrial clean tech RD&D, legitimize, and bolster climate-friendly exports, and attract and develop the type of workforce needed to succeed.

## **Create and fund a world-class clean tech innovation hub in Alberta**

The federal government, in support of existing private and public sector-led initiatives, should establish Alberta as the home of an ambitious new hub for industrial clean tech innovation. To be sure, the government already supports this kind of innovation. It is providing \$3 million to develop a Calgary-based Energy Transition Hub intended to build entrepreneurship in clean tech. More significantly, it also provides \$100 million over four years to support efforts by the Clean Resource Innovation Network (CRIN) to accelerate the development and use of technologies to lower the environmental impact of energy development. CRIN is a pan-Canadian network focused on the sustainable development of the energy sector. It identifies industry challenges in oil and gas and brings together key stakeholders to develop solutions and accelerate their commercialization and adoption.

However, in the context of the hundreds of billions of dollars that will need to be spent on the transition to a low-carbon future, \$25 million per year over four years for CRIN is a tiny fraction of what will be needed to support innovation and the development of emissions-reduction technologies. Developing a true world-class clean tech innovation hub will require tens of billions of dollars committed through long-term annual investments by the federal government.

## **Recommendations**

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- **The federal government should provide a significant, multi-decade funding commitment to develop a world-class clean tech innovation hub in Alberta. This initiative would support the RD&D of climate solutions by accelerating testing and scaling to commercialization (including associated funds and capital); and enhancing the export of those solutions. These solutions could include:**
    - **Short-term: lowering the cost of CCUS; low-carbon hydrogen production and use; biofuels technology; renewables; battery storage; and nature-based solutions.**
    - **Medium-term: carbon utilization; bitumen beyond combustion; small modular nuclear technology; and direct air capture.**
    - **Long-term: zero-carbon hydrogen production; advanced metals and critical minerals extraction; and geothermal energy.**
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## **Bolster Alberta’s standing as a sustainable product and clean tech exporting powerhouse**

Alberta should position itself as a globally preferred supplier of low-carbon industrial products—including for traditional fuel exports and new, industry-decarbonizing clean technologies. RD&D support through the tech innovation hub discussed above will assist the development of the required energy and technologies. The second step is to publicly support Alberta’s exports and industrial clean tech insofar as they can help decrease emissions globally.

## Recommendations

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- **Alberta and Canada’s governments should align their public messaging to actively promote Alberta’s export goods and services insofar as they are capable of:**
  - **Reducing global emissions by taking market share from similar but more emissions-intensive products;**
  - **Replacing higher emitting product alternatives (e.g., LNG displacing coal); and**
  - **Solving international industrial GHG challenges through made-in-Alberta clean tech developments (e.g., exporting Canada’s methane reduction technology and know-how).**
- **Through Invest in Canada and Invest Alberta Corp., the governments of Canada and Alberta should bolster funding and coordinate efforts to attract foreign direct investment in Alberta’s low-carbon economic opportunities. These efforts should include the development of an easy-to-navigate, one-stop shop that makes the business case for investing; offers connections to relevant private sector actors; and provides all necessary information about the government supports that are available.**
- **The Government of Canada should increase its capacity to export low emissions-intensive goods and industrial clean technology solutions to the world by:**
  - **Providing dedicated funding to the Trade Commissioner Service to actively support Alberta’s exporting companies in securing business abroad that verifiably creates global net GHG reductions, including through emissions intensity improvements driven by the substitution of goods and energy;**
  - **Providing additional dedicated funding and supports through the Canadian Technology Accelerator Program; Accelerated Growth Service; Sustainable Development Technology Canada; and CanExport program; and**
  - **Leveraging Export Development Canada’s expertise in enabling Alberta’s industrial and agricultural clean tech exports.**

## Attracting and developing the right workforce

Alberta already has a highly skilled and knowledgeable workforce that is positioned to move the energy transition forward and drive down industrial emissions. This includes a large pool of engineering talent, project management expertise, and skilled labourers.

Furthermore, Indigenous people in Alberta, who are already significant participants in Alberta’s resource sectors and clean tech deployment, have the knowledge and available workforce to meaningfully contribute to the low-carbon economy and help steward the transition to a more sustainable future.

But to scale up climate solutions at the pace necessary, Alberta should be doing all in its power to access talent now and develop home-grown talent with the right sets of skills to succeed in a low-carbon future. Alberta has the right workforce foundation. It should lean into this advantage and build on this base by attracting the brightest minds in areas like hydrogen, non-combustible oil and gas, energy efficiency, carbon capture, and more.

## Recommendations

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- **The provincial government, post-secondary institutions, and industry stakeholders should work together to design university and technical programs that foster skill development relevant for Alberta’s future industrial clean tech career pathways.**
- **In partnership with Indigenous leadership and industry stakeholders, the federal and provincial governments should remove roadblocks to, and provide significantly more training and employment opportunities for, Indigenous individuals and communities to become full participants in the benefits and stewardship of the transition to a low-carbon economy.**

- **The federal government should invest significantly more in Canada’s Workforce Development Agreements to support business-led training and skills development in current and emerging professions in industrial emissions reductions.**
- **Canada and Alberta should coordinate a global campaign championing Alberta as the world’s most attractive place for industrial clean tech talent to locate—where innovators have access to the private and public sector supports needed to pursue new ideas, access industrial field-testing sites, and prove their concepts.**
- **The federal government should help increase the science, research, and clean tech-related talent pool in Alberta by prioritizing and fast-tracking skills-based immigration in fields related to Alberta’s industrial clean tech needs.**

## Scaling up low-carbon hydrogen production and use in Alberta

Momentum is growing for low-carbon hydrogen. The private sector is already partnering with the governments of Alberta and Canada in making major, multi-billion dollar investments into expanding hydrogen development. Projects in the Edmonton region are being proposed. Hydrogen shows great promise as a low-emitting fuel in heavy-duty transportation, industrial processes requiring high heat, utility-scale energy storage fuel for electricity grids, and to a certain extent, in fuel mixing for residential and commercial heat.

Maximizing hydrogen’s potential in Alberta will come up against the following obstacles:

- The economic viability of CCUS deployment at scale;
- The technological, economic, and energy-efficiency challenges across hydrogen’s production, transportation, and use; and
- Scaling up hydrogen’s local and international demand in-step with its supply.

First and foremost, low-carbon hydrogen’s scale-up needs a local proof-of-concept.

## Recommendations

**The federal and provincial governments should work together to jointly position Edmonton and its nearby industrial clusters as Canada’s first major hydrogen hub. Together, the governments should:**

- **Work with existing private sector hydrogen project proponents, Alberta’s Industrial Heartland, the City of Edmonton, and large regional industrial emitters to build up the hydrogen market locally from both the supply and demand side, using this regional hub as a large-scale proof of concept for hydrogen’s viability;**
- **Identify existing technological barriers to adoption and bolster support for hydrogen RD&D to address them;**
- **Help industry conduct feasibility studies for the long-term economics of deploying hydrogen given future carbon pricing assumptions;**
- **Establish enabling policies, standards, legislation, and regulation to clear the path for hydrogen’s production, transportation, and use, ensuring that existing regulations allow its production and use to benefit from carbon markets; and**
- **Replicate the successes of the Edmonton hydrogen hub pilot in other industrial hubs throughout Alberta.**



## Decarbonizing Alberta's electricity production

Alberta's electricity sector has made tremendous progress towards decreasing emissions by transitioning from coal to natural gas-fired electricity and substantially increasing renewable generation. The coal-to-gas transition came at a significant cost, but it has been overwhelmingly successful at reducing the sector's absolute emissions by over 30% since 2005. At the same time, Alberta has seen the cost of renewable generation decline markedly over the past decade, to the point of competitiveness with thermal generation.

Decarbonizing Alberta's electricity sector is a central component of not only reducing sector-specific emissions but emissions across the entire provincial economy. While the province has notable strengths in its capacity to generate renewable power and its competitive energy-only electricity market framework, it faces considerable challenges in developing emissions-free base load and peak load power in the near term.

These challenges are magnified by long-term forecasts for electricity demand. In a net zero future, electricity consumption in Canada is expected to double by 2050, and the Alberta Electric System Operator's (AESO) 2021 Long-term Outlook projects Alberta's 2041 peak load forecast to grow by nearly 50% above 2021 levels in its clean tech scenario—a scenario that possibly underestimates future electricity consumption.

Alberta needs to capitalize on its natural advantages; recognize that the grid requires clean base and peaking power; and realize the scale of infrastructure investment needed in generation, transmission, and distribution.

Transparent, predictable carbon pricing with tradeable carbon credits should be the foundation for electricity decarbonization policy. Alberta's competitive electricity market lends itself well to carbon pricing because private sector investments in generation respond on an at-risk basis to market and carbon pricing signals. Carbon pricing will help support many of the recommendations made below—and, when possible, should make some of the following recommendations time-limited as the price on carbon increases.



## Maximize Alberta’s potential in renewable power generation

Alberta’s resource endowments and energy-only electricity market make it a magnet for investment in renewable projects. Billions of dollars have already been spent, and there is tremendous potential for future growth.

### Recommendation

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- **The provincial government should lean into, and campaign on behalf of, the advantages of its energy-only electricity market to attract ESG- and private purchase agreement-driven (PPA) investments in low-cost renewable power like solar and wind.**
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## Align electricity GHG reduction policy and level the decarbonization playing field

Canada has promised to establish a national Clean Electricity Standard to make the electricity grid net zero by 2035. At the same time, policy supports such as tax credits for CCUS, renewables, or hydrogen production may emerge. These changes could impact the electricity sector’s timeline and lowest-cost pathway in their decarbonization pursuit. More long-term policy certainty and jurisdictional alignment is needed before investments can be made.

### Recommendations

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- **Alberta should ensure its carbon pricing framework maintains equivalence with Canada’s carbon price backstop framework and net zero electricity goals, and align related offset and credit generation mechanisms with accepted international protocols over the long term.**
  - **Canada and Alberta should jointly work to understand the cost and reliability implications of a net zero electricity transition to identify policy gaps and target investments in Alberta’s unique market structure.**
  - **Federal and provincial policy should not favour any one electricity generation technology over another. Rather, electricity providers should be allowed to adopt the most economical technologies to reach emissions, reliability, and cost goals given the constraints of Alberta’s competitive market, carbon pricing, and carbon credits regulations.**
  - **Canada and Alberta should ensure policy incentives in other sectors will either (A) equally benefit the electricity sector’s decarbonization efforts, or (B) be matched by incentives in the electricity sector (e.g., an investment tax credit for renewables with storage) to ensure an even playing field in the competition for investment dollars.**
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## Building out Alberta-generated firm, dispatchable, low-carbon power

Most of Alberta’s dispatchable base power comes from natural gas-fired generation. While renewables have already established themselves as viable sources of cheap, clean power, their intermittency remains problematic without complementary energy storage, firm base power, or peaking power as needed.

Alberta will need to shift to ultra-low carbon firm and/or dispatchable power sources as assets reach their end-of-life. This does not preclude a role for natural gas—many up-and-coming electricity generation technologies could use gas, including Allam-cycle plants, low-carbon hydrogen production, and the incorporation of CCUS onto natural gas power facilities. Meanwhile, many breakthroughs are being made in other clean, dispatchable, firm power technologies. While Alberta’s future generation technology mix is not yet clear, one thing is: the grid will need to transition towards cleaner firm power, and it should do so in a technologically neutral way and at the lowest possible cost for consumers and taxpayers.

As previously recommended, a transparent, long-term carbon pricing signal will help facilitate the transition of this sector in a technology-neutral process. Still, other policies can also catalyze broader sector uptake in the near term by helping to de-risk early adopters of zero- and low-emissions technologies. This can help spur the development of low-carbon projects before carbon pricing can on its own.

## Recommendations

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- **Alberta should explore electricity market policy design within the existing competitive energy-only market framework that can effectively assign short- and long-term price signals to electricity generation such that intermittency and supply- and demand-side variability is adequately priced in. This can help smooth out grid volatility as more renewable capacity comes online and promote price affordability and predictability.**
  - **In consultation and coordination with industry stakeholders, Alberta should consider revamping the Renewable Electricity Act to create targets for low-carbon firm and dispatchable power generation. Targets should be technology agnostic and include storage capable of smoothing over renewable power intermittency.**
  - **Similar to the former Renewable Energy Program (REP) and subject to industry consultations, Alberta should consider establishing a competitive auction program supporting the aforementioned firm and dispatchable low-carbon power targets. A “contract for differences” model can secure a long-term electricity price for auction winners, but it should allow revenues generated from carbon credits to factor into the structure of the awarded contracts. This program would need to be designed:**
    - **to minimize distortions to the existing market;**
    - **to be short-lived to spur investor interest in early adoption of low-carbon firm power; and**
    - **to not be extended if the market already supports this adoption.**
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## Exploring interprovincial grid connectivity opportunities

While Alberta does not have significant hydroelectricity capacity, its neighbour to the west does. In fact, the two provinces have complementary grids and resource endowments that, if better connected, can boost Alberta's capacity for intermittent renewable investments, reduce grid emissions, and lower electricity costs for ratepayers.

Increasing interprovincial grid connectivity can help ensure that investments in clean electricity production are made where the local resources enable it. This would decrease the cost of decarbonization and allow for cleaner power to be distributed where needed.

However, there are significant challenges along the way. For example:

- Interties are expensive and contentious—cost-sharing and route-planning is difficult;
- Differences between regulatory regimes need to be bridged, including between crown corporation models in neighbouring provinces relative to Alberta's competitive, open market system with private sector investment, to facilitate a fair and transparent two-way agreement for purchasing electricity;
- The economics of power exports may make more sense north-south than east-west;
- Increased electricity demand in each province may reduce the capacity for selling power back-and-forth; and
- Alberta's system operator does not consider imported electricity as being 100% reliable in accordance with established utility planning practices.

The federal government should not offer support to interprovincial grid infrastructure until these challenges are addressed. Once addressed, the federal government can support greater interconnectivity between BC and Alberta to help the latter to reduce emissions across the provincial economy, but only if both provinces see benefits from a level playing field across their electricity markets.

## Recommendations

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- **Subject to the aforementioned challenges being addressed, the Government of Canada should help Alberta and BC broker a long-term power purchasing agreement for a mutually beneficial two-way flow of electricity. It can do so by:**
    - **Making any infrastructure funding contingent on addressing differences in interprovincial markets and the need for system reliability to backstop new intermittent renewable growth;**
    - **Accelerating approvals of intertie buildouts on interprovincial right-of-way corridors;**
    - **Bringing the cost differential between the marginal electricity price set by non-Canadian purchasers of BC electricity and fair rates for Albertans to pay;**
    - **Ensuring fair access to the BC market for Alberta's cheap, renewable power during off-peak load times.**
  - **Using the European Network of Transmission System Operators for Electricity (ENTSO-E) as inspiration, Canada should coordinate a central body that studies interconnected Canadian grid benefits and outlines strategies for how provincial electricity sector regulators can coordinate to meet national sector climate goals.**
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## Reducing heavy industry emissions

Heavy industry emissions are notoriously difficult to reduce. Few replacement energy inputs can produce the heat and power combination needed. For some heavy industry activity, hydrogen and CCUS offer potential decarbonization pathways. However, other activities require the by-products of chemical reactions from fossil fuel inputs as well as high heat and power.

Where technically feasible, fuel switching and electrification can provide incremental emissions reductions. While some technologies in development can electrify emissions-intensive forms of high heat production, they are not yet economical in many applications. Electricity rates would also need to decline precipitously to justify upfront retrofit capital costs and ongoing operational costs. And other heavy industry processes remain impossible to electrify at this time. But perfect cannot be the enemy of the good.

In addition to policies already suggested to encourage hydrogen use and CCUS deployment, incremental improvements may be possible through the following policies:

### Recommendations

- **Canada and Alberta should fund electrification feasibility studies for heavy industry facilities where low emissions-intensive electricity may, at least in part, contribute to reduced fossil fuel use (whether that electrification comes from on-site generation and/or grid connectivity). This data should be shared with governments to help identify policy solutions that can speed up sector decarbonization.**
- **Where electrification is both possible and economically feasible given the lifespan of heavy industry assets, the federal government should help industry fund the infrastructure needed for low-carbon on-site power generation or grid connectivity.**
- **Where electrification remains infeasible, the federal government should help fund facility retrofits for lower-emitting bridge solutions (e.g., switching to lower-carbon fuels for power and heat).**

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## Seizing opportunities through low-carbon agriculture:

GHG cuts are challenging in the agriculture sector—particularly in Alberta, where conservation cropping techniques are no longer considered as creating additional reductions. The latest available data shows that nearly 70% of Alberta’s total land prepared for seeding uses no-till techniques, helping the Prairie provinces increase their carbon sequestration by 400% since the mid-1990s. And still, federal climate modeling suggests sector emissions will increase slightly within the government’s own climate plan.

Reducing fossil fuel use on farms can help, but this only represents 16% of the sector’s emissions, and most of the electric heavy farm equipment on the market is not suitable for existing farming requirements. Moreover, cattle methane reduction advancements offer incremental improvements, but technologies are still in the early stages of development—especially insofar as they apply to Alberta’s grazing cattle.

Furthermore, policymakers must balance important values when reducing the sector’s emissions, including food security, protecting biodiversity, export growth to help feed a growing world, and the prosperity of farmers and rural Canadians that rely on the sector. Sometimes policies can align these values, and other times they compete. That said, there are opportunities for the sector to help decrease its emissions and the emissions of other sectors.

## **Incorporating the right elements into the Canadian Agri-Environmental Strategy**

The federal government has signalled its intention to draft a [Canadian Agri-Environmental Strategy](#) to help guide the sector's climate action towards 2030 and 2050 targets. Though long-term [funding for natural climate solutions](#) has been announced as part of the eventual strategy, the strategy has yet to be formalized.

### **Recommendations**

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**The federal government's proposed Canadian Agri-Environmental Strategy should:**

- **Be developed in partnership with agriculture stakeholders and provincial counterparts, working to protect the sector's global competitiveness and align with international standards of emissions reduction/accounting best practices;**
  - **Create a comprehensive, regularly updated roadmap for the sector, including a full accounting of the expected investments required in the sector to contribute to 2030 and 2050 GHG reduction targets;**
  - **Ensure that productivity and efficiency improvements are incorporated into all agriculture sector climate policy considerations, including an accounting of how exports of low-emissions intensive Canadian products impact global emissions;**
  - **Be adaptable—including for government funding support levels—in response to the direction provided by this strategy and the competitiveness challenges imposed by climate action. The plan should precede and inform program funding decisions, not the other way around. Program funding amounts should correlate with impacts expected from this new plan;**
  - **Work alongside the province to consolidate the number of both governments' departments, bodies, and programs from which to access funds, and simplify the process for accessing them;**
  - **Consider improving access to innovation support funding by avoiding grant/project-based funding allocation models in favour of a broad-base industry funding pool that farming innovators and corporates could draw from, subject to fund use parameters, tracking, and spot audits;**
  - **Consider adopting emissions intensity-based GHG reduction metrics for farming activities that impact global competitiveness rather than using absolute GHG cut metrics, including for reducing emissions associated with nitrogen levels from fertilizer use;**
  - **Explore opportunities for the agriculture sector to partner with other economic sectors on developing cross-sector decarbonization efforts;**
  - **Include a commitment to a stable, long-term funding stream for researching, developing, and commercializing methane reduction solutions that work for Alberta's agriculture sector, modelled after New Zealand's [Agricultural GHG Research Centre](#);**
  - **Identify the opportunities and gaps in the feasibility of farmers adopting low-emitting equipment, and provide financial support to overcome high upfront capital costs of switching equipment where viable and to advance R&D efforts where existing solutions do not yet exist; and**
  - **Recognize that the majority of farming and ranching operations are small family farms and cannot and will not have the means to invest in large capital technology projects without significant government financial support.**
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## **Bolstering biofuel production from agricultural waste and captured methane**

According to [Advanced Biofuels Canada](#), there is a \$6-billion investment opportunity in building up advanced biofuel production capacity by 2030, with \$15-billion per year in new economic activity. In fact, recent Emissions Reduction Alberta investments in [biodiesel production](#) display the sector's potential to support GHG cuts economy-wide. However, governments can do more to help the sector seize biofuel opportunities.

### **Recommendations**

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- **The federal government should ensure that biofuels are produced in Canada and by Canadian farmers rather than being imported from feedstocks south of the border.**
  - **To promote made-in-Canada biofuel production, Canada and Alberta should help develop closer linkages between Alberta's farmers and new and emerging biofuel producers to create a robust market for waste biomass and captured methane.**
  - **Canada and Alberta should ensure that projects linking agriculture waste feedstock supply with biofuel production operations will create a positive value proposition for feedstock suppliers and biofuel producers.**
  - **Canada and Alberta should provide farmers with the funds necessary to overcome high upfront costs in adopting waste material collection practices and/or methane capture technologies that can create value through biofuel feedstock sales.**
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## **Creating value through agricultural carbon sinks and GHG reductions**

Agriculture lands and activities can capture and release GHG emissions. Soil management, fertilizer application, and cropping techniques can all help maximize the amount of GHGs that the land can absorb and retain. Similarly, emissions released by equipment and cattle can be mitigated. These methods of GHG reductions should create value for farmers in carbon credit markets.

### **Recommendations**

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- **Canada and Alberta should work with the agriculture sector to develop viable, easy-to-calculate methods of measuring long-term soil carbon levels, crop management sequestration, fossil fuel use reductions, and livestock methane management practices.**
  - **Canada and Alberta should consider a possible role for applying predictable and stable carbon pricing in the sector so that the aforementioned agriculture practices can create value for farmers within carbon market frameworks, but with assurances that Canadian farmers and food producers are not put at a disadvantage to international competition.**
  - **When carbon-reducing practices no longer meet additionality criteria and the financial impetus for carbon management best practices impacts their uptake, governments should support farmers to avoid backtracking.**
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# Conclusion

The challenge ahead is daunting, but with the right policies in place, Alberta is set to flourish in a low-carbon economy.

Make no mistake—for Canada to reach its 2030 and 2050 climate commitments, a disproportionate amount of emissions have to be cut in Alberta. Given Alberta’s economic base and the structure of its emissions, this will not be easy.

But decarbonizing Alberta’s industrial and agriculture sectors and charting the pathway towards a net zero Canada requires all of us—the private sector, labour, Indigenous communities, and every level of government together—to align and embrace the challenge.

We believe that policy elements included in this report will help align these parties with the goals of significantly reducing Canada’s emissions while seizing Alberta’s opportunity to contribute to sustainable prosperity in a low-carbon economy.

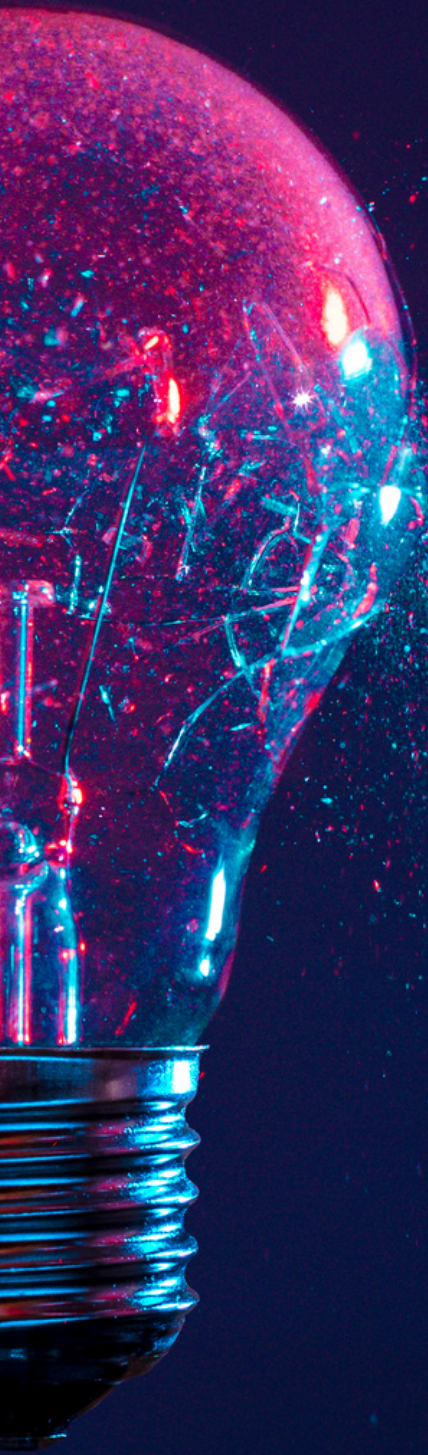
But the time for contemplating action is over. If Canada is to achieve its 2030 and 2050 goals, collective action needs to start today.

Jurisdictional alignment on transparent, long-term, market-driven policy measures must be established. Decarbonization infrastructure buildout roadblocks need to be cleared. Private and public sector investments need to leverage one another to scale clean tech solutions. RD&D efforts need to be accelerated. And the brightest minds must be attracted to, and developed within, Alberta.

This province has a once-in-a-lifetime opportunity. Alberta’s industrial and agriculture sectors are ready to seize the moment, but an all-of-government commitment to implementing the elements of an Alberta Low-Carbon Industrial Strategy is table stakes.

Alberta has the chance to solve global problems right here at home. It is time to embrace the outsized challenges and turn them into outsized opportunities.





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