

The Honourable Shirley Bond  
Minister of Finance  
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Victoria, B.C. V8W 9C5

Via email: [Finoffice@gov.bc.ca](mailto:Finoffice@gov.bc.ca)

August 31, 2012

Dear Minister Bond:

Attached is the Pembina Institute's response to the Ministry of Finance's request for public feedback on British Columbia's carbon tax. The carbon tax is an important step in the province's efforts to reduce greenhouse gas emissions and the opportunity to review and improve the policy is welcomed.

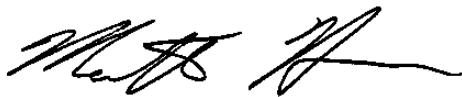
The Pembina Institute recommends the following four steps forward to make the carbon tax fairer and more effective. Each of these recommendations is explained in greater detail in the body of the submission.

- Continue increasing the carbon tax rate,
- Broaden the carbon tax to all measurable greenhouse gas emissions,
- Increase protection for low-income British Columbians, and
- Increase investment in projects that reduce greenhouse gas emissions.

I would also like to draw your attention to two publications for consideration in the review:

- The report "*British Columbia's Carbon Tax: Exploring perspectives and seeking common ground*" was published in June 2012 by the Pembina Institute and the Energy and Materials Research Group at Simon Fraser University. The report presents the findings of 39 interviews about B.C.'s carbon tax with business leaders, environmentalists, academics, and local government officials. The report is available here: <http://www.pembina.org/pub/2352>.
- A December 2011 open letter from 85 business leaders in the province voicing their support for climate leadership in B.C. Of note is their conclusion that: "*We call on government to commit to a schedule of continuing increases after July 2012, in a way that is fair and enables all B.C. businesses and communities to be part of the solution.*" The full letter is available here: <http://www.pembina.org/pub/2300>.

Sincerely,



Matt Horne  
Director, Climate Change Program, Pembina Institute

cc: The Honourable Terry Lake, James Mack and Glen Armstrong

## Recommendations for B.C.'s Carbon Tax Review

Prepared by Matt Horne, P.J. Partington and Tim Shah | August 31, 2012

### Summary

The Pembina Institute views British Columbia's carbon tax as an important first step in the province's efforts to reduce greenhouse gas emissions and build an economy powered by cleaner sources of energy. Looking forward to 2013 and beyond, the Pembina Institute recommends the following changes to improve the fairness and effectiveness of the carbon tax:

1. Continue increasing the carbon tax rate,
2. Broaden the carbon tax to all measurable greenhouse gas emissions,
3. Increase protection for low-income British Columbians, and
4. Increase investment in projects that reduce greenhouse gas emissions.

### Context

#### Progress on climate change solutions is in British Columbia's best interest

British Columbia is on the front lines of climate change, in more ways than one: while the impacts from a rapidly warming climate are already evident across the province, a growing low-carbon economy is building solutions that can be exported around the world. Continuing to move forward with climate change solutions is in the province's best interest for both of these reasons.

B.C. has warmed by 1-1.5°C in the past half century, with another 1.5°C of warming projected by 2050. Precipitation is expected to continue to increase, on average, but with less rainfall in summer, especially in the southern interior. A 10-15 per cent increase in severe precipitation events is expected and severe wildfires are likely to increase significantly over the coming decades.<sup>1</sup> These impacts will impose significant economic costs on the province. The National Round Table on the Environment and the Economy (NRTEE) has estimated that climate change could cost B.C.'s timber sector up to \$3.1 billion per year by mid-century, representing a 0.44 per cent decrease in the province's gross domestic product (GDP). Sea-level rise and precipitation changes could put 11,619 additional B.C. dwellings at risk of flooding by the 2050s, representing an extra \$7.6 billion in annual costs.<sup>2</sup> Those costs could escalate dramatically in the event that global emissions are not

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<sup>1</sup> ICLR, *Telling the Weather Story* (Toronto, ON: Insurance Bureau of Canada, 2012), 10.6.  
[http://www.ibr.ca/en/natural\\_disasters/documents/mcbean\\_report.pdf](http://www.ibr.ca/en/natural_disasters/documents/mcbean_report.pdf).

<sup>2</sup> NRTEE, *Paying the Price: The Economic Impacts of Climate Change for Canada* (Ottawa, ON: Government of Canada, 2011). <http://nrtee-trnee.ca/wp-content/uploads/2011/09/paying-the-price.pdf>.

constrained and climate change impacts shift from manageable to catastrophic.<sup>3</sup>

At the same time, efforts to reduce emissions are bringing exciting new opportunities to B.C.'s economy as businesses innovate and export the solutions needed to create a low-carbon economy. A recent KPMG study found that B.C.'s cleantech sector was directly employing over 7,000 workers in 2010 (with an estimated payroll of \$520 million) and positioned for tremendous growth.<sup>4</sup> The transition to a low-carbon economy is creating and supporting green jobs across the economy. One study estimates that B.C.'s green economy could grow from supporting 166,000 full-time jobs in 2008 to as many as 225,000 by 2020. The green economy's contribution to provincial GDP could grow from \$15.3 billion to \$27.4 billion over the same period.<sup>5</sup>

### **Carbon taxes are an important tool in the effort to fight climate change**

Globally, to avoid the most dangerous impacts of climate change such as severe droughts, wildfires and flooding, every jurisdiction needs to do their fair share to reduce greenhouse gas (GHG) emissions. The carbon tax is an important first step in B.C.'s efforts to do its fair share by sending a clear and increasing signal that investment decisions and behaviours that are good for the planet also make economic sense. While the carbon tax is primarily intended to reduce GHG emissions, the carbon tax mechanism was selected in B.C. because it is widely considered to be one of the most economically efficient ways of achieving emissions reductions.

The main purpose of the carbon tax is to encourage people and businesses to use cleaner sources of energy, and to use energy as efficiently as possible. To assess whether B.C.'s carbon tax is working, we need to look at the consumption of coal, natural gas, gasoline and diesel in the province to see how it has changed since the implementation of the carbon tax. This sort of analysis is challenging for three reasons: 1) only four years have elapsed since the carbon tax was implemented, which is a limited window given the time it takes for capital stock to turn over; 2) the price of the carbon tax remains too low to expect major behavioural changes; and 3) the province implemented a number of climate change policies in close succession, making it difficult to isolate the specific impact of the carbon tax.

Challenges aside, the preliminary evidence is promising and it points to a conclusion that B.C.'s package of climate policies including the carbon tax is helping to reduce GHG emissions. Statistics

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<sup>3</sup> The same NRTEE report, "Paying the Price," estimated that climate change impacts could wipe out upwards of 25 per cent of Canada's GDP if global efforts to prevent the worst impacts of climate change were unsuccessful — a scenario that the world is currently heading towards.

<sup>4</sup> KPMG in Canada, *Cleantech Report Card for British Columbia* (June, 2011).  
<http://www.kpmg.com/ca/en/issuesandinsights/articlespublications/pages/cleantech-report-card-for-british-columbia.aspx>.

<sup>5</sup> Globe Foundation, *British Columbia's Green Economy: Building a Strong Low-Carbon Future* (February, 2010).  
[http://www.globe.ca/media/3887/bcge\\_report\\_feb\\_2010.pdf](http://www.globe.ca/media/3887/bcge_report_feb_2010.pdf)

published by the B.C. government show that the end-use demand for fossil fuels has decreased in the province, dropping faster than the Canadian average, implying that B.C.'s efforts to reduce emissions are delivering results. A recent report by Sustainable Prosperity, a national green energy think tank, also reported that the average British Columbian's consumption of fuels that are covered by the carbon tax have dropped 15.1 per cent since 2008, while the rest of Canada's per capita sales have increased by 1.3 per cent.<sup>6</sup> Based on the most recent data available, B.C.'s GHG emissions dropped by 4.5 per cent overall between 2007 and 2010.<sup>7</sup>

Anecdotal evidence also supports the conclusion that the carbon tax is helping to reduce emissions. During the summer of 2012, the Pembina Institute researched B.C. local government infrastructure projects that reduce GHG emissions (e.g., district energy systems, solar hot water systems and energy efficiency retrofits). The research specifically explored the motivations for those projects and the role of provincial policies in helping or hindering their implementation. The local/regional governments interviewed for the research project included: Burns Lake, the Capital Regional District (CRD), Campbell River, Courtenay, Dawson Creek, Delta, Fort St. John, Langford, Langley, Prince George, Surrey and Whistler.

With regards to the carbon tax, six of these communities found that the carbon tax was helping to make the business case for their low-carbon projects. As the tax puts a price on the environment, this is creating a price signal and incentive for these governments to switch to less carbon-intensive energy sources to save financial capital and on operating costs. Governments such as the CRD, Whistler and Delta explicitly accounted for the carbon tax rate in the financial analysis of their respective projects to determine how much money they could save by displacing fossil fuel use. The City of Dawson Creek and Fort St. John reported that the tax has been providing a stronger argument for why energy conservation projects could be implemented. Although it is not part of the province's Carbon Tax Act, the communities interviewed also viewed the Climate Action Revenue Incentive Program positively. Complete versions of these case studies will be published in September 2012.

Economic impacts also need to be assessed when considering the success of B.C.'s carbon tax. While B.C. has had its share of economic struggles, there is no evidence indicating the province's carbon tax is negatively impacting the economy. B.C.'s per capita GDP is down slightly from 2008 when the carbon tax was introduced, but the rest of Canada has experienced a bigger decline. Sustainable Prosperity reported that the decline in fossil fuel use and corresponding drop in GHG

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<sup>6</sup> Sustainable Prosperity, *British Columbia's Carbon Tax Shift: The First Four Years*. (June 27, 2012). <http://www.sustainableprosperity.ca/dl872&display>

<sup>7</sup> B.C. Ministry of Environment, *Making Progress of B.C.'s Climate Action Plan* (2012). <http://www.env.gov.bc.ca/cas/pdfs/2012-Progress-to-Targets.pdf>

emissions does not seem to have had a negative impact on B.C.'s economy.<sup>8</sup> Opinion pieces from around the world have assessed B.C.'s carbon tax as an effective way to put a price on carbon emissions, while maintaining economic growth.<sup>9,10,11,12</sup>

B.C. is not alone in taxing carbon, and the experiences of countries like Sweden and Finland — countries that implemented similar policies more than two decades ago — offer useful lessons for our province. A study of seven European countries that implemented environmental taxes in the 1990s found that GHG emissions were down from two to six per cent, and the overall effect on gross domestic product had been negligible.<sup>13</sup>

### Carbon taxes around the world

Increasingly, carbon taxes are being adopted around the world by governments trying to reduce GHG emissions. Some of the longest standing examples include the following:

- Finland, which introduced its tax in 1990, currently charges a rate of \$78 per tonne for transportation fuels and \$39 per tonne for heating fuels. Fuels for electricity generation are taxed separately.<sup>14</sup>
- Norway's tax, in place since 1991, currently ranges from \$16 per tonne to \$86 per tonne, depending on the sector. Following a recent increase, the sector with the highest rate is offshore oil and gas production.<sup>15</sup> Norwegian industry (including the offshore sector) also participates in the European Union's (E.U.) Emissions Trading Scheme (ETS).
- Sweden, whose tax has also been in place since 1991, currently charges a standard rate of \$106 per tonne and an industry rate of \$23 per tonne.<sup>16</sup>

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<sup>8</sup> Sustainable Prosperity, *British Columbia's Carbon Tax Shift: The First Four Years*. (June 27, 2012). <http://www.sustainableprosperity.ca/dl872&display>

<sup>9</sup> Yoram Bauman and Shi-Ling Hsu, "The Most Sensible Tax of All," *The New York Times*, July 4, 2012. [http://www.nytimes.com/2012/07/05/opinion/a-carbon-tax-sensible-for-all.html?\\_r=3](http://www.nytimes.com/2012/07/05/opinion/a-carbon-tax-sensible-for-all.html?_r=3).

<sup>10</sup> Yadulla Hussain, "4 key reasons B.C.'s carbon tax is working," *National Post*, July 5, 2012. <http://business.financialpost.com/2012/07/05/4-key-reasons-why-bcs-carbon-tax-is-working/>.

<sup>11</sup> *The Economist*, "We have a winner: British Columbia's carbon tax woos skeptics", July 21, 2011. <http://www.economist.com/node/18989175>.

<sup>12</sup> Chris Wood, "Canada's carbon lesson: Just put a price on it", *LA Times*, February 29, 2012. <http://www.latimes.com/news/opinion/commentary/la-oe-wood-bcaction-plan-20120229,0,6166154.story>.

<sup>13</sup> <http://cordis.europa.eu/documents/documentlibrary/124729471EN6.pdf>.

<sup>14</sup> Finland Ministry of the Environment, "Environmentally related energy taxation in Finland" (2012). <http://www.environment.fi/default.asp?contentid=147208&lan=en>.

<sup>15</sup> *Wall Street Journal*, "Update: Norway Increase Oil Sector CO<sub>2</sub> Emissions Tax By NOK200 Per Ton," April 25, 2012. <http://online.wsj.com/article/BT-CO-20120425-712686.html>.

<sup>16</sup> Jenny Sumner, Lori Bird and Hillary Smith, *Carbon Taxes: A review of experience and policy design considerations* (National Renewable Energy Laboratory, 2009). <http://www.nrel.gov/docs/fy10osti/47312.pdf>.

In each of these economies, carbon taxes have helped to reduce GHG emissions, while average annual GDP growth since 1990 has outstripped that of the E.U. and matched or exceeded the average of all high-income Organization for Economic Co-operation and Development (OECD) countries.<sup>17</sup> As an example, Lin & Li (2011) found that the growth of total CO<sub>2</sub> emissions after the implementation of the tax in Finland was much slower than that occurring before the tax was implemented (annual growth rate of 1.5% between 1981 and 1990 versus an annual growth rate of -0.01% between 1990 and 2008).<sup>18</sup>

Many other jurisdictions, including major emerging economies, have implemented or are exploring carbon-pricing approaches. Table 1 provides a summary of carbon tax and market systems around the world.

Table 1: Carbon taxes and market systems by jurisdiction

Jurisdiction	2012/13 carbon price, if applicable (\$ CAD/tonne)	Start date
<i>Carbon Taxes</i>		
Australia	\$23	2012
Finland	\$78 (transportation fuels) and \$39 (heating)	1990
British Columbia	\$30	2008
Ireland	\$26	2010
Norway	\$16 - \$86 depending on sector	1991
Quebec	\$3	2007
South Africa	\$15	2013
Sweden	\$106 (personal)/ \$23 (industry)	1991
Switzerland	\$39 (rising to \$65 in 2013)	2008
<i>Market Systems</i>		
Alberta	Maximum \$15	2007
California/Quebec	Minimum \$10 for auctioned allowances	2013
China	(Pilot trading systems launching 2012)	2012/16
European Union	\$5 to 20	2005
Northeast U.S.	\$2	2009

<sup>17</sup> The World Bank, “GDP growth (annual per cent).” <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>.

<sup>18</sup> Boqiang Lin, Xuehui Li. (2011). The effect of the carbon tax on per capita CO<sub>2</sub> emissions. *Energy Policy*, 39, 5137-5146.

South Korea	(ETS launching 2015)	2015
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## Recommendations

### Continue increasing the carbon tax rate

The Pembina Institute recommends that the government continue to increase the carbon tax in 2013 and beyond, as the current rate of \$30 per tonne is much too low to mobilize the scale of investment required for B.C. to significantly cut GHG emissions. Increases to the carbon tax should be communicated as far in advance as possible so that individuals and businesses have time to plan and adjust. A multi-year schedule of prices, with an indication of medium-term (e.g., 2020) prices avoids the unnecessary surprise and cost associated with shorter-term changes.

Ultimately, the carbon tax needs to be high enough to significantly shift technology investments and behaviours towards cleaner and more efficient energy choices such that B.C. is able to meet its commitments to reduce GHG emissions. Recent economic modelling indicates that carbon prices will need to be between \$100 and \$200 per tonne by 2020 for B.C. and Canada to meet the emissions reduction targets they have set.<sup>19</sup> The exact price will depend on factors such as how much the cost of clean energy technologies decline, how much market prices for fossil fuels increase or decrease, the types of complementary climate change policies implemented in B.C. and the types of climate change policies implemented in other jurisdictions. To reach a 2020 price of \$100 to \$200 per tonne, the carbon tax will need to continue increasing by between \$5 and \$25 per tonne per year for the remainder of the decade.

The competitiveness of B.C.’s most emissions intensive industries will rightly be part of any discussion to increase the carbon tax rate. If an evidence-based assessment demonstrates that the carbon tax and any accompanying tax cuts and/or investments hurts a sector’s competitiveness, government should address the problem. If such a need arises, the Pembina Institute strongly supports measures that maintain the carbon tax incentive for the sector to reduce its emissions. However, a carbon tax exemption such as the one granted to greenhouse growers in B.C. sets a poor precedent — there was no evidence-based assessment that demonstrated a material competitiveness impact on that industry. Furthermore, the exemption resulted in zero incentive for greenhouse growers to reduce their emissions.<sup>20</sup> A good way to overcome these types of challenges is to use

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<sup>19</sup> References: Government of B.C. (2008) “*Climate Action Plan*” (\$100 per tonne for B.C.), NRTEE (2012) “*Reality Check*” (\$150 per tonne for Canada), and the Pembina Institute (2010) “*Climate Leadership, Economic Prosperity*” (\$150 to \$200 per tonne for Canada depending on target).

<sup>20</sup> For further discussion of the exemption for greenhouse growers, see <http://www.pembina.org/blog/618>.

carbon tax revenue to invest in those sectors such that they still contribute to the overall effort to reduce emissions while improving their competitiveness in the long-term.

### **Broaden the carbon tax coverage to all measurable greenhouse gas emissions**

The carbon tax should be applied equally to all sources of GHG emissions that can be accurately measured. The carbon tax currently applies to almost all of the emissions from burning fossil fuels in B.C., which equates to about 75 per cent of the province's emissions. Notable exceptions include process (i.e., not from combustion) emissions from the aluminum, lime, cement and natural gas sectors, and emissions from greenhouse growers in B.C.<sup>21</sup>

Most of the sources listed above can be accurately measured, so the carbon tax should be applied to them. The caveat about accurate measurement is important because the carbon tax is only effective if a change in emissions can be accurately demonstrated. Methane emitted from landfills is an example of a source of GHG emissions where current techniques for measurement do not provide accurate measurements. Based on the Pembina Institute's estimates, broadening the carbon tax to all emissions in the province that can be accurately measured would increase the carbon tax's coverage from 75 per cent to 82 per cent of B.C.'s GHG emissions, and would increase revenue by \$125 million per year.<sup>22</sup>

The rationale for this recommendation is threefold:

- The more broadly applied the carbon tax is, the more effective it can be at encouraging cleaner and more efficient sources of energy throughout the province.
- Increasing the coverage of the carbon tax makes it fairer by treating as many sources of GHG emissions as equally as possible.
- Increasing the coverage generates additional revenue that the province will be able to invest.

Similar to the discussion about rate increases, the province should address any challenges where an evidence-based assessment demonstrates that broadening the carbon tax would hurt a sector's competitiveness. The best way of addressing those challenges would be to use carbon tax revenue to invest in those sectors such that they are still contributing to the overall effort to reduce emissions while improving their competitiveness in the long-term.

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<sup>21</sup> Greenhouse growers were exempted from the carbon tax in April 2012, while the other sources mentioned have never been included in the coverage.

<sup>22</sup> This estimate is based on \$30 per tonne and 2010 emissions levels.



## **Increase protection for low-income British Columbians**

The Pembina Institute's perspective is that carbon taxes need to be designed to protect low-income families from being disadvantaged, and ideally, to make those families better off. Low-income British Columbians already spend a high percentage of their disposable income on energy costs and often do not have the ability to reduce their energy consumption (e.g., if they do not own their home). Carbon taxes increase the costs of fossil fuels, which, depending on how the carbon tax is designed, can exacerbate these issues and make it even more difficult for this vulnerable population to meet their needs.

The low-income tax credit funded by carbon tax revenues is an important part of addressing this concern. When initially implemented in 2008, the tax credit was large enough to more than offset any potentially negative impacts from the carbon tax on low-income British Columbians, but increases in the credit have not kept pace with increases in the carbon tax.<sup>23</sup>

To make up for this gap, the province should increase the protection it provides to low-income British Columbians. The low-income tax credit is an effective approach that could easily be increased to directly compensate for any negative impacts. The province should also advance approaches that go beyond financial compensation and help low-income households reduce their GHG emissions and the amount of carbon tax they pay. Possible approaches could include making energy efficiency incentives specifically targeted toward low-income households and designing programs that encourage landlords to invest in energy efficiency for rental properties.

## **Increase investment in projects that reduce emissions**

In addition to increasing the support provided to low-income British Columbians, we recommend that the government use a portion of the carbon tax revenue generated by increasing the rate or broadening the coverage to invest in projects that reduce GHG emissions. Those investments should be targeted specifically at projects that are unlikely to occur without the government investment. Good examples would include public transportation projects, research and development funding for new technologies, and investment into emerging technologies that are not yet cost-effective.

There are two good reasons for making these types of investments and linking them to carbon tax revenue. First, additional investment into projects that reduce GHG emissions accelerates the rate at which B.C. is reducing emissions. This is particularly important while the carbon tax rate is still relatively low because the additional investment can help to make the business case in instances where the carbon tax is not sufficient on its own. Second, there is ample evidence that British Columbians and Canadians would like to see carbon tax revenues directly linked to the solutions

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<sup>23</sup> Canadian Centre for Policy Alternatives (2008), "*Is B.C.'s Carbon Tax Fair?*" Accessed at <http://www.policyalternatives.ca/publications/reports/bcs-carbon-tax-fair>.

they are intended to encourage.<sup>24</sup> For example, using a portion of carbon tax revenues to invest in public transit helps frame the carbon tax as both an incentive and a solution, whereas without the direct link to solutions it is often portrayed purely in a punitive light.

This is not to say that using a portion of carbon tax revenue for tax cuts is a bad idea – simply that revenue neutrality is not an idea or principle that the province need adhere to. Revenue neutrality was a decision made when the carbon tax was implemented, but it is not the only way that carbon taxes are designed around the world. Other approaches include Ireland, where their carbon tax revenues go into general revenue and Quebec, where their small carbon tax is used to fund the province’s climate change plan.

The potential revenue could be significant. For example, broadening the carbon tax as discussed in the second recommendation in this submission would increase the carbon tax coverage from approximately 75 per cent to 82 per cent of B.C.’s GHGs. At \$30 per tonne, the broadened coverage would add roughly \$125 million in revenue for the province. In a 2020 scenario where B.C. meets its GHG reduction target, has increased the carbon tax to \$100 per tonne and broadened the coverage to 82 per cent, there would be \$2.1 billion in annual revenue available to the province (in addition to the \$1.2 billion currently collected).

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<sup>24</sup> For example, see the Pembina Institute’s (2011), “*Measuring the appetite for climate action in British Columbia.*” Accessed at <http://www.pembina.org/pub/2233>.