

August 17, 2015

Climate Leadership Plan Discussion Paper Submission

Introduction

The Pembina Institute is pleased to offer our comments on the government's Climate Leadership Plan discussion paper. The goals and approaches outlined in the discussion paper provide a framework for B.C. to update its strategy on combating climate change. We look forward to specific details on implementing the Climate Leadership Plan in order to meet the plan's goals and B.C.'s climate targets.

Learning from our successes

Looking to the successes of the Climate Action Plan (CAP) announced in 2008 is key to crafting the next iteration of B.C.'s climate strategy, as CAP set a strong precedent for the province. Effective policies such as the carbon tax, clean energy requirements and the low-carbon fuel standard were introduced under CAP. Collectively, these policies helped reduce per-capita fossil fuel consumption by 16 per cent, prevented two coal-fired power plants from being built and supported the development of affordable renewable fuels.¹ While these policies have been in place, B.C.'s per-capita GDP grew faster than the rest of Canada's.²

The opportunity to regain the world stage

A robust strategy to reduce B.C.'s emissions across key sectors can continue to co-exist with a healthy economy. Initial analysis to be finalized in the fall by Clean Energy Canada shows that it is possible for B.C.'s economy to grow quickly in a world with deep emissions reductions.

B.C. could become a key provider of renewable energy and clean tech in the midst of the global movement³ to reduce emissions. This is thanks in large part to our existing zero-emissions electricity, which gives the province a competitive advantage over many other jurisdictions worldwide.

We are at a crossroads: the province has acknowledged that carbon emissions are projected to rise — Environment Canada is forecasting an 11 per cent increase — and yet B.C. has committed to reducing emissions by 33 per cent by 2020. The province's current policies fall short of our commitments; ambitious new policies will be needed to change that projection. With extreme weather events like droughts, wildfire and heat becoming the new normal, people are concerned about the future and receptive to solutions. Now is the time is for B.C. to regain its role as an international leader on climate policy.

¹ Navius Research, *Refining Margins in British Columbia: Examining the Renewable and Low Carbon Fuel Regulation in the Context of Refinery Net-Revenues* (2015). <http://www.naviusresearch.com/data/pages/cleanfuel2.php>

² Stewart Elgie, "Just the Facts: Did the carbon tax shift burden or buoy B.C.'s economy?" *Sustainable Prosperity*, July 9, 2014. <http://www.sustainableprosperity.ca/blog/just-facts-did-carbon-tax-shift-burden-or-buoy-bc%E2%80%99s-economy>

³ Globally, the clean energy economy is poised to grow from \$780 billion today to \$1.8 trillion by 2022 (which will be greater than the revenues of the top four oil companies in the world). Countries like China, Germany and the United States, who are targeting the clean energy market, are collectively exporting \$400 billion in goods, and employ 3.6 million people in their clean energy sectors.

Recipe for success

A laudable Climate Leadership Plan must demonstrate government's bold ambition and commitment, both in terms of approach and resources. The task ahead is monumental: B.C.'s current emissions levels are 62 Mt, and B.C. has committed to reducing these levels to 43.5 Mt by 2020, and to 13 Mt by 2050.

In order for the plan to be successful, and to meet our 2020 and 2050 targets, specific steps must be laid out for how we will achieve significant climate reductions. Sufficient financing and incentives for programs need to be available over the long term. While maintaining the strength of B.C.'s resource-based economies, emerging sectors also need adequate financing and policies that foster innovation and encourage growth. In addition, B.C. must start preparing its economy for a low-carbon world and reconsider the longevity of further investments in fossil fuel development and infrastructure.

While there are many policies that will need to be put in place for B.C. to produce a credible plan, the carbon tax in particular must be scheduled to increase.

In order for British Columbians to track progress, transparency and accountability must be components of a new plan.

What follows are the Pembina Institute's comments on each of the areas reflected in the *Climate Leadership Plan Discussion Paper*, our recommendations for specific actions in each area, and some suggestions for additional building blocks to ensure successful implementation of a new plan for climate leadership.

The way we live

The Pembina Institute is supportive of the overall goal and objectives under this area of focus. There should be an emphasis on increasing the energy performance of new and existing buildings and promoting land use decisions that encourage public transit and active transportation. By prioritizing high-performance building envelope and simple, low-tech solutions, we can both reduce emissions and energy use from the building sector and increase community resilience to extreme heat events and power interruptions. Our recommended path to meet this goal focuses on two key approaches: 1) new construction must become net-zero ready by 2030, and 2) incentives, financing and retrofit codes must be in place to accelerate the upgrade of existing buildings.

B.C.'s building sector accounts for 22 per cent of energy use and 12 per cent of carbon pollution in the province. As B.C.'s population increases, the demand for building space is expected to grow. To achieve net reductions we will need to significantly improve the energy efficiency of new and existing buildings, and shift the remaining energy demand to low-carbon sources.

Modelling shows that energy use in buildings could be reduced globally to 33 per cent below 2005 levels by 2050 through increased energy efficiency measures, despite the fact that total demand for building floor space is expected to double during that time. Achieving this level of reductions will require all new buildings and major renovations to existing buildings to meet high efficiency standards (i.e. equivalent to today's state-of-the-art) in a decade, and energy renovations to occur at an accelerated rate of three per cent per year.⁴

We believe B.C. can meet these goals. It will require significant effort, but it is achievable: Europe and the states of California and Washington, among other jurisdictions, have set targets for new buildings to

⁴ Tom-Pierre Frappé-Sénéclauze, Maximilian Kniewasser, *The Path to "Net-Zero Energy" Buildings in BC – The case for action and the role of public policy* (Pembina Institute, 2015). <http://www.pembina.org/reports/pembina-path-to-net-zero-energy-buildings-in-bc.pdf>

reach net-zero or near net-zero energy in the next five to 15 years. B.C. needs to adopt a similar vision. If energy requirements for B.C. buildings continue at the current pace, we will not see net-zero buildings become the norm before 2050.⁵

Our recommendations:

Table 1 below is a summary of our roadmap to achieving net-zero ready (ultra low energy) for Part 3 buildings (commercial, industrial and multi-unit residential), with more details for implementation found below. A similar approach could be adopted for Part 9 (residential).

Table 1. Roadmap to new Net-Zero Ready Part 3 Buildings by 2030

2016	<ul style="list-style-type: none"> • Declare a province-wide goal for new Part 3 buildings to be net-zero ready by 2030 • Develop and implement a multi-tiered performance-based provincial stretch code • Launch exemplary building pilot project program and research programs to study design options and performance of occupied buildings • Require all new provincial public buildings (for major building types) be net-zero ready
2018	<ul style="list-style-type: none"> • Update energy code to ASHRAE 90.1-2016 or revised NECB-2015
2020	<ul style="list-style-type: none"> • Implement net-zero ready requirements for rezoning in City of Vancouver • Review research on first wave of exemplary building projects and earlier pilot projects; assess market readiness for net-zero ready standard • Announce net-zero ready regulation and phased adoption schedule
2025	<ul style="list-style-type: none"> • Adopt net-zero ready standard in Lower Mainland/south coast
2027	<ul style="list-style-type: none"> • Adopt net-zero ready standard in rest of province
2030	<ul style="list-style-type: none"> • Almost all new Part 3 buildings are net-zero ready

Our vision for achieving net-zero ready buildings includes four key components to encourage early implementation of net-zero ready construction:

1. Develop provincial multi-tiered performance-based stretch codes that local governments can adopt as their base code or as conditions for rezoning or other incentives.
2. Require that new public-sector buildings be built net-zero ready to ensure government leads by example. Over 80 per cent of provincially owned or managed floor space should undergo deep retrofits by 2020.
3. Lead by example with a public-sector retrofit program designed to improve public buildings and accelerate the skills development and innovation needed for the broader private sector transition to high performance buildings.
4. Launch an exemplary building pilot-project program to increase demand for and visibility of net-zero ready buildings. This program should:
 - Focus on low-cost, simple and reproducible solutions and that allow different building approaches
 - Be in place for several years to allow the construction of a substantial pool of buildings to learn from, and to drive market demand for products

⁵ Tom-Pierre Frappé-Sénéclauze, Joshua MacNab, *Evolution of Energy Efficiency Requirements in the B.C. Building Code*, (Pembina Institute, 2015).

<http://www.pembina.org/pub/evolution-of-energy-efficiency-requirements-in-the-bc-building-code>

- Provide appropriate training programs for trades, developers, architects and building managers.
- Encourage research partnerships to identify the most successful design approaches and monitor actual performance of buildings

Other strategies to support a rapid shift to net-zero ready buildings include:

- **Provide incentives and innovative financing solutions** – Well-designed incentives and financing solutions can offset or redistribute some of the incremental costs and risks associated with new technologies and enable developers to go beyond code.
- **Monitor and disclose building energy performance and operations** – Monitoring and disclosure will ensure buildings operate at the level they were designed for while driving market demand for energy efficient buildings.
- **Invest in industry training and capacity** – Fostering innovation as well as the knowledge and skills required to design, build and operate high performance buildings is essential. We also recommend creating a network of advisors to provide technical, financial and management advice targeted to specific market segments. BOMA’s proposed Energy Efficiency Centre, for example, could provide a one-stop-shop support for the commercial real estate industry.

Save for a public-sector retrofit program, the roadmap above focuses on new buildings. The building stock in B.C. is being replaced at a rate of about one per cent per year. So while we are improving energy efficiency standards for new construction, existing buildings continue to represent a significant contribution to energy use and emissions. A similar level of ambition targeting the energy efficiency of existing Part 3 and Part 9 buildings is required in order to address the climate impacts of *all* B.C.’s building stock.

The way we travel

The province’s goal of “clean transportation” with a focus on energy efficient transportation systems and zero or very low emissions vehicles resonates with the Pembina Institute’s vision for a clean energy future. Policies that result in increased use of electricity, biofuel and energy efficiency to reduce overall emissions from the transportation sector are needed to achieve this goal. A key aspect of reducing emissions from vehicles is increasing the use of public transit and active transportation. We encourage the province to work with local governments in urban and rural areas to ensure appropriate funding for a functional and accessible public transportation system, and for active transportation infrastructure.

Policies that would support meeting this goal would include:

- **Clean infrastructure fund** – Encourage transit, walking and cycling through investment in appropriate infrastructure
- **Low carbon fuel standard** – Strengthen the current policy and broaden coverage to include all vehicle fuel use
- **Clean vehicle standard** – Encourage the availability of new vehicle technology in the marketplace
- **Transit-oriented development** – Link land use planning with transportation and transit investments

We point to the work of groups such as Clean Energy Canada, forthcoming work from the Ecofiscal Commission and the Urban Development Institute for further details on actions that will help meet these goals.

The way we work

The Pembina Institute is supportive of the goal of maintaining the strength of B.C.'s economy while continuing to create jobs and reducing carbon emissions. From our perspective, achieving this goal will require two main strategies that are consistent with the objectives in the discussion paper: 1) reducing the carbon pollution from B.C.'s major industrial emitters such as the natural gas, aluminum and cement sectors, and 2) growing the sectors of the economy poised to take advantage of the growing global demand for renewable energy, energy efficiency solutions and other climate change solutions. Our recommendations are focused on two specific areas: 1) reducing carbon pollution from LNG and shale gas production; and 2) growing the clean energy sector in B.C.

Reducing carbon pollution from LNG and shale gas

The natural gas sector is currently responsible for 10.2 million tonnes of carbon pollution — 17 per cent of B.C.'s total. If LNG development goes ahead at a scale in line with the province's ambitions and policies remain unchanged, carbon pollution would increase significantly, putting the province's climate targets out of reach.

Those levels of carbon pollution are not fixed, and better technologies and practices have the capacity to reduce the carbon intensity of development significantly. The potential solutions could involve using electricity instead of natural gas in the production process, improving compressor efficiency, reducing methane leaks, and capturing and storing carbon from gas processing plants.⁶

With modelling support from Navius Research, the Pembina Institute recently developed the B.C. Shale Tool to better understand the potential of these types of technologies. To illustrate, Scenarios 1 and 2 below demonstrate how wide the range of impacts could be with three LNG terminals operating under current standards compared to operating with significant sector-wide improvements to environmental technologies and practices. In both scenarios, impacts shown are based on 2030 projections and the assumptions that net exports to Alberta and U.S. decrease by 30 per cent by 2030. By comparison, Scenario 3 depicts one medium-sized LNG terminal built with a capacity of six million tonnes of LNG per year, and the implementation of significant improvements to environmental technologies and practices.

Scenario 1 – Three terminals, current environmental technologies and practices: Carbon emissions from the natural gas sector increase to 24.4 Mt CO₂e by 2030, an increase of 139 per cent from 2012 levels. To put this in perspective, over the same time frame B.C.'s carbon emissions must fall 46 per cent.⁷

Scenario 2 – Three terminals, improved policies and practices: Carbon emissions from the natural gas sector increase to 14.9 Mt CO₂e, an increase of 46 per cent over 2012 levels.

Scenario 3 – One terminal, improved policies and practices: Carbon emissions from the natural gas sector could drop by 28 per cent of 2012 levels to 7.3 Mt CO₂e in 2030.

⁶ For more information, see the Pembina Institute report *Wellhead to Waterline* (2014). <http://www.pembina.org/reports/pi-wellhead-to-waterline-goehnerhome-022014.pdf>

⁷ The 2030 target is calculated by assuming that B.C.'s climate target decreases linearly from 2020 target (43.5 Mt CO₂e) to the 2050 target (13 Mt CO₂e). This gives a 2030 target of 33.3 Mt CO₂e.

Table 2: Carbon emissions from three different LNG development scenarios

LNG Development	Domestic consumption and North American exports	Level of environmental technologies and practices	Carbon emissions in 2030 (Mt CO ₂ e)	Percentage of B.C.'s 2030 climate targets	Carbon emissions in 2050 (Mt CO ₂ e)	Percentage of B.C.'s 2050 climate targets
3 large terminals (36 mtpa total)	-30% by 2030, -50% by 2050 compared to 2013	Current	24.4	73%	24.0	185%
3 large terminals (36 mtpa total)	-30% by 2030, -50% by 2050 compared to 2013	Significant improvement	14.9	45%	12.8	98%
1 medium terminal (6 mtpa total)	-30% by 2030, -50% by 2050 compared to 2013	Significant improvement	7.3	22%	4.5	35%

The results show that there is an opportunity to decrease carbon emissions caused by LNG development and associated upstream natural gas activity. Taking advantage of those opportunities will require significantly stronger climate policies. However, as the above table shows, even with strong policy the development of LNG at a scale in-line with the province's ambition will make it nearly impossible to meet the province's long-term climate targets.

Our recommendations:

1. **Addressing non-combustion carbon emissions** – The carbon tax currently applies to combustion emissions but not for non-combustion sources. In the gas sector, 39 per cent of emissions, including methane leaks and venting, and venting of formation CO₂, are not subject to carbon tax. Thus there is no incentive to reduce carbon pollution from such sources. These gaps could be addressed by broadening the carbon tax (see next section on *What we value*), establishing performance standards, and/or establishing technology and practice requirements for sources currently not covered.
2. **Strengthening policy for all sources of carbon pollution in the gas sector** – The carbon tax is the main climate policy currently in place for the natural gas sector, which is frozen at \$30 per tonne until 2018. Whether through the carbon tax alone or in combination with other complementary policies, stronger signals are needed for all sources of carbon pollution in the gas sector. In addition to increasing the carbon tax (see next section on *What we value*), approaches could include performance standards that move towards near-zero emissions in the near future, and specific technology requirements that result in near-zero emissions in the near future.
3. **Keeping policy options open for LNG development** – In July 2015, the B.C. Government passed the LNG Project Agreement Act, which will be in effect for 25 years. With this act, the B.C. Government has given away its ability to increase the stringency of the Greenhouse Gas Industrial Reporting and Control Act — the main climate policy focusing on LNG development — without compensating LNG producers. Furthermore, the Act guarantees a subsidy to producers that miss the performance standard by up to 0.07 t CO₂e/ t LNG, even though LNG proponents have shown that they can meet and exceed the performance requirements without any help from

government.⁸ Achieving the necessary change in our energy system requires flexible policy options that increasingly encourage cleaner energy and discourage fossil fuels. With the LNG Project Agreement Act, the B.C. Government has done the opposite.

4. **Prepare for declining LNG and natural gas demand** – Based on research we completed for PICS,⁹ the world needs to make a massive transition away from all fossil fuels to renewable energy, nuclear energy and energy efficiency if it is going to have a chance of avoiding two degrees of warming. In such a scenario, the global demand for natural gas would peak around 2030 and decline below current levels before the middle of the century. B.C. must start preparing its economy for a low-carbon world and reconsider the longevity of further investments in fossil fuel development and infrastructure.

Growing the clean energy economy

The province's clean tech sector already employs over 123,000 people¹⁰ and contributes \$15 billion to its GDP. There are 156 renewable energy projects¹¹ currently operating or under construction around the province, and more than 200 companies selling their products around the world.

In 2014 alone, global clean energy investments rose by 17 per cent to \$380 billion¹². According to Analytica Advisors,¹³ the global clean tech industry reached nearly \$1 trillion, with exports of Canadian clean tech industries reaching \$5.8 billion or 50 per cent of the industry's revenue. Yet Canada's share of the global market has declined by 41 per cent since 2005: the Canadian clean tech industry is failing to grow at the same rate as the majority of other countries. Canada is the third-largest loser of market share since 2008. This may not be surprising given the lack of a comprehensive policy focused on this industry.

While B.C. has a number of policies and programs that support clean tech, what is missing is a comprehensive policy framework focused on the sector. Both Ontario and Quebec have focused strategically on the sector, with Ontario's Clean Energy Economic Development Strategy and Quebec's Development Strategy for Quebec's Environmental and Green Technology Industry.

With the sector poised to grow internationally and a concentration of clean tech companies already operating in B.C., this is an area that should be a high priority for the B.C. government.

Our recommendations:

A comprehensive policy framework focused on the clean tech sector is required in B.C. This framework should emphasize domestic climate policies and build on policy success. Strengthening domestic policies can help create a local market that allows clean tech entrepreneurs to demonstrate the potential of their solutions for global markets.

⁸ The LNG Canada facility is expected to achieve an emission intensity of 0.15 t CO₂/t LNG. *LNG Canada Export Terminal - Assessment Report, Canadian Environmental Assessment Act* (2015). <http://www.ceaa-acee.gc.ca/050/documents/p80038/101852E.pdf>

⁹ Matt Horne, Josha MacNab, *LNG and Climate Change: The Global Context* (Pembina Institute, 2014). <http://www.pembina.org/reports/lng-and-climate-change-the-global-context-pi-pics.pdf>

¹⁰ Globe Advisors, *BC Clean Economy Market Study*, (2012). <http://globeadvisors.ca/market-research/bc-clean-economy-market-insights-study.aspx>

¹¹ Pembina Institute, *The British Columbia Clean Energy Jobs Map* (April 24, 2015). <http://www.pembina.org/pub/the-british-columbia-clean-energy-jobs-map>

¹² Clean Energy Canada, *Tracking the Clean Energy Revolution - Global* (2015). <http://cleanenergycanada.org/wp-content/uploads/2015/07/TER-G-Tracking-the-Global-Energy-Revolution-20151.pdf>

¹³ Analytica Advisors, *Synopsis: Canadian Clean Technology Industry Report* (2015). http://www.analytica-advisors.com/assets/file/2015%20Report%20Synopsis%20Final_wcovers.pdf

Currently, responsibility for the clean tech sector is not consistently coordinated within government. We recommend the creation of an inter-ministerial body tasked with creating this framework, which would take responsibility for coordinating between ministries to oversee implementation of policies and programs that foster the development of the clean energy economy.

Programs that target clean tech export development and commercialization are needed at both the provincial and federal levels. B.C. can look to other sectors of the economy that have well-established export markets (e.g. natural resources, manufacturing) for examples of leading policies. There is also an opportunity for the B.C. and federal governments to build on the success of the research and development, start-up and commercialization policies that currently exist. This could be done by tailoring policies specifically to the needs and conditions of the clean tech sector. Furthermore, greater stability and support for these programs could improve their effectiveness in the marketplace.

Specific policies that would be of value to include and/or build upon in a revised climate plan are as follows:

- Strengthen the carbon tax
- Improve the low-carbon fuel standard
- Update clean energy requirements
- Revitalize the Innovative Clean Energy (ICE) Fund and use the fund to support the commercialization of clean technologies
- Increase and expand the Venture Capital Corporation (VCC) tax credit
- Utilize government assets for clean tech demonstration opportunities
- Increase the number of clean energy sector-specific trade missions
- Replicate Export Development Canada's (EDC) Export Guarantee Program at the provincial level

What we value

British Columbia's carbon tax has been in place for seven years and all available evidence indicates it has been successful. Per capita fossil fuel combustion is down and the economy has performed well relative to the rest of Canada. The policy is now supported by a strong majority of British Columbians and has survived two provincial elections and a change in Premier.

The time is right to build on that initial success. Doing so would support Goal 4 in the discussion paper, and would in particular enable the price on carbon in B.C. to encourage businesses, organizations and individuals to reduce carbon emissions.

Our recommendations:

- **Increase the rate** – A new schedule of carbon tax increases that extends for 10 years with a review after five years should be implemented. The rate of increases should be \$5 to \$10 per tonne per year depending on modelling from the Climate Leadership Plan. While the carbon tax freeze is currently scheduled to end in 2018, we believe there has been enough global carbon progress on carbon pricing to end the freeze immediately. For example, since the freeze was implemented, there has been progress on carbon pricing in Quebec, Ontario and Alberta.
- **Broaden the coverage** – The application of the carbon tax should be broadened to all sources that can be accurately measured. The new sources that would be included are: vented methane and CO₂ from the natural gas sector and industrial process emissions from cement, aluminum and lime sectors. These additions would increase the carbon tax coverage from ~75 per cent of B.C.'s emissions to ~85 per cent. Vented methane and formation CO₂ from the gas sector are particularly

important gaps in the current coverage; there are opportunities to reduce these sources of emissions that the current carbon tax does not encourage.

- **Maintain equity for low-income households** – The low-income tax credit should be increased to keep pace with tax rate increases and ensure that the overall tax policy remains progressive. For example, a 10-year schedule of \$5 per tonne per year increases would take the carbon tax from \$30 per tonne to \$80 per tonne. A similar increase in the low income tax credit would take it from \$115.50 per adult to \$308.00 per year.
- **Preserve competitiveness of our sectors** – If there is a need to support emissions-intensive trade-exposed sectors to preserve their competitiveness, the Pembina Institute is supportive of government using approaches that don't undermine the incentive to reduce carbon pollution. Examples of such approaches used in B.C. include the reduced corporate income tax and corporate tax credits in the first phase of the carbon tax, and the cement sector clean energy fund, which was introduced in the 2015 provincial budget.

Additional building blocks

In addition to the four key areas the government will be considering in developing the next steps on climate leadership, we feel there are foundational pieces required to support successful implementation.

These issues include:

- **Accountability** – For a climate leadership plan to have credibility, the government needs to establish a transparent process for reporting on progress. We recommend that the government establish an arms-length body to monitor and evaluate progress towards the goals articulated in the Climate Leadership Plan.
- **Implementation process** – Once the goals are established, implementation plans will be needed. Strong implementation plans will include targets, timelines and clear assignment of responsibility. They will also indicate sufficient internal resources dedicated to implementation. We recommend that the government establish clear implementation plans for each of the four areas.
- **Offsets** – In the event that offsets are purchased to meet B.C.'s climate targets, transparency regarding the purchase of offsets, including quality and type of offsets, will be required. We recommend that every effort is made to avoid the purchase of offsets.
- **Equity** – Any impacts as a result of climate policy must ensure the principle of equity is upheld and protected. We recommend that climate policy ensure equity in terms of impact between urban and rural areas and for low-income British Columbians and other disadvantaged groups. Any climate action strategy must also recognize the reality of existing Aboriginal title and rights in B.C. and directly involve First Nations in shaping solutions related to climate action.

The Pembina Institute will be conducting our own research into some of these areas over the next few months and will provide greater detail in the next round of public consultation.