BC's Quest for Carbon Neutrality

A Tyee Solutions Series

Reporters:
Tom Barrett, Geoff Dembicki, Christopher Pollon and Chris Wood

Tyee Solutions Society

Tyee Solutions Society is a Vancouver-based non-profit that produces catalytic, solutions-oriented journalism on social, economic and environmental issues of broad concern to Canadians.

BC's Quest for Carbon Neutrality

An introduction

Announced in 2007 and implemented over the year that followed, British Columbia's Climate Action Plan placed it in the vanguard of jurisdictions confronting the greenhouse emissions that are driving climate change. In late 2011, with new political leadership in the legislature, a provincial election just over the horizon and the risks of shifting weather patterns becoming ever more expensively apparent, Tyee Solutions Society anticipated the Climate Action Plan's fifth anniversary with an in-depth review of its accomplishments and shortfalls.

Reporting the series were independent journalists Tom Barrett, Christopher Pollon and Geoff Dembicki (see bios). Tyee Solutions Society co-ordinating editor Chris Wood oversaw their work. Their reports and analysis appeared over the course of 10 installments over several weeks in *The Tyee*, Tyee Solutions Society's primary media partner. A distillation of the series also appeared in the commentary pages of the *Los Angeles Times* and half a dozen other metropolitan U.S. papers.

The reports compiled here review the policy features that placed B.C. ahead of the North American pack in fighting climate emissions, including its pioneering carbon tax. They examine the successes and missteps of the policy as it took shape, finding evidence that it has had a meaningful impact on greenhouse emissions, while identifying not only the well-known controversies associated with some of its implementation but also overlooked features that threaten the promised effectiveness of, for example, the plan's fuel carbon standard.

Since the series appeared, Liberal Premier Christy Clark has thrown open British Columbia's carbon-emissions reduction goals. Clark's February, 2012, endorsement of liquefied natural gas exports from British Columbia implied an increase of associated carbon emissions from expanded gas production and infrastructure. Finance Minister Kevin Falcon froze the province's pioneering carbon tax and placed it under review. Some in his party mused aloud that it should simply be dropped. Meanwhile spending was announced to buffer the action plan's impacts on influential public and private sectors, but the government remained silent on what it planned, if anything, to rein in significant industrial emissions, including those from gas development.

Opposition Leader Adrian Dix committed to retain the carbon tax, but said that a future New Democratic Party government under his leadership might redirect some of the revenue it raises to other emission-reduction purposes. The party did not disclose how, or whether, it would attempt to close the same known loophole in the climate plan through which roughly a quarter of the province's carbon releases occur unchecked as industrial emissions.

British Columbia's experiment in climate action remains unique. How it's turned out should be of vital interest whether you're a B.C. citizen preparing to vote on its future, or an engaged resident of another state or province considering what choices to make for your own future. This collection of stories from the front-line offers a lively, informed and professionally balanced summary of its results to date.

- Chris Wood

Bios

Tom Barrett: Tom Barrett writes on politics and climate change policy for *The Tyee* and is a sessional instructor at Kwantlen University's journalism program.

Christopher Pollon: Christopher Pollon reports on issues of resource extraction and the environment. His work appears in *The Globe and Mail*, *Canadian Geographic* and *The Tyee*, where he is a contributing editor.

Geoff Dembicki: Geoff Dembicki reports on energy and climate change issues for Tyee Solutions Society. His reporting has been featured in *Salon*, *Alternet* and the *Los Angeles Times*.

Chris Wood: Chris Wood contributes to *The Tyee* and *The Walrus*, is the author of *Dry Spring*, a book about climate change and water, and a forthcoming book on Canada's environmental management.

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Riske Creek, British Columbia.
Photo courtesy of if we could from Your BC: The Tyee's Photo Pool

BC's Climate Plan at a Crossroads

Today begins a series on how the province's carbon reduction plans are working, or not.

By Christopher Pollon, 21 November 2011

View full article and comments: http://thetyee.ca/News/2011/11/21/BC-Climate-Action/

[Editor's note: Four years ago, B.C. dazzled the world with a daring new plan to drive down carbon emissions. Well, the world has moved on since 2007 – through a global financial crisis into a new era of pinched economies and a deepening divide between the economic have-it-alls and the have-lesses (and less and less with each passing year), as expressed in the Occupy movement. Meanwhile, the political leader who gave B.C. its carbon strategy has also moved on. His Liberal successor, Premier Christy Clark, and her equally untested rival, NDP Opposition Leader Adrian Dix, must face British Columbia voters in a general election in May 2013. For both, the millions of dollars in government revenue, public spending, and future tax hikes and disbursements at stake in B.C.'s climate strategy present irresistible, or perhaps inescapable, targets to define their opposing campaigns.

Before the partisan framing sets in, the Tyee Solutions Society thought it might be useful to stand back and consider just what the Climate Action Plan has and hasn't accomplished so far – what's been learned from its successes and lapses, what informed observers say deserves rethinking and what the rival suitors for our support in the coming election have revealed about which elements of the pioneering plan to zero out B.C.'s carbon footprint they may scrap or enhance.

In this first instalment of a series, Christopher Pollon recaps how we got here. Future instalments will measure partisan support for the Carbon Action Plan; look in on how our unique-in-North-America carbon tax is working out; pull back the curtain on the mysterious world of carbon "offsets"; and more.]

Political observers still can't explain Gordon Campbell's 2007 transformation from eco-villain to trail-blazing climate activist. While other North American politicians stood slack-jawed on the sidelines, British Columbia's then-premier, an avowed enemy of environmentalists, launched the continent's boldest experiment to fight climate change.

Over about a year, Campbell's Liberal government tabled 10 pieces of legislation to enable British Columbia's Climate Action Plan. At its heart was a legally binding requirement to slash B.C.'s greenhouse gas emissions by one-third from 2007 levels by 2020, and 80 per cent by 2050.

Many doubted Campbell's sincerity. Six years earlier, the former Vancouver mayor had terminated his predecessor's climate change program within months of taking power, created a tax loophole for gas-guzzling luxury vehicles and reduced provincial fuel taxes. He joined the premier of oil-producing Alberta in opposing ratification of the Kyoto protocol.

It seemed a stunning reversal when his government's February 2007 speech from the throne declared a four-part war on climate change to include North America's first broad-based revenue-neutral carbon tax, mandatory public sector carbon neutrality and plans for participation in a regional cap and trade system.

The boldness of B.C.'s climate plan continues to astonish international politicians and business leaders. "They're all dumbfounded," said Mark Jaccard, an environmental economist at British Columbia's Simon Fraser University, International Panel on Climate Change (IPCC) co-author and one of the experts recruited late in 2007 to help the province meet its ambitious 2020 targets. "They're like, 'You did that? What political leader would have done that? This is crazy!'"

Crisis = opportunity

What appears to have inspired Campbell's conversion was a combination of global theory and painful local experience – and a pragmatic conclusion that global climate crisis would yield vast economic opportunities for the province.

Known as a policy wonk, Campbell was profoundly affected by the 2006 Stern Review, which warned that 20 per cent of global gross domestic product (GDP) could be lost by climate inaction. The cost of action was, by contrast, estimated at just one to two per cent of the global GDP. "The economic benefits opened up by transitioning to a low-carbon economy are real and substantial," Campbell's "Climate Action Team" wrote of the Stern Review.

Sobering realities on the ground bolstered the resolve to act. By 2007, it was difficult to deny the role of warmer winter temperatures in a mountain pine beetle epidemic that had already killed at least 530 million cubic metres of interior lodge-pole pine, with no end in sight. In the space of a generation, a province dependent on the flow of its great rivers for electricity had lost up to half of its snowpack.

At the time – with the fourth report from the IPCC being widely reported, former U.S. vice-president Al Gore's *Inconvenient Truth* in theatres and the Great Recession still to come – public concern was also ascendant. An Ipsos-Reid poll three months before the launch of the climate plan showed the issue eclipsing even health care as a concern for Canadians.

The making of a plan

By all accounts, B.C.'s climate strategy was devised and implemented quickly, vetted only by a small circle of people close to the premier and the finance and environment ministries. Outsiders who provided advice included Jaccard and another IPCC co-author, Andrew Weaver, climate scientist at the University of Victoria. (Weaver gained notoriety last year when he sued several climate-change-skeptical Canadian columnists who had publicly questioned his professionalism.)

British Columbia's emissions targets became law in November 2007, followed seven months later by the release of a Climate Action Plan to achieve them. (See a more detailed timeline in the fact box to the right of the story.)

Hitting those carbon goals would, however, as Campbell's advisors warned, require nothing short of a revolution in thinking: "What we are driving... is perhaps the largest and most significant shift in public attitudes ever," the Climate Action Team wrote in 2008. "We are attempting to alter, in the span of just a few years, behaviours that in many cases have been entrenched for generations."

Four pillars

To achieve its revolution, B.C.'s Climate Action Plan, released in June 2008, relied on four pillars:

- *A carbon tax.* The carbon tax put a dollar price on carbon emissions. Starting in July 2008, that price was C$10 per tonne of CO2 equivalent emissions, designed to increase by C$5/tonne annually until 2012, when it will hit C$30/tonne. The tax is applied and collected at the wholesale level in the same way as most motor fuel taxes and was designed to be "revenue neutral" – almost all of the revenue collected is offset as tax cuts. By raising the cost of fossil fuels, the tax is intended to provide an incentive to find less carbon-intensive energy and transportation alternatives. Emissions from certain industrial processes, like gas flaring

and certain aspects of aluminum and concrete production, remain exempted from the carbon tax.

- *A low-carbon fuel standard.* Legislation mandated a 10 per cent reduction in the "average carbon intensity" of fuels used in B.C. by 2020. To make this happen, fuel distributors are required to calculate the average "global warming intensity" of their products – including emission-creating activities during their production (such as refining and stack flaring) – and reduce it over time.

- *Public sector carbon neutrality.* In another continental first, all activities in British Columbia's public sector – a category that includes government offices, provincial jails and public schools, as well as hospitals and Crown corporations (of which the biggest is BC Hydro with C$4 billion in revenues last year) – were ordered to become "carbon neutral" by 2010. How? A covered entity such as a Crown corporation had first to calculate its total business-as-usual greenhouse gas emissions, then reduce those as much as possible. And emissions that remain must be "offset" by the purchase of carbon-reduction credits from the Pacific Carbon Trust, a new Crown corporation created specifically to acquire and sell a portfolio of "made-in-B.C." carbon offsets. In 2010 alone, the provincial public sector spent C$18.2 million annually to offset 730,000 tonnes of greenhouse emissions.

- *Regional cap and trade.* B.C. was the first province to fully partner in North America's Western Climate Initiative (WCI), which is designing a regional cap and trade system to be formally launched in January 2012. Such a system imposes a limit or "cap" on the total emissions for participants in the system, lowering the cap over time with the goal of meeting an overarching reduction target. Individual emitters are issued credits equal to the amount of emissions allowed under the cap. If a participant cannot meet their own emissions limit, they must either purchase additional credits from participants that are successful in meeting their emissions target, or invest in emissions-reducing projects.

The Western Climate Initiative got a critical boost in October when California approved its final cap and trade regulations which will enable the trade of emission credits by 2013. Quebec is firmly committed to participate as well. Just last week, however, WCI took a hit when six American states pulled out of the program.

Uncertain future

Nearly five years after it began, B.C.'s bold experiment in change is at a crossroads. Campbell has gone off to a plum diplomatic posting in London.

His successor, Premier Christy Clark, is struggling to solidify her leadership in the lead-up to an election prescribed by law for May 2013. She has made the family her policy priority ahead of the environment, and counts among her closest advisers the founding CEO of one of the continent's largest natural gas producers.

Clark's opposition in the B.C. legislature is under new leadership of its own, as Adrian Dix aims to place his stamp on New Democratic Party policy before the province votes.

Staying the present course is not an option for either leader. Round one of actions under the Climate Action Plan was never designed to take us more than about 75 per cent of the way toward our 2020 emissions reduction target. The plan contemplated a second round, kicking in sometime around now, to take us the rest of the way. Round two would include:

- Possible increases to the carbon tax after 2012 if required to achieve emissions targets.

- Expanding the carbon tax to include all greenhouse gas emissions generated in B.C., or capturing these "fugitive" industrial emissions as part of a future cap and trade system.

- Increasing the carbon fuel standard to 15 from 10 per cent by 2020.

- Capturing emissions from air travel in the new cap and trade system after 2012 – or, barring that, "mandatory carbon credit payments" charged at points of air travel.

How many of those will survive the politicking to come? Or will British Columbia follow other jurisdictions and retreat back to the sidelines? Perhaps the most important questions of all: Which parts of B.C.'s pioneering climate plan are actually delivering reduced carbon emissions? And which, if any, are not?

We'll be examining those questions over the days and weeks ahead in this special series of reports on B.C.'s embattled commitment to carbon cutting.

BC's Climate Campaign: Timeline

October 2006
- UK Stern Report released discussing the effects of climate change on the world economy.

February 2007
- IPCC published Fourth Assessment Report.
- Speech from the throne commits actions to tackle climate change, including setting greenhouse gas emission reduction targets and carbon neutral government; $4 million for Climate Action Secretariat included in budget.
- Energy Plan released.

April 2007
- B.C. joins the Western Climate Initiative.

May 2007
- Climate Action Secretariat established.
- B.C. joins the Climate Action Registry.

August 2007
- Western Climate Initiative members agree to a 15 per cent regional GHG emission reduction goal.
- Key staff at Climate Action Secretariat hired.

September 2007
- B.C. communities commit to carbon neutrality by 2012 by signing the Climate Action Charter.

October 2007
- B.C. joins the International Carbon Action Partnership (ICAP).

November 2007
- Greenhouse Gas Emissions Reductions Target Act passed setting a 33 per cent reduction target by 2020 and 80 per cent by 2050, carbon neutral government legislated.
- Climate Action Team announced consisting of 15 members including business, local government, academic, NGO and energy leaders.

December 2007
- Call for proposals issued for the Innovative Clean Energy Fund.

January 2008
- $14 billion transportation plan announced.

February 2008
- Budget includes over $1 billion in spending for climate action.
- Revenue neutral carbon tax announced starting at $5/tonne.
- LiveSmart B.C. incentives announced.

Spring 2008
- Government passes climate action legislation to enable the carbon tax, cap and trade, vehicle emissions standards, renewable and low carbon fuel requirements, green community development and low-carbon energy production.

June 2008
- Government releases the Climate Action Plan. Includes modelling by Mark Jaccard and associates estimating that the policies in the plan get the province 73 per cent of the way to their 2020 target.
- LiveSmart B.C. website launched.
- Carbon tax comes into effect.

August 2008
- Climate Action Team releases report recommending interim GHG emission reduction targets, additional policy measures to meet 2020 reduction targets and advice on how to achieve carbon neutral government.

September 2008
- Citizens' Conservation Councils launched consisting of seven councils with 70 participants.
- WCI partners release a proposed design for comprehensive regional cap and trade.

October 2008
- Low income families receive low income climate action tax credit
- November 2008
- Government sets GHG targets for 2012 and 2016.

April 2009
- Pacific Carbon Trust buys first set of emissions offsets.

July 2009
- Release of B.C. Greenhouse Gas Inventory Report 2007 – sets the emission baseline for provincial targets.
- The Province and the Canadian Association of Petroleum Producers (CAPP) sign a Memorandum of Understanding on energy efficiency.

November 2009
- Reporting regulation requires facilities emitting 10,000 tonnes of greenhouse gas and above annually to report their emissions.

March 2010
- Zero Net Deforestation Act passed.

April 2010
- Clean Energy Act is introduced.

May 2010
- The province returns nearly $2.9 million in carbon-tax dollars to local governments who are committed to becoming carbon neutral by 2012.
- The province has released the Community Energy and Emissions Inventory (CEEI) reports for all B.C. local governments, a North American first.

June 2010
- $25 million for Public Sector Energy Conservation Agreement projects goes to public sector organizations for energy retrofits.

September 2010
- "Apps 4 Climate Action" contest winners are announced.
- B.C. Releases its second Greenhouse Gas Inventory Report.

October 2010
- Beginning of formal public consultations on cap and trade regulations.

February 2011
- B.C. and Washington State sign Climate Action Partnerships

March 2011
- Facilities report greenhouse gas emissions to B.C. for the first time through the one-window reporting system with Environment Canada.

April 2011
- Extension of LiveSmart B.C. home energy retrofit program.

June 2011
- B.C. becomes North America's first carbon neutral public sector.

July 2011
- B.C. raises carbon tax to $25/tonne.
- Quebec tables regulations for its participation in the California-led cap and trade system – with legal obligations for industries and enforcement commencing in 2013.

October 2011
- California approves its final cap and trade regulations, which will create the second largest carbon market in the world beginning in 2013.

(SOURCE: B.C. Ministry of Environment, CP)

Tyee Solutions Society is a non-profit producing catalytic, solutions-oriented journalism on social, economic and environmental issues of broad concern to Canadians. For more information visit www.tyeesolutions.org.

Climate policy hot seats inside: Legislature building in Victoria, B.C. Photo courtesy of FerryDude2011 from Your BC: The Tyee's Photo Pool

Politics Buffet BC's Carbon Agenda

Premier Clark inherited bold climate policies and strong pressures on all sides.

What will she do?

By Tom Barrett, 22 November 2011

View full article and comments: http://thetyee.ca/News/2011/11/22/BC-Carbon-Agenda/

[Editor's note: This Tyee Solutions Society series sets out to consider just what B.C.'s four-year-old Climate Action Plan has and hasn't accomplished so far, including what informed observers say deserves rethinking. Part one of this series re-capped how we got here. In this second instalment, Tom Barrett takes the measure of Carbon Plan support – or not – in today's political context. Future instalments will look in on how our unique-in-North-America carbon tax is working out; pull back the curtain on the mysterious world of carbon "offsets"; and more.]

Back in 2007, a radio hotliner named Christy Clark proudly announced that she had jumped on the "global warming bandwagon." The environment, she declared, was "the single most important issue facing this country."

Today, hotliner Clark is Premier Clark. Where she sits on the global warming bandwagon isn't so clear. What is clear is that unless her government takes action on the climate front soon, B.C. will likely miss the legally binding emission reduction targets set by her predecessor.

Under a law passed under former premier Gordon Campbell, B.C. is committed to reducing its greenhouse gas emissions to one-third below 2007 levels by 2020. Under Campbell, an ambitious Climate Action Plan was put into place. So far, to the relief of environmentalists and the frustration of business, Clark has not repudiated that plan.

But the plan went only so far. Three years ago, the government's panel of experts, known as the Climate Action Team, concluded that the action plan would take the province only about three-quarters of the way to its target. To close the gap, the team proposed a number of measures. A key recommendation urged the government to increase the carbon tax after 2012. A second stressed the importance of putting a price on emissions not covered by the carbon tax.

So far, Clark has shown no intention of raising the carbon tax beyond its last scheduled increase in 2012. Progress on putting a price on untaxed emissions has been slow. Meanwhile, Clark has rolled out a jobs strategy, featuring

a beefed-up oil and gas sector, which appears certain to increase emissions.

Even Environment Minister Terry Lake admits that meeting the legislated reduction targets will be "challenging." Currently, the government's response to the Climate Action Team's recommendations is being discussed, Lake said in an interview. A plan could "start to come together" in 2012, he said.

Brave goals, at the time

In his climate plan, Campbell set out some grand goals. In the 2008 Throne Speech, Campbell gave Lieutenant-Governor Steven Point these Churchillian words to read:

"We cannot be paralyzed into inaction by the scale of the task at hand. Rather, we will act now to make a real difference, and to encourage behavioural changes that will drive sustainable growth as a global imperative."

British Columbians were promised a revenue-neutral carbon tax, membership in a regional cap-and-trade system that would lower industrial emissions, "carbon smart communities" and California-style vehicle emission and low-carbon fuel standards. BC Hydro was directed to favour new, clean energy sources.

Despite political controversy, the Campbell government moved ahead with many of its policies. But when Campbell resigned in Nov. 2010, the plan's future was unclear. Would the new premier commit to what was essentially a Campbell pet project?

During her days as a media commentator, Clark certainly sounded onside.

In a 2007 column in The Province headlined, "We Don't Have Much Time Left to Keep Debating Climate Change," Clark wrote that climate change is real, man-made and could have disastrous consequences.

"We could face devastating forest fires, suffocating heatwaves and mass starvation," she wrote.

Clark: 'I was outraged'

A few months later, Clark revealed that, "my jump onto the global warming bandwagon came in a roundabout way."

Reflecting on the experience of interviewing environmentalist Mae Burrows, who talked about toxins in the environment, Clark wrote, "I was outraged that those chemicals are allowed in our household products in Canada – even though they've been banned in Europe."

"Mae got me thinking hard about the environment and what state it'll be in when my son grows up," the future premier continued. "Because it's not just toxins that are a threat to his future, it's thousands of other things as well. Pine beetles have chewed through billions of dollars worth of trees, while we wait for a cold snap that never comes. There's less water in our reservoirs because snowpacks on the mountains above are shrinking. Our streams are warmer. If they warm just one or two degrees more, most of our returning salmon will die.

"I spend enough time thinking about it that I've concluded it's the single most important issue facing this country."

In April 2007, a few months after Campbell launched his war on carbon emissions, Clark wrote that politicians who want to cut greenhouse gases shouldn't promise to make driving less expensive. "Saving the environment won't come cheap," she wrote in The Province.

During the Liberal leadership campaign, Clark spoke in general terms about the benefits of a green economy. She appeared to be cautiously supportive of the carbon tax, but said it contained "wrinkles" that would require review.

Mixed signals

Once in power, however, the first signals Clark sent were anything but green. Her transition team was heavy on the oil and gas industry, with unconventional gas giant EnCana's founding CEO, Gwyn Morgan, and pipeline company Enbridge vice-president Roger Harris at the table. There were rumours that the entire climate action agenda was up for review. Environmentalists worried that the Campbell initiatives might be scrapped.

Then, in May, while running in the Point Grey byelection, Clark released an "open letter to British Columbians." It re-affirmed her commitment to increase the carbon tax, as scheduled, through 2012. She suggested that she might also find some new uses for the carbon tax.

"In the future," Clark wrote, "I am open to considering using the carbon tax to support regional initiatives, such

as public transit. If we go this route, we must ensure that the allocation of carbon tax revenue respects regions and communities so that one region is not subsidizing investments in another."

The open letter also said B.C. "will continue to play a leadership role through the Western Climate Initiative to design a cap and trade system that works for our environment and our economy. B.C. will work with California and other participating jurisdictions, while consulting extensively with stakeholders in B.C."

On his blog, University of B.C. resource policy expert George Hoberg called the announcement "great news."

Much of B.C.'s business community didn't take it that way, however.

Jock Finlayson, executive vice-president of the Business Council of B.C., said in an email that he hasn't seen any signs that Clark intends to quit the Campbell climate strategy – although many of his members wish she would.

"The new premier has given no indication that she plans to back away from the aggressive climate policy positions defined by her predecessor," Finlayson said.

"The Business Council continues to recommend that the government 'pause and reset' on climate policy," Finlayson wrote. "Many (not all) of our members believe B.C. moved too quickly on climate policy, without doing the homework necessary to arrive at well-informed policy decisions.

"That said, so far I have not seen any hard evidence that the Clark government is heeding our advice."

There is one point on which Finlayson and environmentalists agree, and that's Clark's jobs strategy, announced in September and loaded with promises of eight new mines and a liquefied natural gas terminal at Kitimat. "It's hard to see how these goals can be met while still adhering to all of the elements of the climate policy framework established under former Premier Campbell," Finlayson said.

The Pembina Institute's Matt Horne says the goals can be reconciled, but the solutions aren't "just going to naturally fall out of the air. We've got to be on top of them."

Said Horne: "I think if we're really going to live up to the objectives of the Climate Action Plan, there's no question that additional concrete steps are needed. And those haven't been taken to date."

Horne said the government has to put a price on the industrial emissions mentioned by the Climate Action Team. While the carbon tax covers almost all emissions from burning fossil fuels, it doesn't cover non-combustion emissions. These gases represent about one-quarter of the province's total emissions and their sources include landfills, gas pipelines, cement plants and aluminum smelters.

At the time the Climate Action Plan was drafted, there was a lack of data on these emissions, making it difficult to place them under the carbon tax. Instead, the government originally favoured including such emissions in the WCI cap-and-trade scheme. That scheme is progressing, but slowly. Meanwhile, Horne said, enough data has been accumulated to apply the carbon tax to at least some of the uncovered gases.

"In 2008 they were defensible gaps. In 2011 and 2012 they're quickly becoming loopholes."

Economist Marc Lee, with the Climate Justice Project of the Canadian Centre for Policy Alternatives, shares Horne's concerns.

"As far as I can tell," Lee said, "the B.C. government hasn't done anything [on climate] since its flurry in 2007, 2008." Since then, "All we've seen are increasing efforts to spur more oil and gas development, which are going to worsen the problem and likely mean that we will not be able to meet those targets."

Clark's jobs plan "moves us totally in the wrong direction by putting so much emphasis on mining and oil and gas development," Lee said. The proposed LNG terminal in Kitimat would be "an utter disaster environmentally," he said.

The anti-carbon-tax B.C. Conservative party may be one factor scaring Clark's Liberals away from climate action, Lee suggested.

"It may be that with the Conservative party gaining strength the Liberals are more worried about their right flank than their left flank. It would be nice if behind the scenes the NDP and Liberals sort of said, 'Okay, we agree we're not going to beat each other up on this carbon tax thing, we're going to do the right thing.'

"Instead we have the opposite case. Neither of the two big parties is supporting any new meaningful climate action."

Still afloat, but adrift

Political scientist Dennis Pilon was at the University of Victoria when the Campbell government rolled out its climate plan. Newly relocated to York University in Toronto, Pilon questions the seriousness of Campbell's commitment to fighting climate change.

"The premier was a man of quickly changing tastes," he said. "The carbon tax came up – Oh gosh, this is exciting – then it got pushed aside for some other issue *de jour* that he thought was terribly important and was talking with somebody over dinner about."

The action plan, he said, looks like a bid to steal away middle class supporters of the NDP. "I was never really entirely convinced that the premier was putting any muscle behind the policy."

Given Clark's background in the federal Liberal party – albeit on the right wing of the federal Liberals – Pilon expects she will maintain her commitment to the Campbell climate plans. "I think the fact that the party won quite decisively last time despite the carbon tax suggests that it won't kill the party," he said.

No 'Axe the Tax' in 2012

New Democratic Party environment critic Rob Fleming is another who says B.C. won't meet its GHG-reduction targets unless its climate policy changes gears.

"You can't give industry a free pass and give out environmental permits to major new emitters in the province," Fleming said. "It just doesn't add up."

The NDP's "Axe the Tax" election slogan proved unpersuasive in the last election. The party now supports a carbon tax, but not its revenue neutrality.

As created under Campbell, the levy was billed as a tax *shift*, rather than a tax *increase* – all the revenues collected by the tax were, by law, going to be given back in personal and corporate tax cuts.

In fact the government has been giving out far more cash than it's been collecting from the carbon tax – millions more. The most recent B.C. budget says the government collected $740 million in carbon tax revenue in the last fiscal year. But it gave up $395 million in personal income tax cuts and $467 million in business tax cuts.

That means the government lost $122 million on the carbon tax last year. This year, the shortfall is forecast to hit $191 million.

An NDP government would instead use some of the carbon tax money to fund green infrastructure like transit.

"The carbon tax in B.C. has not been well structured to contribute towards the kinds of investments that will allow British Columbians in their daily lives to reduce their carbon footprints," Fleming said. "They accelerated corporate tax cuts to such an extent under the guise of making the carbon tax revenue neutral that in actual fact it's contributing approximately $200 million to the province's deficit right now.

"So not only has it failed to fund smart green infrastructure investments, it actually hurts the province's ability to fund public services that we enjoy currently."

An NDP government would pay for this infrastructure by either cutting the business tax breaks or "growing the carbon tax revenues," Fleming said.

As for the sectors of the economy not covered by the carbon tax, they "need to be brought into the scheme, either through the carbon tax or through some sort of regulation that will help them contribute to the province-wide legal target of a 33 per cent reduction by 2020," Fleming said.

The NDP would also overhaul the carbon neutral government initiative. Schools and hospitals would no longer be required to buy offsets from the Pacific Carbon Trust, which uses the money to pay for carbon reductions in the private sector.

'A fine balance': BC enviro minister

B.C. Environment Minister Terry Lake told Tyee Solutions that growing the economy while shrinking emissions is "not an easy task." He added that it would be irresponsible for the government to ignore the fragile world economy.

"There's a balance we have to strike between the greenhouse gas side of things and the economy and competitiveness and creating jobs on the other side," he said. "You know, that's a fine balance sometimes and so that's why we're doing a lot of work, looking at all of those different factors that come into those types of decisions."

As for meeting the legislated GHG targets, Lake said: "It certainly is challenging to meet the 2020 targets when you look at the advent of shale gas and liquefied natural gas. I wouldn't be frank if I said it wasn't a challenge. But I think it's a challenge that I'm quite excited about trying to meet."

The government is meeting with industry and environmentalists to discuss the next steps, Lake said. "We have to have discussions about the carbon tax and further increases past 2012," he said. "That's still up for debate." The best way to cover emissions not currently covered by the carbon tax is also up for debate, he said.

Lake said the government is watching the progress of the WCI cap and trade system. Next year will be a sort of test run for the scheme, with California rolling out a program that will not require immediate emissions reductions.

Lake said it's too late for B.C. to impose cap and trade for 2012. "We want to keep our options open for looking at cap and trade beyond that," he said.

Asked when decisions might be expected on the carbon tax and cap and trade, Lake replied, "I don't want to put any time lines around it," adding that he doesn't want to go ahead without adequate information.

"I would hope that in 2012 these things would start to come together and we'll be able to move forward with a sort of comprehensive plan about how we're going to meet those different challenges."

Lake said he believes it is possible to reconcile the government's economic development and climate change agendas. In the face of a cooled-off economy and a warming planet, business and environmentalists alike will be watching to see what the Clark government chooses to do. ■

Tyee Solutions Society is a non-profit producing catalytic, solutions-oriented journalism on social, economic and environmental issues of broad concern to Canadians.

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Clouded future for carbon tax? Burrard Street, Vancouver.
Photo courtesy eric flexyourhead from Your BC: The Tyee's Photo Pool

Has BC's Carbon Tax Worked?

Experts are divided on what the levy has achieved and how it must evolve.

By Christopher Pollon, 23 November 2011

View full article and comments: http://thetyee.ca/News/2011/11/23/BC-Carbon-Tax/

[Editor's note: This is the third article in an in-depth Tyee Solutions Society series, "BC's Quest for Carbon Neutrality: Reports from Canada's Climate Policy Frontier." To meet the lead reporters on this project, see the accompanying profile today on The Tyee.]

When governments come to do battle with climate change, truly decisive action courts political suicide. Consider the challenge of putting a price on carbon – arguably our most effective policy tool in averting global climate disaster.
In July, Australian Prime Minister Julia Gillard unveiled a national carbon tax on that country's 500 worst polluters, after her predecessor was turfed from office when his own carbon pricing scheme withered on the vine. Gillard has been bloodied by an ongoing revolt led by the coal industry, and faces an uphill battle to win re-election in 2013.

Former federal Liberal leader Stephan Dion's political life ended when his partisan rivals, including the late Jack Layton, savaged his complex "Green Shift" carbon tax. Most Canadians didn't get it; even more didn't trust it. The "Green Shaft," as it became known, now serves only to deter any other North American politician brave enough to seriously address the issue.

Such cautionary tales make British Columbia's carbon pricing experiment all the more remarkable (see sidebar for the elements). There are a dozen or so carbon taxes in the world today (a chart laying all of them out can be found on page 16 of this report). Of all those levies, enacted by a patchwork of nations, provinces and even municipalities (Boulder, Colo., has one), B.C.'s tax has been widely hailed as a model of environmental and economic design.

We Have a Winner: British Columbia's Carbon Tax Woos Sceptics, gushed one headline in the Economist in July, as did a similarly glowing feature earlier this year in the New York Times, which suggested a B.C.-styled carbon tax could solve America's debt woes.

Yet in British Columbia today many remain less than enthused. Social advocates say the poor are being squeezed too hard by the tax, while an unfair chunk of the revenue is being given back to corporations. Environmentalists warn that the tax, which rose to $25/tonne on July 1, is

too slight to change our bad energy habits. Meanwhile business leaders insist our small, resource-based economy shouldn't "dance alone" while global competitors continue to pollute unhindered.

Already one potential future premier, John Cummins of the upstart BC Conservatives, is proposing to kill the carbon tax, apparently believing the public mood has changed since then-NDP leader Carole James campaigned in 2008 on a promise to "axe the tax" – and handed the BC Liberals a third straight majority.

But with the future of B.C.'s carbon tax experiment uncertain, and the next provincial election looming in May 2013, now may be the time for a little sober reflection: What has the B.C. carbon tax really achieved so far? What can we expect to see if we stick with the tax? And how might it need to change?

Good news for a change

One who calls our carbon tax a good-news story, is Stewart Elgie, a University of Ottawa law and economics professor and chair of the green economy think-tank Sustainable Prosperity.

Elgie says B.C.'s gasoline consumption has dropped by three per cent compared to the rest of Canada since the introduction of the tax, an effect that cannot be attributed to the post-2008 recession. He also points out that B.C.'s GDP has grown slightly in the three years since the tax appeared – indicating at a bare minimum that the carbon tax hasn't hurt the economy. That, says Elgie, is because B.C.'s tax on fossil fuels was designed from the start to go as unnoticed as possible by being "revenue neutral" – most of the money it collects from taxpayers is given back in the form of lower income and corporate taxes.

And while the carbon tax might not have won the last election for the Liberals, it didn't lose it for them either. (Politicians both inside and outside B.C. take note – recent polling for the Pembina Institute shows that public support for the carbon tax remains strong; strong for a tax, at least.)

B.C.'s Carbon Tax Shift

B.C.'s carbon tax applies a single price to the province's fossil-fuel-originated CO2 emissions: It started at $10/tonne in July 2008 and has moved up in $5 increments each year ever since. In July 2012, it will hit $30/tonne. Exempted processes, including natural gas flaring, mean that about 25 per cent of B.C.'s CO2 emissions are untaxed.

More than a tax, B.C. has imposed a tax shift: The money collected from the carbon tax pushes personal and corporate taxes down, while steadily ramping up taxes on fossil fuels. Over time, this continually rising price provides an incentive for people and businesses to use less and find alternatives: Anyone who can lower their fuel usage and/or energy consumption, pays less tax. – C.P.

"B.C. is now the lowest per-capita gasoline user in Canada, and also has the lowest income tax rates in Canada," says Elgie. "That is in large part because of the carbon tax shift."

In 2008, B.C. emitted 68.7 million tonnes (Mt) of greenhouse gas emissions, measured in carbon dioxide equivalent (CO2e). In all of 2009, total greenhouse gas emissions in British Columbia were down slightly to 66.9 megatonnes CO2e, according to the provincial government. Updated stats for 2010 will not be published until 2012.

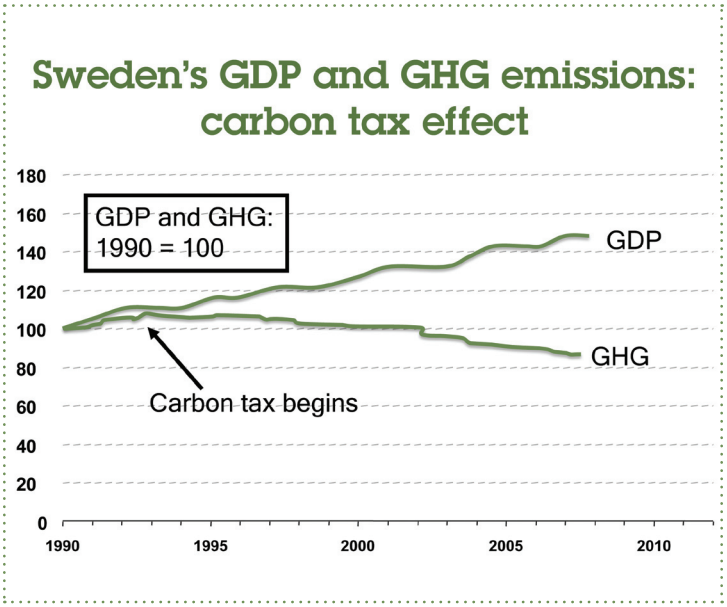
How have other carbon taxes worked out?

It's still early days for the B.C. tax. What can we expect in the years to come? It helps to look at Sweden, where a carbon tax has been in place for 20 years.

In 1991, Sweden imposed a carbon tax of just over $50/tonne of CO2. By December of 2008, greenhouse emissions had dropped by more than 40 per cent from levels of the mid-1970s – well below its Kyoto commitments – as Swedes embraced renewable energy from biomass, heat pumps and waste heat recovery, and expanded their use of district heating systems.

In 2008, Swedish Environment Minister Andreas Carlgren credited Sweden's tax policy for cutting its emissions by 20 per cent below what levels would have been without it. "A carbon tax," Calgren told the Guardian at the time, "is the most cost-effective way to make carbon cuts, and it does not prevent strong economic growth."

The Swedish carbon tax is not identical to ours. Most prominently, it is much, much higher. Sweden's tax started at about twice the dollar-per-tonne rate that ours reached only this year, and the top rate has jumped to about $100 per metric tonne since its inception. On the other hand, many Swedish industries pay a lower rate (about $22/tonne), not all fossil fuels are covered, and proceeds go into general government revenues instead of tax cuts.



Sweden's "carbon tax effect": A disconnect between economic output and emissions. (Source: Mark Jaccard, Simon Fraser University Energy and Materials Research Group, March 2011.)

But the similarities between Sweden and B.C. are nonetheless striking. Both have a small population, widely dispersed across a forested, northern land base with just a few large cities. Both rely on a lot of hydro for electricity.

"When you look at B.C.'s policies," says Mark Jaccard, an environmental economist at Simon Fraser University, "you see the very same things we saw in the first years of the Swedish policy, which is the beginning of this disconnect between economic output and emissions."

Elgie finds that pattern repeated across the handful of other European countries – including Finland and the Netherlands – that have followed the carbon tax path. First there is a period of adjustment, as society begins to alter its behaviour and infrastructure in response to the higher prices. During this early phase, as in B.C., critics insist the tax is not working.

But, as Elgie points out, no one buys a new car or modernizes their factory every month. Yet if you know the price of energy will keep going up over time, fuel efficiency becomes a prime consideration the next time such an investment needs to be made.

The experience of others shows that 15 years on, carbon emissions can go down by five or six per cent with no negative impact on GDP. "The story we're seeing in B.C. is pretty much the same story that's already played out in countries with more experience," says Elgie. "Good for the environment, no harm to the economy."

Tweak the tax?

That's not to say B.C.'s carbon tax couldn't be made better, even in the eyes of admirers. It covers only about 75 per cent of our greenhouse gas emissions, for one thing. The rest, such as flaring from gas wells or non-combustion processes in cement and aluminum manufacturing, remain untaxed. "Let's go after that final 25 per cent," urges Mark Jaccard.

In particular, Jaccard fingers natural gas production as a growing emission source that could "swamp all of our efforts," unless we take action. "Tell them they can't emit (greenhouse gases) into the air, end of story," he says.

But gas facilities aren't the only places where emissions "leak" past B.C.'s tax: landfills, smelters and cement kilns are others. Jaccard's view? "Regulate everybody. Tell them they'll have to measure what is coming out. And, we're taxing you on it." Jaccard says this hard line could be phased in, however, to allow companies and regional districts time to prepare.

If that seems radical, note that such an approach has been taken before in B.C. In early 2007, BC Hydro had signed contracts to receive power from two coal-fuelled plants – until premier Gordon Campbell decreed that all future sources of electricity must be zero-emission. The projects were promptly cancelled.

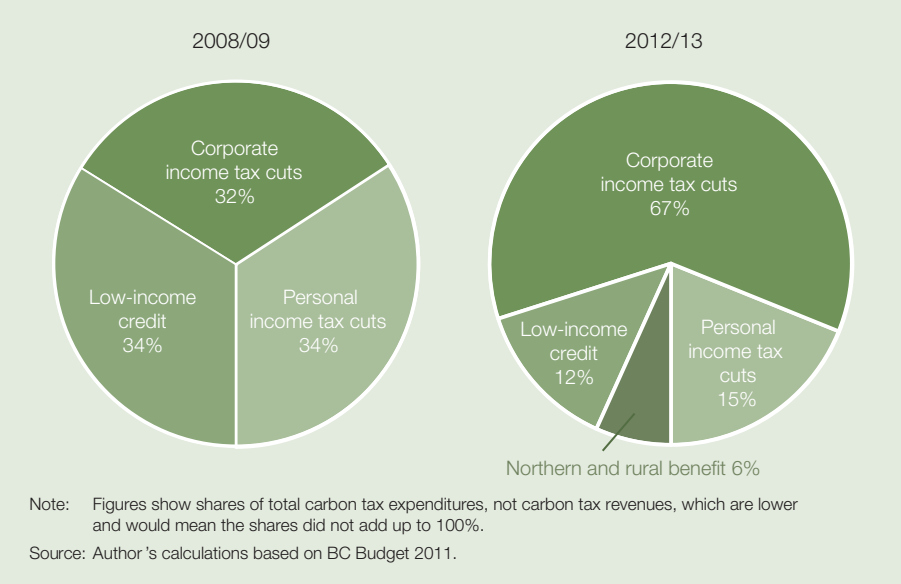
B.C. Minister of Environment Terry Lake agrees that industrial emissions should not be exempt from carbon pricing. It's just a matter of which carbon pricing scheme we use to capture them – either the carbon tax, or a California-led regional cap and trade system that B.C. is still considering joining. "There are ways to capture those fugitive emissions and I quite agree that we should," he told the Tyee. "If we didn't want to go with cap and trade, we certainly could expand the carbon tax to capture those non-combustible emissions as well."

"Devil in the details"

Marc Lee, an economist with the Canadian Centre For Policy Alternatives, gives Gordon Campbell credit for bringing in "a policy industry did not want." But while other

pundits laud B.C.'s carbon tax shift, Lee is underwhelmed. He doesn't buy Elgie's "early days" optimism.

"At $25 a tonne, the carbon tax is too small to have (created) any change in behaviour, even now that we're in the fourth year," Lee says. In his view, the tax must continue to rise each year, hitting $200/tonne by 2020, to really make a dent in our greenhouse gas emissions. But the tone of Lee's voice displays his pessimism about that actually happening. "We're languishing," he says. A November report from a B.C. government finance committee recommends the carbon tax be capped next year when it hits $30/tonne.



Note: Figures show shares of total carbon tax expenditures, not carbon tax revenues, which are lower and would mean the shares did not add up to 100%.

Source: Author 's calculations based on BC Budget 2011.

Sweden's "carbon tax effect": A disconnect between economic output and emissions. (Source: Mark Jaccard, Simon Fraser University Energy and Materials Research Group, March 2011.)

And while British Columbia has launched a climate action plan, we continue to subsidize the dirtiest sectors of our economy most responsible for greenhouse gas emissions. We're spending billions through our Gateway Program to expand freeways between suburban Langley and East Vancouver, and building power-grid connections to carbon-spewing resource companies for free. "We have to recognize this contradiction between what the left and right hands are doing," Lee says.

Lee also cautions against overstating the benefits of B.C.'s carbon tax. Any tax that makes fossil fuels more expensive is technically a carbon tax, sending a price signal to consumers and business to use less. He cites Ontario's application of the HST to gasoline and diesel as an example. Raising the tax in July 2010 from five per cent (under GST) to 13 per cent (with HST) created a higher tax on the carbon in a litre of motor fuel than our own B.C. carbon tax.

And in a report published in February, Lee points out that B.C.'s carbon tax is not "revenue neutral" as widely reported, but in fact "revenue negative." In other words, the B.C. government has given back $200 million more in tax cuts than it has actually collected from the tax.

Those tax cuts were based on the government's inaccurate projections of how much money the carbon tax would bring in. In addition to creating a gaping hole in public finances, the way the cuts were structured to favour business means that an ever-growing share of this foregone revenue will go to big corporations, at the expense of personal income taxes and support for the poor.

Lee challenges the idea that carbon tax revenue should be recycled to taxpayers at all. "Big chunks" need to flow to green investments as well as vulnerable British Columbians, he says.

"People may not like taxes, but when they do pay taxes, they expect them to pay for stuff like schools and hospitals," says Lee. "If we're going to have a carbon tax, it would make sense to be spending it on things like transit improvements, energy efficiency upgrades and green jobs."

Industry is feeling lonely

Jock Finlayson, a policy director at the Business Council of BC – representing 250 of B.C.'s biggest companies – insists he's not against carbon taxes in principle. "The biggest issue we have with the carbon tax isn't the design, it's the fact that we're the only jurisdiction in North America implementing it."

The scheme was implemented at a time when it was assumed many others would follow suit with carbon pricing, says Finlayson. But then came the crash of 2008, the rightward shift of federal Conservative leadership and, in the U.S., the Tea Partiers, surging gasoline prices and ongoing fears of economic collapse. The tax should not keep going up if B.C. continues to go it alone, he says.

The biggest problem moving forward, says Finlayson, is that for certain industries, like cement manufacturing, no "cost-effective" low carbon alternative products or technologies exist. Citing the tax as a disadvantage, cement industry reps claimed in March that Asian imports into B.C. were up about 15 per cent from 2008.

Stewart Elgie says the carbon tax must continue to go up to have the required environmental effect, but concedes that the most carbon-intensive industries need to be protected from "adverse economic effects." In the Swedish experience, for example, most industry pays less than the rest of society.

Others, like Jaccard, suggest the carbon price could continue to rise, but the amount of increase might be contingent on whether others join us in pricing carbon. For example, in setting its emission goals, the European Union devised not one, but two separate targets: A 20 per cent reduction by 2020 if they continued to go it alone, and a 30 per cent reduction if countries like China and the U.S. also got serious about emissions.

Marc Lee calls it absurd to give additional handouts to dirty industries that are already making huge profits by offloading the cost of their carbon pollution onto society.

"If we were to be aggressive in carbon pricing, it would dramatically undermine the competitiveness of industries like oil and gas, but that's the whole point," Lee says. "Weaning ourselves off dirty industries into clean industries... is going to create a lot more jobs than we are going to lose in oil and gas or mining."

Back to politics

The future shape of B.C.'s carbon tax may hang on how Gordon Campbell's successors interpret the concept of "revenue neutrality." Both the NDP and Christy Clark's BC Liberals are eyeing the huge amounts of money the carbon tax generates – $848 million in the two fiscal years from mid-2008 to mid-2010. Both have suggested that revenue could do more than just cut taxes.

Therein lies political opportunity – and hazard. About half of all carbon taxes in the world today fund carbon mitigation programs and government budgets. But to start spending B.C.'s carbon revenue – even on "green" objectives – after selling the tax to British Columbians as revenue neutral, only reinforces the kind of scepticism toward campaign promises that makes it so risky for politicians to impose decisive climate policy in the first place. The voting public, even those who want to do the right thing about climate change, already have enough reason not to trust politicians to keep their word.

Take Australia, where Prime Minister Julia Gillard first promised the public there would be no carbon tax. Yet, as these words are being written, Gillard has successfully created just that.

In Australia, as in B.C., the political dilemma is acute. If vote seekers are tempted to appease tax-fatigued cynics by stepping away from a carbon tax with bite, the latest scientific findings starkly reveal the cost of doing nothing. Just Monday, the United Nations weather agency announced that global concentration of C02 had exceeded most forecasts, hitting record levels. ■

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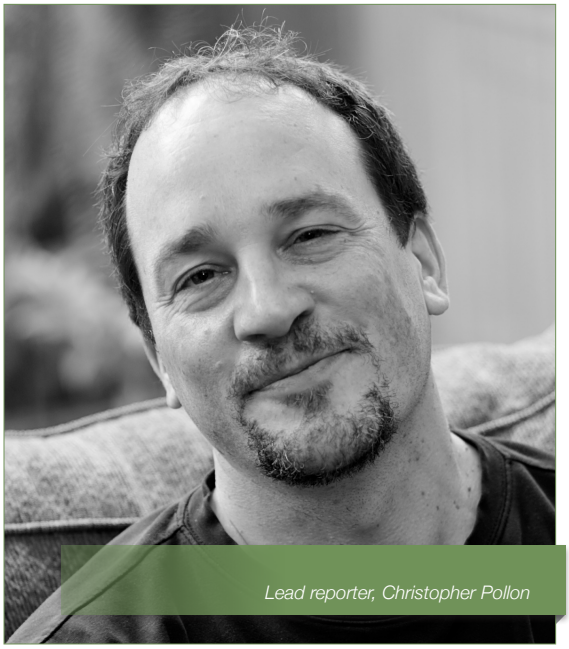
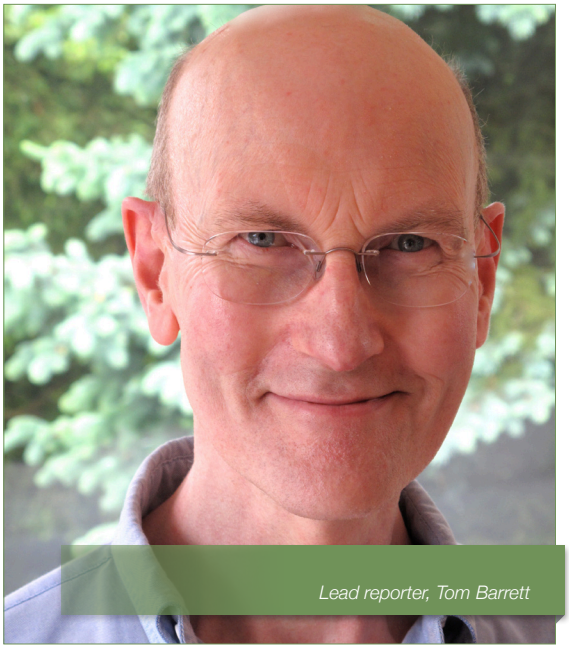


Lead reporter, Christopher Pollon



Lead reporter, Tom Barrett

Carbon Series Reporters Unravel Complex Knot

Tyee Solutions Society project probes real results of BC's stated climate policies.

By David Beers, 23 Nov 2011

View full article and comments: http://thetyee.ca/Mediacheck/2011/11/23/Carbon-Series-Reporters/

[The entire "BC's Quest for Carbon Neutrality" series appeared on The Tyee.ca, "a daily online magazine reaching every corner of BC and beyond." This piece was published in The Tyee.ca to help provide perspective on the series from reporters Tom Barrett and Christopher Pollon.]

The series launched Monday here on The Tyee started with a question: Where have Gordon Campbell's carbon reduction policies taken B.C.? That simple sounding query turns out to have many answers requiring complex investigation – the kind of journalism relished by the project's two veteran lead reporters, Tom Barrett and Christopher Pollon.

After weeks of interviewing politicians, economists, environmentalists, policy wonks and others involved in the province's carbon emissions reduction agenda, Barrett and Pollon have produced a detailed but easy-to-track road map of where we've been, where we've arrived and where the forks in the road ahead could lead.

If you are a regular reader of The Tyee, you will probably recognize those bylines. Tom Barrett was for decades a reporter at the Vancouver Sun, covering the political scene from Victoria and Vancouver. Then he became one of the Tyee's first contributing editors and, four years ago, when then premier Campbell rolled out his agenda for climate policies in B.C., Barrett covered the moment closely. Chris Pollon, too, is a Tyee contributing editor. Widely published in magazines and newspapers, Pollon's focus for our pages has been on industry and the environment. Most recently he produced a multi-part series on the push to make B.C.'s northwest more accessible to mining.

A project of the Tyee Solutions Society

"BC's Quest for Carbon Neutrality: Reports from Canada's Climate Policy Frontier" is a project of the Tyee Solutions Society (TSS), a non-profit organization that creates journalism in the public interest and makes the resulting articles available to other publications beyond The Tyee. This project was supported by funding from the Bullitt Foundation and the Hospital Employees' Union. All funders sign releases guaranteeing TSS full editorial autonomy. Likewise, funders do not formally endorse any of the particular findings of TSS's work.

In a time when resources for in-depth journalism seem to be increasingly scarce, Barrett and Pollon say they appreciated the opportunity to explore so deeply a question with big ramifications not just for British Columbians, but far beyond our borders.

"The overall Climate Action Plan is certainly unique in North America if for no other reason than the carbon tax," notes Barrett. "And the extreme ambition of the whole plan – whatever you think of the political sincerity behind it – certainly made it rare in the world, if not unique."

Barrett focused most of his reporting on the official goal of making B.C.'s own government carbon neutral. "The strategy's emphasis on offsets sold by a government-run corporation makes it distinctive worldwide, if not unique."

The deeper Barrett got into the details, the more he was convinced "the whole thing needs a good look. I think a public debate about some key questions – are offsets valid in principle? Are the Pacific Carbon Trust offsets in particular valid? Does the program cover enough emissions to really qualify as 'carbon neutral'? – would be a good thing."

Seeking facts, context

It's a good thing Barrett and Pollon are experienced reporters, because carbon emissions politics seem to produce clouds of spin.

"The most spin," says Pollon, "is found at the very heart of the whole issue: The question of whether humankind is causing global climate change. If you don't believe we have a hand in the crisis, there can be no coherent discussion of 'carbon reduction,' or anything else that needs to be done.

"I was also surprised at the extent of misinformation among the general public and media concerning B.C.'s carbon tax. I have seen many references to the carbon tax, both in media and in angry letters to the editor, as a government 'cash grab.' Many do not realize that the government gives the money all back – most of it in the form of tax cuts."

Barrett and Pollon began their research and interviews in the summer, when it seemed likely that a fall election would be called by Christy Clark, who replaced Gordon Campbell when he stepped down as leader of the BC Liberals and premier of B.C. The journalists were struck by how much the political landscape had been shifted by the global economic downturn and Campbell's doomed embrace of the Harmonized Sales Tax.

"As I say in my carbon politics story," says Barrett, "Christy Clark has gone from being an avowed climate change champion to the oil and gas industry's biggest booster. The climate plan has been replaced by a jobs plan – and that was probably inevitable. Experts say it's possible to reconcile economic development with the climate, but so far we haven't seen how the government plans to do this."

The politics are fraught, agrees Pollon, but he notes that B.C. is not alone in attempting carbon reduction initiatives. "The premise of this series from the outset was that B.C. had enacted policies that made it a leader in North America when it comes to battling climate change, and this remains true. What came as a surprise was how many nations in the world have either already taken action, or are planning to very soon. Federal politicians in North America often portray developing countries – particularly their emerging trade rivals China and India – as laggards who are increasingly responsible for greenhouse gas emissions. Yet China will have a nationwide emissions trading system by 2015, and India will set an emissions cap for its 500 or so biggest polluters by 2014.

"Meanwhile in North America, Obama's national cap and trade system has been killed, climate denial has become mainstream, and Canada is happy to follow whatever the U.S. does – or doesn't do. Meanwhile," says Pollon, "Australia, New Zealand, Sweden and most of the EU have successfully put a price on carbon. And the sky hasn't fallen yet, either."

'Our most pressing issue'

Reporting the series could be an up and down experience, both Barrett and Pollon admit.

"Sometimes I feel like the only people who care about this issue are a few climate nerds. That's frustrating," says Barrett.

"You can divide the world into three camps: Those who think we are causing climate change, those who think it's all BS and those who don't care – and there's significant overlap with the latter two schools," says Pollon. "In North America, I see the latter groups gaining traction, and I'm not sure what can be done about it. This growing denial/disengagement has direct political implications – as we

have seen with the six U.S. states pulling out of California's cap and trade system, or the U.S. Republicans derailing Obama's plans for a nationwide cap and trade system.

"It's getting to the point where rational discourse on climate change – or more pointedly, what to do about it – is not possible. The only thing that will change this may be for the climate impacts to worsen to the point that deniers change their minds. But by then, it's likely too late."

The role of the Tyee Solutions Society journalist is not to make the case for any particular policy, both Barrett and Pollon agree, but to provide as much solid context for public discussion as possible, so that citizens and their leaders can form sound judgments.

Pollon thought of his five-year-old child often as he pursued the questions in this series. "The situation in North America – where it has become politically unacceptable to confront climate change in any truly serious way – is bleak. It's particularly difficult to have young kids and to ponder that their future is so uncertain. Climate change is our most collectively pressing issue, so it's necessary to scrutinize how we're confronting it."

Look for more reports in this series from Tom Barrett and Christopher Pollon, as well as Tyee reporter Geoff Dembicki, in the weeks ahead. ■

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Hazy timetable: After hurrying up, B.C. waits on cap and trade.

Why BC Isn't Rushing to 'Cap and Trade' Carbon

California beckons with new market for emissions offsets. Will we join soon?

By Christopher Pollon, 28 Nov 2011

View full article and comments: http://thetyee.ca/News/2011/11/28/BC-Cap-And-Trade/

[Editor's note: This is the fourth article in an in-depth Tyee Solutions Society series, "BC's Quest for Carbon Neutrality: Reports from Canada's Climate Policy Frontier."]

Acid rain was sterilizing lakes across Canada and the northern U.S. during the early 1990s, until the Americans put a dollar price on the pollution that was causing the problem. By 2002, sulphur dioxide emissions from coal-fired power plants were 40 per cent lower than they had been in 1980, as new life crept back into the continent's dead-zone lakes.

Why not apply this same approach to the carbon emissions causing climate change?

That's a question a group of North American states and provinces posed when they formed the Western Climate Initiative (WCI) in 2007.

Driven by frustration over the laggard climate change policies of North American federal governments, the WCI led by California envisioned a "cap and trade" system setting strict limits on the emissions of the biggest polluters.

From the beginning, this regional cap and trade scheme was intended to lay the foundation for a continent-wide system including the U.S., Canada and Mexico – an ambition that did not seem so far-fetched back in 2007. But nearly five years after the WCI was conceived, the can-do optimism of many of the participating states and provinces has waned. Today, just California and Quebec are sure to be there when a test-run begins in January.

British Columbia – the only North American jurisdiction to have imposed a relatively serious price on carbon to date – has already completed most of the upfront work needed to participate; all that is lacking is the political decision to move forward. So which way will the B.C. political winds blow on cap and trade?

"We're staying the course in terms of our negotiations and collaborative work with California on a cap and trade system, but we still haven't made a decision," says B.C.'s Environment Minister Terry Lake, a former Kamloops mayor appointed by Premier Christy Clark last spring. Lake notes that Quebec is moving forward with a noncompliance year in 2012 – a sort of test run of the system – with

full participation by 2013. “That is certainly a consideration for us.”

So if this consideration strengthens into resolve to participate, what are the risks and benefits to British Columbia of joining this small, California-led coalition of the willing? And how would such a system have to be designed to actually work?

How it works (in theory)

Historically, it has cost nothing to treat the atmosphere as a giant waste receptacle. Carbon pricing schemes, like carbon taxes and cap and trade, provide a disincentive to do this by forcing polluters to pay for the carbon they dump. A cap-and-trade system sets a limit or “cap” on the overall amount of carbon pollution from industry (and sometimes other sectors) and reduces that cap year after year, with a goal of hitting a pollution reduction target over time.

Tradable “allowances” in a quantity equal to the overall cap are distributed to participants. They in turn must quantify and report their emissions, eventually surrendering an allowance credit for every tonne of greenhouse gas they produce during a set compliance period. Polluters who do not reduce their emissions enough have two options: buy emission allowances from other polluters who have met their emission limits and have a surplus to sell, or invest in low-carbon projects as “offsets” – which are then credited as a reduction against their own emissions.

Over time, the system-wide cap on emissions is ratcheted ever downward, forcing participants to progressively lower their emissions.

How it needs to work

That, at any rate, is how cap and trade works in theory. In practice, there is enormous leeway for participants to shape and amend the rules – and therein lies both the strength and weakness of the approach, says David Suzuki Foundation climate change campaigner Ian Bruce. There are, however, ways to ensure the “environmental integrity” of a cap and trade system, he says.

“The most important thing is the cap on emissions and the target you use to ratchet down emissions year after year,” says Bruce. For example, B.C. already has a legislated target to reduce emissions by one-third over 10 years, so if we joined the WCI system, the province would need to ensure our overall cap aligns with that legislated target. Anything less would water down our existing commitment to reduce greenhouse gases.

Another key to a cap and trade system with integrity concerns those carbon ‘offsets’. According to the Pembina Institute’s climate change director Matt Horne (who has made cap and trade design recommendations to both B.C. and Quebec), they represent a loophole that must be either severely limited or closed altogether. “One analysis after another on offset systems is showing that they are not producing the emission reductions we are counting on them for,” he says.

Emission allowances as a commodity

Operating since 2005, the European Union’s cap and trade system is the largest multinational emissions trading scheme in the world. It offers important lessons about how such systems work in the real world.

When the EU system was first set up, participating companies received emission allowances for free or very little. But since participants who sufficiently reduce their emissions can sell their surplus allowances for cash, the permits acquired financial value. Giving them away for nothing ultimately resulted in windfall profits for some European companies: public wealth went straight to the private bottom line.

Bruce and Horne agree that if B.C.’s carbon market does launch, its participants must pay for their allowances from the outset – most practically, through auctions.

Volatile markets with wild swings in the price of credits is another concern, particularly in the early stages of a cap and trade system. A Massachusetts Institute of Technology study that evaluated the growing pains of the EU system details how, a little more than a year into the cap and trade trial period, allowance prices plummeted.

“The uncertainty concerning the demand for allowances is especially large at the beginning of any program,” the MIT study found, “because it reflects not only the usual unpredictable variables of economic activity, weather, and energy prices, but also, and perhaps most importantly, the amount of abatement that will take place in response to the new price on emissions.

It's important to note that the same report considered the growing pains minor compared to the importance of creating a carbon price for Europe. "The initial challenge is simply to establish a system that will demonstrate the societal decision that GHG emissions shall have a price, and to provide the signal of what constitutes appropriate short-term and long-term measures to limit GHG emissions," the study concluded.

California dreamin'

The first step in the creation of the WCI regional carbon market is for participating jurisdictions to adopt their own cap and trade regulation – which California did in late October. (Quebec plans to follow later this fall.) Each participant ultimately creates their own local cap and trade system, which over time will be tweaked and harmonized to fit with the others. It's an approach that allows fence-sitters to join the system at a later date.

When it comes into full compliance in 2013, California will set its overall emissions cap at two per cent below the state's forecast total emissions for 2012. Industrial facilities will get 90 per cent of their "California Carbon Allowances" for free in the initial years of the program.

California will also allow at least 600 industrial emitters across the state to use offsets to satisfy up to eight per cent of their compliance obligation. For the moment, those offsets are restricted to investments in four sectors: forestry, urban forestry, "dairy digesters" and the destruction of ozone-depleting substances. (The latter targets the destruction of a wide range of waste refrigerants and air conditioning substances – which not only deplete ozone, but have profound global warming potential impacts, ranging between 100 and 11,000 times the greenhouse gas potency of carbon dioxide.)

Assuming a company gets 90 per cent of its allowances for free, and can meet eight per cent of its remaining commitment through offsets, it could meet its compliance obligation either by a minimal two per cent reduction in its emissions, or the purchase of an equivalent number of allowances.

And at the outset, only U.S.-based offset projects will be eligible for purchase by California participants, even though California's only partner in the system is Quebec, and the closest jurisdictions to joining are B.C., Ontario and Manitoba.

"It is absolutely not a problem that California's actual regulation restricts the emission of offset credits to the U.S.," says Hélène Simard of Quebec's Ministère du Développement Durable, de l'Environnement et des Parcs. "Technical work has to be done on California's offset protocols to adapt them to Canada. This work will be done in the upcoming months."

The case for waiting

One expert who believes that B.C. has more to lose than gain by rushing off the bench to join the California-led scheme is Mark Jaccard, a Simon Fraser University economist best known as a member of the Nobel Prize winning UN Intergovernmental Panel on Climate Change.

First of all, he argues, joining too soon could unravel B.C.'s carbon tax. If allowance prices for industry suddenly crashed to something like $5 dollars per tonne, while the rest of British Columbians were stuck paying $30 per tonne through the carbon tax, Jaccard says, political pressure to axe the tax could become overwhelming. (Thomson Reuters has projected a WCI carbon price of $30 per tonne for 2013-20 – exactly the dollar figure that B.C.'s carbon tax is scheduled to hit next July.)

Then there is the juggernaut California economy. Even if no other jurisdiction signs up, California's cap and trade system alone will be the second largest on the planet, covering about 400,000 tons of annual CO2 (by 2015) and 350 businesses – representing 85 per cent of the state's greenhouse gas emissions. (Initially the program will cover just electric utilities and large industrial facilities; by 2015 distributors of transportation, natural gas and other fuels will also participate)

North America's Other Cap & Trade System

The Regional Greenhouse Gas Initiative is a cap and trade system that limits CO2 emissions from electrical plants across 10 northeastern U.S. states.

Established in 2008, the participants have committed to reducing electricity power sector CO2 emissions by 10 per cent by 2018. Each state is responsible for establishing its own trading program, issuing allowances, and staging auctions to distribute the allowances; regulated utilities can then use allowances from any of the 10 states to meet their CO2 limits.

A November 2011 study shows the first three years of the initiative resulted in lower consumer electric bills, increased installation of energy efficiency measures, and more than $900 million generated from allowance auctions. – C.P.

Jock Finlayson, executive vice president for policy at the Business Council of B.C. (representing many of B.C.'s biggest companies), says some of his members in aluminum and concrete production see advantages in cap and trade versus carbon taxes, but too many questions remain unanswered. "Will the eventual rules for such a scheme be largely set by California, whose economy is 10 per cent larger than all of Canada and 10 times bigger than B.C.'s?" (B.C. mining giant Teck, Shell Canada and aluminum producer Rio Tinto Alcan declined comment when contacted for this story.)

Jaccard says two things need to happen before B.C. considers joining cap and trade: more jurisdictions must be part of it, forming a critical mass to counteract California's dominance, and a "floor" must be imposed on the carbon price to ensure it never dips below the value of our carbon tax.

A new realm of enterprise

Despite the uncertainty of design and growing pains, there are significant advantages to the cap and trade approach – which B.C. might reap if it participates.

Unlike carbon taxes, cap and trade actually sets a hard limit on emissions that must be achieved over the short and longer term. The private sector is then set loose to innovate any way it sees fit, freeing government from dictating the winning and losing technologies. Compared to a carbon tax imposed from above, this approach appeals to the enterprising spirit of the private sector, personified by the likes of Shell Oil Company president Marvin Odum, who in 2009 expressed his company's preference for a market approach.

"There's an argument often that a carbon tax is more simple, it's more direct, more predictable," Odum said, "but the question has to be, do you get the environmental result that you're really looking for?"

Even the complexities of developing and administering the system, often cited as a negative, have a silver lining. Creation of such a system in B.C. would grow a vast new bureaucracy of brokers, analysts, pundits and auditors. But is this a bad thing? Aren't these the "green collar jobs" we've all heard so much about, which will accompany the leap to a low carbon economy?

What's more, cap and trade may be the world's best hope in putting a global price on carbon pollution. China has already announced plans for a nation-wide emissions trading system by 2015; India plans to set emission levels for its 563 biggest polluters by 2014. And Australia's daring new carbon tax will transform into a "market-set carbon price" within four years.

In North America, the most promising attribute of cap and trade is that it is not a tax, and thus not instantly anathema to most of us from the outset. (This did not stop the Republican Party from misrepresenting – and ultimately derailing – U.S. President Obama's 2009 effort to launch a national cap and trade system there as a "cap and tax," but the point stands.)

The cap and trade devil may reside in the details, but as the creeping recovery of once-sterilized North American acid lakes testifies, we already know it can work. ■

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Counting trees as carbon reducers is controversial.

Is BC's Public Sector Really 'Carbon Neutral'?

Not everyone's buying the math the government uses to make its claim.

By Tom Barrett, 30 November 2011

View full article and comments: http://thetyee.ca/News/2011/11/30/Carbon-Neutral-BC/

[Editor's note: This is the fifth article in an in-depth Tyee Solutions Society series, "BC's Quest for Carbon Neutrality: Reports from Canada's Climate Policy Frontier."]

The University of British Columbia (UBC) prides itself on reducing its carbon footprint. Long before Gordon Campbell got climate change religion, UBC was looking for ways to reduce its greenhouse gas (GHG) emissions.

Now the university would like to build more student housing on its Point Grey campus. This would be good for the environment; students who currently commute long distances would instead be able to walk to class. GHG emissions would drop.

But if UBC builds the student housing, the provincial government will force it to pay a penalty. And the penalty would be levied under a highly touted carbon-neutral government strategy that is supposed to be fighting climate change.

Turns out there's more to being carbon neutral than meets the eye.

The B.C. government declared itself carbon neutral on June 30 – "a first for North America," as the press release proclaimed. The declaration marked "an achievement that places British Columbia on the leading edge of climate action and growth in the clean-energy and clean-technology sectors."

Questions have been raised, however, about whether B.C.'s public sector is in fact carbon-neutral and what, exactly, that term means.

The term carbon-neutral suggests that an organization is not adding carbon dioxide or other climate-altering gases to the atmosphere. In practice it usually means that the organization has made an effort to reduce its emissions and has bought carbon offsets – credits supposed to represent reductions elsewhere in the economy – to neutralize the organization's remaining emissions.

Critics, however, question how much of the B.C. government's emissions are actually being offset.

"The government is not carbon-neutral and will not achieve true carbon neutrality anytime soon," Independent MLA Bob Simpson said in the legislature in October.

To declare itself carbon-neutral, he said, the government exempted a number of operations, including BC Ferries. (A government spokesperson said Victoria exempted the Crown-owned corporation because it "has no operational control over BC Ferries.")

Less is more

There are other kinds of emissions that aren't counted, as well, which brings us back to UBC.

A study by Kim Lau, a UBC PhD student, and Hadi Dowlatabadi, a physicist with UBC's Institute for Resources, Environment and Sustainability, discovered that the government's carbon-neutral accounting scheme covers only 53 per cent of the total direct and indirect emissions associated with UBC's Vancouver campus. And, while the UBC emissions covered by the strategy dropped by about one per cent between 2007 and 2009, emissions that aren't covered actually increased by 2.4 per cent.

Lau and Dowlatabadi reviewed the carbon-neutral government initiative in a paper for the Pacific Institute for Climate Solutions. They calculated that, if UBC builds the 8,000 new units of student housing it wants, the reduced commuting would cut overall GHG emissions in the Lower Mainland by 7,700 tonnes per year. That's because, as Dowlatabadi said in an interview, "Commuting to and from UBC is huge compared to what energy consumption is actually going on inside UBC."

The Power of Zero

The goal of a carbon-neutral B.C. government was first proclaimed in 2007, as part of then-premier Gordon Campbell's sweeping array of *climate change initiatives*.

By going carbon neutral, the government vowed, it would accomplish a number of goals. It would lower emissions, publicize the importance of fighting climate change, set an example for the rest of the province, foster the development of green technology and a low-carbon economy, and cash in on an expected boom in carbon trading and carbon offsets.

B.C.'s public sector – schools, colleges, universities, hospitals and Crown corporations as well as core government – were ordered to measure their carbon emissions and reduce them where they could.

As of 2010, public sector organizations must buy carbon offsets to cover their emissions. They must buy these offsets, which cost $25/tonne of emissions, from a Crown corporation called the *Pacific Carbon Trust* (PCT).

The offsets represent emissions reductions elsewhere in the B.C. economy that, in theory, wouldn't have happened without the sale of the offset. Thanks to these private sector cuts, the public sector's net climate impact is supposed to be zero – its carbon "neutralized." – T.B.

But the carbon-neutral strategy gives organizations no credit for reducing emissions from commuting. Instead, because increasing the amount of student housing on campus would increase UBC's *direct* emissions, the university would have to spend an extra $145,000 per year on offsets.

That's despite the fact that the students' housing emissions would simply be moved from one place in the Lower Mainland to another. And the new UBC housing would be more energy efficient than students' current homes.

Not all government organizations will have as low a proportion of uncovered emissions as UBC, Dowlatabadi said. A hospital, for example, would have less commuting associated with it.

Still, the study shows that many things government does that affect climate aren't being counted, he said.

Dowlatabadi said that it's understandable that the original carbon neutral strategy did not include most indirect emissions because they are more complicated to measure. But it would be wise for the government to review its rules and correct the unintended anomalies, he said.

The government has a "really genuine" interest in fixing this problem, he said. "The challenges in implementing a new paradigm always lead to good steps and bad steps. We're dealing with new concepts. We need to think carefully about them. We need to roll them out, learn, then roll them out again with modification and improvement."

Living in a hypothetical future

Even if the government fixes this unintended consequence, it will have to deal with a wave of other controversies attached to the program.

A fundamental question is whether offsets even work.

A carbon offset represents a reduction in greenhouse gases by a company or organization. When you buy an offset to cancel out your emissions, you pay so

much a tonne to the organization that's reducing its emissions. Carbon neutrality means that you have purchased enough offsets to compensate for all your emissions.

But Mark Jaccard, a Simon Fraser University resource economist and a special advisor to the government's Climate Action Team, calls carbon-neutral government "a delusion."

Offset buyers would be truly carbon-neutral if the offsets represented gases that were sucked out of the atmosphere and stored away permanently, like nuclear waste, Jaccard said.

"Not making it into trees, that's no good," he said. "It's got to be in the earth's crust or in big steel boxes or something that are millions of years stored away."

That's pretty expensive, though, so most offsets don't work that way. Instead, organizations like the B.C. government's Pacific Carbon Trust buy carbon credits from emitters who intend to emit less in the future. Say the owner of a warehouse would like to supplement his natural gas heating system with solar power. But he says he can't afford the capital cost of putting in solar panels. The PCT steps in and subsidizes the conversion.

When the PCT decides how much to give the warehouse owner, it calculates the level of emissions the building would emit in the future if it continued to use natural gas for all its energy. Then it calculates the emissions with solar panels in place. It then pays the building owner so much per tonne for the difference: the "reduced" emissions.

But basing offsets on a hypothetical future is uncertain. Skeptical economists have a saying that the "offset market is based on the lack of delivery of an invisible substance to no one."

"We can't run history twice," said Jaccard, so we don't know for sure whether the emissions we're paying to eliminate would ever have been created at all. Someone selling offsets might say they wouldn't have cut their emissions without the payment, but we'll never know for sure.

"You cannot assess an offset on an individual basis," Jaccard said. "It's what's called the asymmetric information problem."

Free riders

For example, if someone offers you money to buy a Prius, you might claim that if they hadn't come along with that incentive you would have bought a gas-guzzling land yacht instead. But maybe you would have bought a Prius anyway. You're the only one who really knows.

"In all cases, some critical information will only be known by the person who's going to get the money," Jaccard said.

He said large statistical studies suggest that a huge proportion of offset money goes to people who would have cut their emissions anyway – what economists call "free riders." This is a major problem with all subsidy programs: governments often spend a lot of money rewarding people for what they would have done anyway.

Studies of climate-related subsidy programs have found that 50 per cent, 80 per cent, sometimes as high as 99 per cent of the participants in such programs are free riders, Jaccard said.

In 2008, Michael W. Wara and David G. Victor, of Stanford University, looked at the world's largest offset market, the Kyoto Protocol Clean Development Mechanism (CDM). After studying greenhouse gas reduction projects in China, Wara and Victor found "an urgent need for reform."

Well-designed offsets markets can play a small role in getting developing countries engaged in reducing emissions, the authors concluded. "However, in practice, much of the current CDM market does not reflect actual reductions in emissions, and that trend is poised to get worse."

Added Wara and Victor: "Our paper focuses on international offsets, but we caution that these problems are unlikely to be substantially different for a domestic offsets program...."

Their conclusions were reinforced by a recently leaked diplomatic cable that, according to Nature magazine, "reveals that most of the CDM projects in India should not have been certified because they did not reduce emissions beyond those that would have been achieved without foreign investment."

Similarly, a study of a project in Costa Rica that paid landowners to conserve forests found that the payments made a difference in less than one per cent of the forest lots that participated in the program.

Some offsets are 'excellent'

Other experts, though, argue that offsets can work. There are plenty of offsets out there that are "rubbish," said UBC's Dowlatabadi. But some, he insists, are "excellent."

Dowlatabadi said ground source heat pumps, which use one-third the energy of conventional home heating and cooling equipment, would make a good offset. Because those systems cost more – an investment that takes longer to recover – developers don't install them, he said.

If you can pay a developer enough to make installing ground source heat pumps worth his while, "Then what is wrong with that?" Dowlatabadi asked.

He stresses that he thinks the B.C. government is doing its best to make carbon-neutral government work. But he's not wild about some of the offsets that the PCT has sponsored.

In particular, he's skeptical about offsets that subsidize switching from fossil fuels to electricity. If BC Hydro drops its plans for clean energy self-sufficiency, Dowlatabadi said, some of the electricity that powers projects funded with offset money could end up coming from coal- or gas-fired plants in Alberta.

If that happens, the project "becomes a (carbon) liability, not an offset."

Then there are forestry offsets. Trees absorb carbon dioxide, so paying someone to not chop them down can qualify as an offset. Sixty per cent of the PCT's offsets in 2010 came from two forest projects: the Darkwoods project in the Nelson-Creston area and an improved forest management project on private land owned by TimberWest on Vancouver Island.

A Symbolic Gamble

Despite the controversies that surround the program, carbon-neutral government is really a bit of a sideshow when it comes to climate policy. Total public sector emissions represent about one per cent of the total GHGs emitted by the province. Public sector organizations spend less than one per cent of their operating budgets on offsets.

But the symbolism of the strategy was always more important to government than the actual emissions or dollars involved. "Our government believes it is important to model and to lead and to show British Columbians that this is an important, critical issue," John Yap, former minister of state for climate action, said in the legislature in October.

But many who follow climate policy note that symbolism cuts both ways. While a successful carbon-neutral government could become a positive icon, if that policy fails, or becomes associated with unpopular messages – that tax dollars are being taken from classrooms and operating theatres and given to profitable corporations or wasted on offsets that don't reduce real emissions – the failure could set back the whole fight against climate change. – T.B.

Both projects have been criticized in the media, notably by resource policy analyst Ben Parfitt and MLA Bob Simpson. Dowlatabadi has his own criticisms. The UBC academic co-founded Offsetters Clean Technology Inc., a company that invests in offset projects. He's no longer with the organization, but during his time with Offsetters, Dowlatabadi said, "We never accepted forestry offsets." He still wouldn't do them, he added.

The impact of climate change on forests is not known, Dowlatabadi said. A lot of the trees that the PCT assumes will act as carbon sinks may in fact die and return their carbon to the atmosphere because of a hotter climate, he said.

"I can pretty well guarantee you that we'll have much higher mortality rates," Dowlatabadi said.

A hotter climate could also mean more forest fires, he said. If the trees burn, they give up carbon instead of absorbing it.

Said Dowlatabadi: "I think it's premature to invest in carbon offsets using forestry."

There are some PCT offset projects that Dowlatabadi does like.

He calls a project at Interfor's Adams Lake sawmill that saw a switch from liquefied natural gas to wood waste "a good idea." Interfor uses wood left over from its milling operations to dry lumber and heat buildings at the mill.

He also likes the idea of installing insulating curtains at a number of Lower Mainland greenhouses. The curtains reduce heat loss and lower the greenhouses' natural gas bills.

Scrutiny

The Pacific Carbon Trust defends its portfolio of offsets by stressing the close scrutiny it gives to each project. The

Crown corporation says it has developed rigorous protocols to make sure that its offsets represent real reductions.

Every project is reviewed by independent third parties drawn from a list of companies approved by the PCT. The companies must be accredited by the International Accreditation Forum. Each project is reviewed twice. There is a "validation" review that occurs before the project is approved and a "verification" review that happens once the project is operating.

"The independent opinion and professional expertise of the validator and verifier is central to the project development process," a PCT spokeswoman said in an email. (No one from the PCT was available to participate in a live interview.) "The validator and verifier are required to have specific expertise related to the project type and investigate all aspects of the project, including 'additionality' (the requirement that the project would not have happened without the sale of offsets)."

"The validation and verification audits provide the same level of assurance that is provided in a financial audit of a publicly traded corporation."

To qualify a project as an offset, the company or organization must "demonstrate financial, technological or other obstacles that are partially or fully overcome by revenues from offset sales."

As for Dowlatabadi's cautions about the effects of a change in Hydro policy on offsets, the spokeswoman replied in an email that if Hydro changes its policy, the PCT will make the necessary adjustments to its offset procedures.

Accounting for fire and bugs

Forest offsets also have their defenders. James Tansey, a UBC business professor and the president of Offsetters, agrees that there was a time when the company avoided forest offsets. But British Columbia has developed rigorous standards that overcome Dowlatabadi's objections, he said.

There is no doubt forests absorb carbon, Tansey said. The only question is whether offsets conform to the highest standards.

"I am now confident that we have an approach to forest carbon offsets development that's the strongest in the world," he said.

David Rokoss, director of business development for ERA Inc., which helped develop the Darkwoods offset project, said in an interview that B.C.'s forest offset projects have stringent safeguards built into them.

"There's so many assurance mechanisms built in that the likelihood of having a catastrophic reversal that is unaccounted for is practically zero.... The system has backup mechanism after backup mechanism after backup mechanism," he said.

Rokoss said a certain amount of carbon credit is deducted from the total absorbed by a forest project to cover things like fires, infestations and flood. On top of that, each forest project has a "buffer" – "10, 20, 30 per cent or more of the total volume of carbon that's for sale" – to cover the possibility of fire.

In other words, he said, a project that preserves forests and removes 100,000 tonnes of carbon a year could be paid for only 70,000 tonnes of offset credits.

"You can have hundreds, thousands of trees actually fall over, be damaged or release carbon over time," Rokoss said. "That is all accounted for."

Critics remain skeptical about the rigour of the PCT's approval process. But beyond the question of whether offsets are reducing emissions as much as advocates claim, the pursuit of a carbon-neutral government has produced other benefits: putting a price on public sector emissions has led to real reductions. ■

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Solar panels on roof of Admiral Seymour School in Vancouver. Photo by Rob from Your BC: The Tyee's Photo Pool

'Carbon Neutral' Goal Spurs Projects

Whatever its flaws, BC's quest for carbon neutrality is getting some things done in the public sector.

By Tom Barrett, 1 December 2011

View full article and comments: http://thetyee.ca/News/2011/12/01/Carbon-Neutral-Spurs-Projects/

Editor's note: This is the latest in an in-depth Tyee Solutions Society series, "BC's Quest for Carbon Neutrality: Reports from Canada's Climate Policy Frontier."]

Even its staunchest supporters admit that B.C.'s strategy to make government carbon neutral has some flaws. But the scheme has also brought benefits. By forcing public sector organizations to measure their carbon, and putting a price on those releases, the program has sparked greenhouse gas reductions throughout government.

The public sector's interest in cutting emissions is reflected in the numbers. From 2008 to 2010, the government's Public Sector Energy Conservation Agreement, or PSECA, gave out $75 million for capital projects that would reduce public organizations' carbon footprints.

The program received a total of 852 applications, only 250 of which were approved and completed. While some of those applications were rejected because they didn't meet program criteria, the level of interest was obviously high.

Even without the subsidies, public sector organizations have been working on cutting their GHGs, in part because they don't want to pay to offset their emissions. To that extent, the carbon neutral government program has worked.

School District 27, in the Cariboo-Chilcotin, received a total of $750,000 in PSECA money. With two PSECA-funded projects and a host of other initiatives, the district figures it has eliminated almost 1,000 tonnes from its carbon footprint – a cut of 16 per cent, said district secretary-treasurer Bonnie Roller.

She said at least three-quarters of the cuts were prompted by the carbon neutral government strategy.

Emissions-reducing projects completed or planned in School District 27 include:

- A geothermal heat pump system at Mile 108 Elementary School;

- A high efficiency boiler at Williams Lake Secondary;
- Four solar hot water systems at different schools;
- A "solar wall" to preheat ventilation air at Williams Lake Senior Secondary; and
- Biomass boiler systems at two rural schools that burn wood pellets, which are considered to be carbon neutral fuel.

"In addition, the biomass fuel will come from local sources further reducing the transportation carbon production and aiding the local forestry industry," Roller wrote in the district's environmental report.

Leaders

School districts are going to cut their emissions to some extent even without a carbon neutral government strategy, Roller said in an interview. "Being in the education system, we very much want to be leaders."

The energy projects teach students the importance of reducing emissions and how it can be done, she said. Science students, for example, will get an up-close opportunity to learn how solar hot water systems work.

Roller credits the district's former manager of facilities, Doug Gorcak, who developed an early expertise in energy-saving systems. When the PSECA money was offered, S.D. 27 was poised to "get our foot in the door," she said.

Gorcak has moved to Penticton, but the Cariboo-Chilcotin district is committed to continuing what he started, Roller said.

She said the energy efficiency projects have probably saved the district more than $200,000 over the last five years. Unfortunately, she adds, that money has been swallowed up by higher fuel costs for school buses.

Counting Carbon

$18.2 million: Total amount the B.C. public sector paid the Pacific Carbon Trust to offset 2010 emissions.

729,782: Number of tonnes of carbon offset.

1: Percentage of total B.C. emissions those offsets represent.

$75 million: Amount the Public Sector Energy Conservation Agreement gave to public sector organizations for emissions-cutting capital investments.

35,600: Number of tonnes of carbon the government estimates those improvements will prevent from being emitted annually.

$12.6 million: Energy costs the government estimates those grants will save annually.

Source: LiveSmart BC Carbon Neutral Report

Which brings up the downside of carbon neutral government from the school districts' point of view.

District 27 has written to Victoria, asking that the carbon neutral government strategy be reformed. Under the strategy, when public sector organizations are unable to reduce their actual emissions further, and need to bring their carbon balance down to zero through the purchase of offsets, they must pay $25 per tonne of emissions to the Pacific Carbon Trust. The Crown agency uses the money to pay private sector companies to reduce their emissions. District 27 thinks that money should stay in the district, to fund more energy-saving projects.

For 2010, the first year of carbon neutral government, S.D. 27 sent $85,000 to the Pacific Carbon Trust. That's a tiny portion of the district's total operating budget – about 0.2 per cent. But Roller said it's still a significant sum when dollars are too short to start with.

"When we budget, we budget out every penny," she said. "Over the last two years our unrestricted surplus has been right around the $150,000 mark. Which isn't very much when you're considering a $54 million budget."

Bigger budget, same gripe

The University of B.C. bought a lot more offsets than the Cariboo-Chilcotin school district – more than $1.5 million worth in all. But in relation to the university's total operating budget, the amount is about the same, 0.2 per cent. And it's money UBC as well would like to see come back.

"We would love to take those offset dollars and invest them in our own projects for sure," said Nancy Knight, UBC's associate vice president, planning.

UBC began reducing its carbon footprint in the 1990s, long before the provincial government declared war on climate change. It's already met the Kyoto target of a six per cent reduction in emissions from its 1990 level.

And it has pledged to further reduce its emissions by 33 per cent below 2007 levels by 2015. That's five years ahead of the provincial government's target.

The university has won awards for its commitment to sustainability. Its ECOTrek energy retrofit project – a six-year initiative launched in 2001 – saves $4 million a year in energy costs and is described by UBC as the largest project of its kind in Canada.

More feasible

The university is currently working on three more "really big projects," Knight said:

- An $85 million project to convert steam heating facilities to hot water is expected to reduce greenhouse gas emissions at the Point Grey campus by 20 per cent. "You don't really need steam for heat," Knight said. "Hot water is a much better source now."

- A $27 million biomass project, to be completed next year, is expected to cut the university's natural gas consumption by 12 per cent.

- A "continuous optimization" project, in partnership with BC Hydro, will regularly monitor and reduce energy use in 72 academic buildings. "Buildings are like vehicles," said Knight. "They go out of tune." This program aims to keep the buildings in tune, resulting in an expected 10 per cent reduction in GHG levels.

While UBC's longstanding commitment to sustainability suggests that at least some of these improvements would have happened without the carbon neutral government strategy, Knight said the price the scheme puts on carbon makes them more feasible.

The steam-to-hot-water conversion project "would have been a tougher project to make the business case for without the carbon tax and the offset requirements," Knight said. "I wouldn't say that without those we wouldn't have done it. But I think they made it a heck of a lot easier for our board of governors to see it was the right thing to do."

UBC generally supports the carbon neutral government strategy, she said.

"I think there's wrinkles in the policy and the programs, as there always are when you introduce new things. We look forward to continuing to work on those with government."

So putting a price on carbon emissions can have positive effects. But when public sector organizations pay the price, does it make sense – in terms of either policy or politics – to give their money to the private sector? ■

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Penticton High School: Public educators across BC wonder why they must pay energy giants to cut emissions. Photo courtesy of bulliver from Your BC: The Tyee's Photo Pool

Why the Pacific Carbon Trust Draws Political Heat

Making hospitals and schools transfer tight dollars to corporations is no easy climate policy to sell.

By Tom Barrett, 5 December 2011

View full article and comments: http://thetyee.ca/News/2011/12/05/CarbonTrustDrawsHeat/

B.C.'s carbon neutral government strategy uses a carrot-and-stick approach to fighting climate change.

The private sector gets the carrot. The public sector gets the stick.

This has caused plenty of criticism, especially from public sector bodies. School boards have been angrily vocal about having to send tax dollars to a Crown corporation called the Pacific Carbon Trust (PCT), which uses the money to pay profitable corporations like Encana to cut their greenhouse gas emissions.

Politically, it's a tough sell as well. New Democratic Party environment critic Rob Fleming complained recently in the legislature that "public dollars that should go to alleviate wait-lists, improve learning outcomes, replace inefficient boilers or install heat pumps and solar walls at schools are instead being given over to profitable cement, gas, spa and resort companies with revenues and assets worth hundreds of billions of dollars.

"We're still in the process of giving scarce education and health care dollars to massive GHG emitters like Encana," Fleming said. "Our public sector entities are being unnecessarily constrained in their own ability to plan, save and invest in projects that will green our schools and hospitals and actually lower the energy costs borne by the taxpayer."

Even some Liberals are unhappy with the policy. When B.C. School Trustees president Michael McEvoy complained about the strategy to the legislature's finance committee recently, Liberal backbencher Jane Thornthwaite told him: "I get what you're saying about the [Pacific] Carbon Trust. I tend to agree with what you're saying."

Admittedly, the money spent on carbon offsets, as a percentage of public sector budgets, is tiny. But in times when money's tight all over, such complaints are not going to stop.

Good idea at the time?

So why does the government give health and education dollars to big corporations? To understand the policy, we have to go back to February 2007, when then-premier Gordon Campbell decided to fight climate change. His government outlined a sweeping package of emissions-fighting policies, including a plan to make the B.C. government carbon neutral.

Over the next year, civil servants put together a plan that promised all sorts of spinoffs. The government would cut its emissions. Emissions that weren't cut would be offset, tonne for tonne, by carbon eliminated elsewhere in the economy, making B.C.'s public sector a net-zero greenhouse emitter.

If you accept that offsets represent genuine cuts in emissions – a debatable conclusion – the idea made sense from a policy point of view. The atmosphere doesn't care where greenhouse gases come from; a reduction in the private sector is as good as a reduction in the public sector.

At the same time, the strategy would show that the B.C. government was leading the way in the fight against climate change. (And, some cynics speculate, wouldn't hurt the government's image if people got confused and thought the entire province was carbon neutral.)

Meanwhile, the government's commitment to carbon neutrality would, through the offset strategy, also give the private sector some cash to help cut its carbon.

But that wasn't the end of the anticipated benefits.

"A new Pacific Carbon Trust will foster economic growth from new opportunities in carbon credit trading and carbon offsets," said the 2008 Throne Speech.

Not only would government help to reduce BC emissions, it would create jobs, "in new fields of employment like carbon accounting, carbon brokerage, carbon auditing and carbon trading."

By offsetting government emissions, the folks at PCT would become experts in the arcane world of carbon offsets, poised to profit from that expertise in a new, low-carbon economy.

At the time, carbon offsets looked like they were going to be a lucrative global commodity. Climate change was a growing policy concern and offsets promised to be an important and profitable tool in the battle to keep the planet from broiling.

Then the global economy tanked.

A new climate

Climate change was no longer such a policy priority. B.C.'s provincial budget went into the red, putting a squeeze on budgets throughout the public sector. There was less money for capital projects that would cut emissions and less money to buy offsets.

Globally, slower economic activity has meant less demand for carbon offsets. Prices have slumped to the point where offsets are now the world's worst performing commodity.

In B.C., the private sector has become less interested in selling offsets. In a gloomy economy, corporations are not so keen to undertake capital projects of any kind, including those that reduce emissions. The result is that the Pacific Carbon Trust is having "challenges" buying enough offsets to sell to the public sector.

"A risk for PCT," says the trust's latest annual report, "is not being able to source enough quality offsets because of a delay in starting projects, due to policy and slow economic recovery in North America." (The trust says it has enough offsets for the first three years of carbon-neutral government. Carbon markets, a spokesperson said in an email, "continue to mature.")

Amid all this uncertainty and belt-tightening, this was the first year that public sector organizations were required by law to buy offsets, at $25 per tonne, for carbon spewed in 2010.

Catch $25

School districts, which have elected representatives who are used to taking on Victoria, have been the loudest to complain. They see themselves caught in what a report from the Columbia Institute calls a "Catch $25." Says the report:

- "School districts are legislated to reach carbon neutrality, but the province hasn't given sufficient funds to make the necessary infrastructure changes;
- "Districts are then forced to buy large numbers of carbon offsets from a government supplier at inflated prices, further reducing their capacity;
- "The bigger the emissions gap, the more offsets districts have to buy; the more offsets they have to buy, the less they can shrink emissions."

"The way that the system's been set up, it actually gets in the way of school districts doing real emissions [reductions] within their own operations," said Charley Beresford, the executive director of the Columbia Institute and one of the report's authors. "They're put in a box where they're forced to spend money buying offsets and then they don't have enough money to apply to those things that would actually end up in reductions."

School districts spent less than one per cent of their operating budgets last year buying offsets. But school budgets are "very, very tight in the first place," as Beresford puts it. "There aren't enough operational dollars to run the programs already and clearly there aren't enough capital dollars to make the fixes that are required."

Hit twice

Over the years, the carbon neutral government policy has also developed some uneven features, thanks to a political fix that the Campbell government made to the carbon tax in the fall of 2008.

Individuals and corporations get income tax breaks that roughly balance what they pay in carbon tax, making the tax nominally "revenue neutral." Because they don't pay income tax, school districts and local governments argued that the carbon tax wasn't revenue neutral for them.

So the Campbell government promised them a rebate on their carbon tax. To collect the rebate, a local government or school board had to promise to go carbon neutral – even though school districts were already required to do so by law.

The same deal wasn't offered to other public sector organizations like hospitals and universities, however. As a result, some public sector organizations pay $25 a tonne for their emissions – the price of offsets – while others pay a total of $50 a tonne – $25 for offsets and $25 for the carbon tax.

Independent MLA Bob Simpson notes that the rules for going carbon neutral for local governments are much less onerous than for the rest of the public sector. Instead of buying offsets, municipalities can invest in local projects that reduce emissions. And if they do choose to buy offsets, municipalities don't have to go to the PCT; they can buy them at cheaper prices from other offset sellers.

Why did local governments get a better deal? "They have a better political lobby," said Simpson.

And that's led to an odd situation: if a local government needs more cash to purchase offsets, it can always raise taxes. A private corporation can raise prices. But other public sector organizations like schools and hospitals can do neither of those things.

"The only sector that does not have revenue-generating capacity is the only one that's capped and taxed at $25 a tonne," say Simpson. "It's bizarre." ■

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Competing policy ideas: 'Everything is up for discussion' says B.C.'s Environment Minister.

Back to Drawing Board for Carbon Neutral Government

As BC Liberals revisit their approach to a carbon neutral public sector, some advice they'll likely get.

By Tom Barrett, 7 December 2011

View full article and comments: http://thetyee.ca/News/2011/12/07/Carbon-Neutral-Drawing-Board/

The B.C. government is reviewing its controversial carbon neutral government strategy and Environment Minister Terry Lake says "everything is up for discussion."

He'll get lots of advice. Critics have complained that the strategy uses tax dollars to pay profitable corporations to cut their greenhouse gas emissions and they've questioned whether public money was needed to make those cuts. Some, like Independent MLA Bob Simpson, have called the strategy a "sham" and want the carbon neutral legislation repealed.

It's uncertain how far the government is prepared to go to answer these charges. Nor do critics and stakeholders agree on what Lake should do instead. The consultations will largely take place in private, but here's a peek at some of the proposals – both solicited and unsolicited – Lake is likely to hear:

Scrap it

The most radical solution, this is also the least likely to be followed by the government. It's the answer put forward by those who believe that the problems with carbon neutral government are more than growing pains.

The idea that the B.C. government is carbon neutral – a net-zero emitter of greenhouse gases (GHGs) – is largely based on the purchase of carbon offsets. If you believe, like Simon Fraser University economist Mark Jaccard, that carbon offsets are an illusion, it's hard to imagine what else can be done with the program except ditch it.

The program works this way: for every tonne of greenhouse gases a government organization emits, it must pay $25. That money goes to a Crown corporation called the Pacific Carbon Trust (PCT), which uses it to buy offsets

from B.C. companies and organizations. Offsets represent emissions that these companies and organizations would have produced, but have decided instead to eliminate.

The total emissions reductions are supposed to match, tonne for tonne, the emissions put out by the public sector, which allows the government to declare itself carbon neutral.

The principle behind the scheme is that the private sector emissions cuts would not have happened if the government had not bought the offsets. But Jaccard argues that there's no way to be sure that's true.

He said programs like this tend to attract what are known as "free riders," participants who would have reduced their emissions even if they hadn't been paid. And, if the cuts would have happened without the government's help, then you can't claim they offset the government's own emissions.

(The government and its supporters argue that the PCT's offsets are genuine because they are examined closely by independent consultants who reject any free riders.)

BC Conservative Party Leader John Cummins has promised to kill the province's "carbon bureaucracy," including the carbon tax and the PCT. On the other side of the political spectrum, Independent MLA Simpson, one of the carbon neutral strategy's most persistent critics, has introduced a private member's bill called the Carbon Neutral Government Repeal Act. If passed – and private member's bills rarely become law – public sector organizations would still have to track and report their GHG emissions, but they would not have to buy offsets from the PCT.

Don't subsidize, tax

This option could be done with or without scrapping public sector offset payments. In this scenario, rather than paying corporations to reduce their emissions, government would make those emissions more expensive.

Currently, the carbon tax covers emissions caused by burning fossil fuels. That's about three-quarters of the province's total emissions. The other quarter comes from a number of sources, including landfills, gas pipelines and industrial processes like cement making.

Lake said the government is looking at putting a price on these emissions, but critics complain that the government is moving too slowly.

Ian Bruce, a climate specialist with the David Suzuki Foundation, said industrial emissions should be regulated or taxed.

"Instead of being part of the (PCT) offset portfolio, they should be required like other sectors in British Columbia to be contributing to reducing their own greenhouse gas emissions through regulations or through the carbon tax," Bruce said. "That would help shift responsibility back to industrial polluters to reduce their own pollution. And in the long run it would make B.C.'s industry leaders in energy efficiency."

Simpson points to offsets purchased from Encana as an example of what happens under the current policy. The PCT pays Encana an undisclosed amount to reduce emissions at a northeastern B.C. drill site. The PCT says that's a reduction of just under 85,000 tonnes a year. But Encana is also going ahead with the Cabin Gas Plant near Fort Nelson, which will put out 2.2 million additional tonnes of GHGs a year.

That's 25 times the emissions reduction the PCT paid for through offsets. In fact, it's three times the total annual emissions offset by the entire B.C. public sector.

"That's bad public policy," Simpson said.

Keep it and fix it

Not everyone wants to scrap the program. Matt Horne, of the Pembina Institute, argues that B.C.'s carbon neutral government initiative is a "relatively unique" policy. "To expect to have gotten it exactly right on the first pass through probably isn't realistic."

He said he's concerned about calls to drop the strategy because it has put a price on emissions in the public sector and has caused those working in government to think about their carbon footprint.

"It's not universal, but there's certainly lots of people thinking, 'We're paying $25 a tonne – how can we not pay that,' " Horne said. "That's something that other types of green government programs haven't accomplished."

Horne is one of several people following this file who think offsets could be retained, but with a change in emphasis.

Give more weight to reducing

The B.C. carbon neutral strategy was policy in a hurry. Public sector organizations were given less than three years to cut their emissions before having to buy offsets. A government eager to develop a B.C. offset industry ended up giving much more weight in its strategy to offsets than to emissions-reducing capital projects.

A program of government grants eliminated 35,600 tonnes of annual GHGs, about four per cent of the total government output. But that grant program has been cancelled, and public organizations argue that they don't have the capital funds to make further cuts.

Other jurisdictions have given themselves more time to reach the carbon neutral goal. And they've put emissions cuts before offsets. The U.K. Climate Change Department's Guidance on Carbon Neutrality, the UN and ICLEI - Local Governments for Sustainability all stress reducing emissions before buying offsets.

A report from the Columbia Institute, a Vancouver civic governance think-tank and community group, shows how this approach to carbon neutral government has played out in the Australian state of New South Wales (NSW).

"Rather than setting a short timeline that would almost inevitably lead to high offset purchases, the NSW government in 2008 set a target of public sector carbon neutrality by 2020, giving public sector bodies time to implement real emissions reductions in their own operations," says the report, titled *Catch $25*. "Under the NSW framework, offset purchases will not even be considered until 2014 (Year 6 of the plan), and only then after 'all other means of reducing emissions have been put in place.' If offsets do become part of the NSW plan, they would not be required until 2020, Year 12 of the program."

Charley Beresford, executive director of the Columbia Institute and a co-author of the report, said in an interview that making real reductions before buying offsets should be the "primary principle" of a carbon neutral strategy.

James Tansey, a University of British Columbia business professor and president of Offsetters, counters that if the government had delayed offsetting it wouldn't have gotten the attention of decision-makers in the public sector.

Hadi Dowlatabadi, a physicist with UBC's Institute for Resources, Environment and Sustainability, said that buying offsets doesn't preclude cutting emissions.

"If I can offset my emissions at a lower cost than the offset price, of course I'll be doing that," he said. And if it costs more than $25 a tonne to offset your emissions, then buying offsets from the Pacific Carbon Trust saves you money, he said.

What's important is whether the public sector is being given the right kind of financial help to cut its emissions, he said. Which leads us to the next suggested solution:

Bring back the grants

From 2008 to 2010, the Public Sector Energy Conservation Agreement (PSECA) gave out $75 million to help the public sector cut carbon. But that money has dried up. Almost everybody involved would like to see it come back.

"If there's a cost-effective project in a school we should make sure the funds are there to make sure that project's happening," said the Pembina Institute's Horne.

This is one solution that seems likely to be adopted by the government. Environment Minister Lake said in an interview that "We recognize that people have concerns with private money going to offset private companies. Ideally, what we would do is have a fund that public sector organizations could access to help them reduce their greenhouse gas emissions."

He mentioned PSECA as an example of such a fund.

In answer to the inevitable question of where the money would come from for such a fund, MLA Simpson makes this suggestion: take it from the surplus of the PCT.

Which is a step toward the next proposed solution:

Keep offset money in the public sector

This is a popular suggestion with public sector organizations and is endorsed by the BC New Democratic Party. The idea is that the money now going into offsets could be pooled into a fund that would pay for public sector emissions cuts.

"Those moneys should be remitted back to districts or to a common pot, as it were, to distribute to those districts that could make best use of the money," B.C. School Trustees Association president Michael McEvoy said in an interview.

The money, he said, "needs to remain in the public system. That's pretty simple. I don't think it takes a gathering of stakeholders to figure that out. Our view would be the minister and the government should just move to resolve the problem."

Lake seems less enthusiastic about this proposal, however.

"The problem is, if you take that money and don't reduce greenhouse gas emissions elsewhere, you can't call yourself carbon neutral," he said.

The money currently being paid in offsets won't fund enough capital projects to eliminate all of the public sector's emissions, Lake said, although he added that he isn't ruling the proposal out.

Simpson replies that the cuts would at least be real – no questions about whether offsets are genuine – and they would save taxpayers money.

Simpson is among those who have put forward another proposal that's popular in the public sector, but unlikely to thrill Lake.

Give the whole public sector the deal local governments get

Municipalities get their carbon tax payments back if they agree to go carbon neutral. But they have a lot more leeway in how they achieve neutrality. They don't have to go through the PCT. Instead they can buy cheaper offsets on the open market, participate in approved GHG reduction projects or start their own projects.

"There's plenty of solutions available," said theDavid Suzuki Foundation's Bruce.

The last proposal on our list deals with the situation mentioned at the beginning of this series on carbon neutral government.

Deal with indirect emissions

UBC wants to build 8,000 new units of student housing. This would lower overall GHG emissions in the Lower Mainland by 7,700 tonnes a year; not only would the students be living in housing that would be more energy efficient than their current off-campus dwellings, but their commuting would be drastically cut.

But, because of a wrinkle in the way the B.C. government counts emissions, UBC would have to buy an extra $145,000 a year in offsets for cutting these GHGs.

In a study for the Pacific Institute for Climate Solutions, PhD student Kim Lau and Dowlatabadi argue that public sector organizations should assess and report indirect emissions such as those associated with commuting. However, they say, organizations shouldn't have to buy offsets for such indirect emissions. Instead, they should be encouraged to reduce them and be allowed to claim the reductions as offsets – either to sell to the PCT or to balance their own emissions.

Dowlatabadi said the government is genuinely interested in this recommendation.

"I applaud what the Climate Action Secretariat have been doing," he said. "They've been pioneers and they should be applauded for what they've been going. Nothing is perfect the first time out.

"What we should be doing is getting feedback on how to improve it, rather than to bash it so that it goes away altogether."

It's unclear when the government's review of the carbon neutral strategy will be concluded. Lake said he's not going to put a timeline on it, other than to say that "Hopefully, into the new year we'll have a lot of these things wrapped up."

Like much of the B.C. Climate Action Plan, it's difficult to say exactly where carbon neutral government is headed or when it's likely to get there. But given the strategy's symbolic importance, a public debate around these proposed solutions can only be good for overall climate policy. ■

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Golden results thanks to BC emissions law? Numbers say otherwise.

BC's 'Cleaner' Fuel Standard: Reality Check

How a law supposed to require low carbon gasoline and diesel spares the oil sands at the atmosphere's expense.

By Geoff Dembicki, 13 December 2011

View full article and comments: http://thetyee.ca/News/2011/12/13/Fuel_Standard_Reality_Check/

In late September this year, a who's who of climate policy experts, industry reps and provincial bureaucrats gathered at the swanky Delta Ocean Pointe Hotel on Victoria's inner harbour, just across the water from B.C.'s legislature buildings.

The purpose of their two-day retreat – which went unreported by all Canadian media, including The Tyee – was to evaluate the province's low carbon fuel standard, a policy that has positioned B.C. in the global vanguard of climate change action.

In theory the standard will make all gasoline and diesel sold in the province better for the climate and help us transition to a clean energy economy.

Yet the mood at the Pollution Probe-hosted conference, which drew the majority of its participants from the oil and gas industry, was far from celebratory.

"Industry was challenging the fuel standard, saying it's unworkable," Alison Bailie, a Pembina Institute policy advisor who attended told The Tyee.

Perhaps more surprising is that Bailie herself, and other prominent green groups, are also reluctant to support the initiative.

With the legislation set to go into effect next year, they see major design flaws that could render its clean energy goals unlikely, if not impossible, to achieve.

Those flaws, they argue, give big handouts to Alberta's oil sands industry and entrench B.C.'s addiction to some of the world's most polluting fuel.

"It's hard to have a position on B.C.'s low carbon fuel standard," Bailie said. "We can say we're supportive of the objectives, but the way it's implemented can have a profound impact on whether it does lead to greenhouse gas reductions."

Schwarzenegger gives high praise

In 2007, B.C. became the second jurisdiction in the world after California to adopt a low carbon fuel standard, and optimism couldn't have been higher.

"With your willingness to be innovative in clean technology, you are poised to start British Columbia's new gold rush," then-California governor Arnold Schwarzenegger declared at a Vancouver economic summit that year.

The goal of B.C.'s fuel standard, modeled after similar Sunshine State legislation, remains unchanged after four years. It strives by 2020 to make all gasoline and diesel sold in the province 10 per cent less damaging to the climate than it was in 2010.

Not only that, say its proponents, but the policy would also provide powerful incentives to adopt cleaner, more renewable fuel sources, creating a veritable "gold rush" of new technology and investment.

The fuel standard is based on a fairly straightforward premise.

If global warming is ever to get solved, it will mean drastic cuts in emissions from transportation, a sector responsible for 36 per cent of all greenhouse gases released in B.C. in 2008.

One obvious way to reduce them is by making people drive less, an objective of B.C.'s carbon tax, which increased the price of gasoline and diesel.

That only addresses part of the problem though. Many of the emissions associated with road fuels are released (think crude-oil upgraders, refineries etc.) before those products ever get into a gas tank.

There's no single way to reduce these so-called "upstream" emissions.

The Math

According to Stats Canada, a total of 4,398,401,200 litres of gasoline was purchased across B.C. in 2007. The Tyee Solutions Society assumed that half of that amount, 2,199,200,600 litres, was produced from oil sands crude. Since the B.C. government considers each litre of gasoline to contain 34.69 mega-joules (MJ) of energy, sales of this oil sands gasoline were equivalent to 76,290,268,814 mega-joules of energy.

Each mega-joule of oil sands fuel energy releases roughly 107.3 grams of carbon, according to Stanford University's Adam Brandt. So all that oil sands fuel put roughly 8,185,945,840,000 grams of carbon into the atmosphere. Under the fuel standard, that oil sands fuel is considered to have a carbon intensity of 90.21 g/MJ, resulting instead in a figure of 6,882,145,150,000 grams of carbon released.

The difference between the two estimations, 1,303,800,690,000 grams or 1,303,800,690 kilograms,isn't being accounted for in the low carbon fuel standard. Plug that number into the EPA's Greenhouse Gas Equivalencies Calculator, and it's shown to be equivalent to the annual emissions of 255,647 passenger vehicles.

– G.D.

Still, by setting a clear reductions target for the final product at the pump, and imposing fines for non-compliance, you not only force the transportation fuel industry to come up with solutions, but give it every incentive to speed the shift to renewables.

Of course it's one thing to talk about a "gold rush", and quite another to actually make it happen.

Anatomy of a carbon policy

In order to understand why B.C.'s low carbon fuel standard could potentially do more harm to the climate than good, you must first get a sense of how the government designed it.

The initial step in any climate policy is to establish some sort of "baseline," a starting value that all carbon reductions are measured against.

Think of it like an obese person recording his or her weight before enrolling in boot camp.

Under B.C.'s fuel standard, bureaucrats in the ministry of energy and mines have calculated that baseline to be 82.40 g/MJ for the year 2010.

What that means, is that for every unit of energy (a mega-joule) created by gasoline, diesel and biofuels that year, an average of 82.40 grams of carbon was released.

That number must go down to 73.82 by 2020, meaning that on average, every litre of road fuel pumped into cars and trucks will be about nine to 10 per cent less damaging to the climate.

It's sort of like acknowledging that every excess calorie a person consumes creates body fat – then declaring that in order to reduce overall obesity in the population, restaurants must start serving lower-calorie meals.

Forcing B.C.'s fuel suppliers to provide road fuel that's 10 per cent cleaner by 2020 may sound straightforward enough.

But the math that the provincial government relies upon could mean the difference between a carbon policy that succeeds and one that fails.

Let's return to that original "baseline" number, the 82.40 g/MJ value for 2010 that all carbon reductions are measured against.

Calculating that number meant the B.C. government had to do three things: figure out exactly how much gasoline, diesel and biofuels were being sold in the province; measure how bad each is for the climate; and then do some fancy math to create an average.

The first and third parts are easy, while the second relies on a complex science with virtually no historical precedent.

Road fuel vs. the climate

Most people fill up their gas tanks with little regard for the fuel they're pumping, where it came from, or how it was made.

These factors, though, are precisely what make one kind of fuel worse for the climate than another.

To understand why, consider the case of gasoline, by far the most commonly pumped road fuel in B.C.

Broadly speaking, drivers across the province are filling up with two types of gasoline. There is gasoline made from conventional oil, and gasoline made from oil sands. (The same holds true for diesel).

Spend a week powering your car with each type, and the emissions coming out of your tailpipe will be virtually identical.

So to truly figure out which is better for the climate, you'd have to track how each type of gasoline was produced, determining, in the parlance of carbon policy, its "lifecycle emissions".

That's exactly what Stanford University researcher Adam Brandt did in a recent European Commission report.

And based on the huge amounts of energy needed to extract and refine oil sands crude, he concluded that this energy source is 23 per cent worse for the climate than conventional oil.

Which brings us back to that 82.40 value created by the B.C. government, the one which shows how much carbon was emitted for each unit of road fuel energy in 2010.

As part of the complicated math needed to create that number, policy makers needed to somehow account for the differences between the two types of gasoline described above, oil sands and conventional.

They did this by essentially averaging each fuel's carbon footprint, among others, in order to create a single value. (It would be like calculating an average calorie count for say, all the pizza served in B.C.)

Hence all gasoline sold across the province, whether oil sands or conventional, is considered by the B.C. government to have a carbon intensity of 90.21 g/MJ. (Diesel got the same treatment too, resulting in a slightly higher 93.33 g/MJ).

So why does all this technical mumbo jumbo matter?

Math doesn't add up

Recall the report that compared the actual carbon intensity of both oil sands and conventional fuel, the one that said oil sands is 23 per cent worse for the climate.

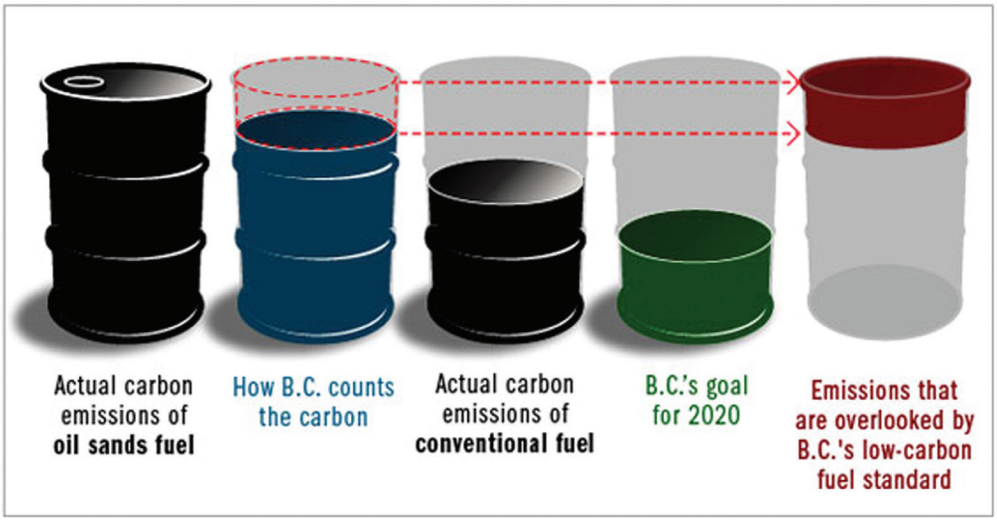
According to the report's author, Stanford's Brandt, the actual carbon intensity of oil sands fuel should be somewhere around 107.3 g/MJ.

But the B.C. government considers all gasoline, oil sands or not, to have the same carbon intensity, 90.21 g/MJ.

Here is why that is a big deal. If you're a fuel supplier that puts only oil sands gasoline onto the provincial market, the true carbon intensity of your product would resemble Brandt's 107.3 g/MJ figure.

And reducing that number to the province's target of 73.82 g/MJ by 2020 means your fuel supply has to get about 31 per cent cleaner, a serious undertaking.

You'd have to put real pressure on oil sands producers to clean up their acts, and start blending millions of litres of low carbon biofuels into your gasoline supply.



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Tyee Solutions Society graphic by Alex Grunenfelder.

Instead, the B.C. government has decided that the carbon intensity of your oil sands gasoline is going to be 90.21 g/MJ on paper, not the more accurate 107.3 g/MJ.

The government has essentially granted you, the oil sands fuel supplier, a huge freebie. Because now you only have to make your gasoline 18 per cent cleaner in order to reach the 2020 target, instead of 31 per cent.

That's also 17 grams of carbon per mega-joule wiped off the province's carbon books. But not out of the atmosphere.

Those emissions are still being pumped out of upgrader smokestacks and vehicle exhaust pipes, contributing to rising global temperatures.

Let's assume that half of the 4.4 billion litres of gasoline consumed in B.C. each year comes from Alberta's oil sands (a not unreasonable estimate).

Arbitrarily reducing that gasoline's carbon intensity by 16 per cent, as the B.C.'s fuel standard does, ignores annual emissions equivalent to those from 255,647 passenger vehicles, roughly three times the number counted on the streets of Kelowna, B.C., in 2007.

You could expect a similar, though slightly smaller, figure for diesel. (A sidebar accompanying this story shows The Tyee Solutions Society calculations.)

"This is a gaping loophole," Environmental Defence program manager Gillian McEachern told The Tyee Solutions Society. "We're concerned that B.C.'s fuel standard won't achieve what the province says it will."

BC policy a 'hundred pound weakling'?

The scenario described above may be extreme, but it's where the B.C.'s road fuel sector is heading.

The province gets the majority of its gasoline and diesel from three Edmonton-area refineries.

Two of these (owned respectively by Shell and Suncor) process exclusively oil sands crude, while the other (owned by Imperial Oil) relies mostly on light, conventional oil.

The remainder of B.C.'s fuel needs are met largely from a Burnaby refinery operated by Chevron, which refines a mix of oil sands and conventional.

As supplies of the latter continue to dwindle across Alberta, the province's vast bitumen deposits will almost surely make up the difference.

Natural Resources Canada predicted as much in a 2008 report, stating that the oil processed by western Canadian refineries "will continue to get heavier in the coming decade."

Indeed, a recent federal agency report estimated that oil sands production is set to triple by 2035, while conventional Canadian production is tailing off.

As fuel suppliers bring more and more oil sands fuel onto the market, the carbon gap created by the B.C. government's fuel standard on average will also grow, leaving tonnes of emissions unaccounted for.

California's low carbon fuel standard (as well as pending European Union legislation) contains a solution to this loophole.

Instead of just one carbon intensity value for gasoline, and another for diesel, policymakers are creating a separate, relatively higher oil sands value.

Suppliers are free to sell whatever kind of gasoline and diesel they want. But if they intend to meet fuel standard targets, and avoid fines, they'll probably try to sell as little oil sands fuel as possible.

In theory this will have a cascading effect, with oil sands producers pushing hard for innovations that make their operations less damaging to the climate.

There's already evidence this could be happening. Cenovus Energy Inc., a major oil sands producer, announced this October that several of its operations now have a low enough carbon footprint to meet California's standard.

But those types of changes are unlikely to be spurred by B.C.'s policy, which "does not incentivize refiners to switch to lower-emissions crudes or to pursue energy efficiency improvements," according to a 2010 IHS-CERA report.

"Compared to the muscular version pioneered by Governor Schwarzenegger in California," said Environmental Defence's McEachern, British Columbia's policy is "a hundred pound weakling."

Industry fights back

You might think that western Canada's largest refiners would support a "weakling" fuel standard that doesn't target Alberta's oil sands.

But at the recent Pollution Probe-hosted conference in Victoria, the Canadian Petroleum Products Institute, a refining industry trade group, still fought hard against the legislation.

Biofuels: Carbon Liability?

By 2012, when B.C.'s fuel standard first comes into effect, suppliers have to ensure that five per cent of the fuel they're putting onto the market comes from renewable sources.

Barring the large-scale adoption of electric vehicles, that effectively commits them to crop-based biofuels such as ethanol.

Of major concern here is something called "indirect land-use changes", which refers to additional emissions released by, say, tearing up carbon-trapping forests to grow new fuels.

"In some cases," the B.C. government acknowledged in 2009, "[indirect land-use changes] can increase the [carbon intensity] of biofuels to the point where the biofuels have greater [greenhouse gas] impact than the fuel they replace."

Ideally, the next generation of bio-fuels would be far less damaging to the climate. They'd be grown on existing but underused agricultural land, or produced from algae in ponds or the desert.

Meanwhile California is incorporating indirect land-use changes into its fuel standard legislation, providing market signals that will encourage development of such lower-carbon options.

– G.D.

"The target is very optimistic," reads a presentation from Ted Stoner, the group's western Canadian head.

And in a sense the oil and gas industry is right. Its members don't necessarily control whether B.C. embraces electric vehicles, or develops the truly low-carbon bio-fuels deemed necessary to fight global warming (see sidebar).

Yet a tough low carbon fuel standard, such as the one being implemented in California, could potentially force innovative responses to those changes and help bridge the transition to a clean energy economy.

As it stands now, that doesn't seem too likely. ■

Tyee Solutions Society is a non-profit producing catalytic, solutions-oriented journalism on social, economic and environmental issues of broad concern to Canadians.

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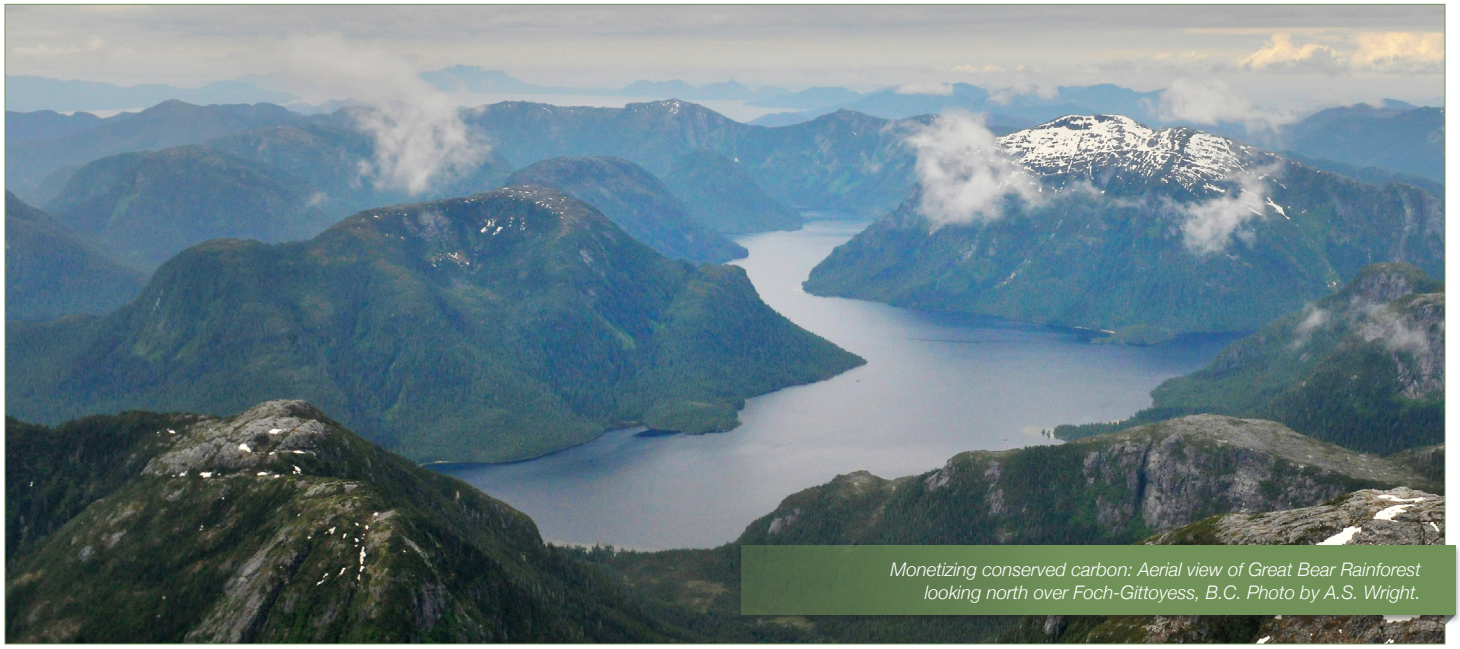

Monetizing conserved carbon: Aerial view of Great Bear Rainforest looking north over Foch-Gittoyess, B.C. Photo by A.S. Wright.

Great Bear Forest to Be Massive Carbon Offset Project

How eight coastal First Nations will harvest money from trees without saws.

By Christopher Pollon, 11 June 2012

View full article and comments: http://thetyee.ca/News/2012/06/11/Great-Bear-Carbon-Offset/

In a young man's eyes the logging that laid waste to the coastal forest was akin to a military invasion.

Cameron Hill was barely a teenager when loggers descended onto Gitga'at First Nation territory in the early '80s, clear-cutting vast stands of old-growth cedar in the midst of what is now known internationally as the Great Bear rainforest.

"We still have huge blocks of our territory decimated from those clear cuts," says Hill, now 44, a band councillor and school teacher in the remote north coast village of Hartley Bay. "The land was raped while we watched, and we don't ever want to see that again."

An unprecedented new carbon offset project, among the largest ever conceived, promises industrial logging will not return.

Beginning this year, the Gitga'at and seven neighbouring First Nations (see sidebar "The Coastal First Nations") will "harvest" one million tonnes of "carbon offsets" from the Great Bear Rainforest, sharing millions of dollars in revenue with the province over the next century.

That harvest was created, counterintuitively, by putting vast areas of the Great Bear off-limits to industrial-scale logging. By leaving more trees standing, the First Nations are able to sell certificates attesting to the increasing volume of carbon stored in their roots, leaves and fibre. Purchasers may claim the carbon thereby removed from the atmosphere to offset their own direct greenhouse emissions.

Hill, who teaches math and physical education in Hartley Bay, says the deal is bigger than the revenue it will earn, or even the climate change it may forestall; the Gitga'at, unlike most British Columbians, still rely almost entirely on their wild surroundings for daily sustenance.

"Money from carbon is not the end-all, be-all for us," he says. "The Gitga'at way of life is what is most important, and however we can preserve that, we're open to the options and opportunities."

Options and opportunities

The pending carbon deal is a precedent that could open the floodgates for other First Nations, private companies, and community forests to profit from a uniquely 21st century forest resource: the carbon held in B.C.'s estimated 55 million hectares of forest, packaged into tradable financial instruments and sold as a commodity around the world.

Given that forests and the soil beneath them are responsible for almost all of the world's land-based carbon sequestration, attempts to put a dollar value on forest carbon are an important step forward in the fight against climate change, albeit steps beset by hurdles and shackling complications.

The Great Bear project is among the biggest forest-carbon projects every conceived, in the same league as the 1.8 million tonne Juma Reserve in the Brazilian Amazon.

"The Great Bear Forest project is at a scale that dwarfs everything else that's gone before," says Valerie Langer of ForestEthics Solutions, who helped the province develop its rules for forest offset projects.

That makes it unique – for now. But the project may also be a trend-setter, Langer says. "If this is done right, it will apply to forests across the province. This is not a one-off deal."

To accomplish the massive deal, the Great Bear project was split into four pieces. In all, eight participating First Nations have agreed to practice "ecosystem based" forest management that will slash timber harvest over a total land base of 5.4 million hectares. In place of retaining the minimum tree cover required by law (about 30 per cent), the new plan preserves at least 50 per cent, and as much as 80 per cent, of standing growth.

The Coastal First Nations

The Coastal First Nations is an alliance of north and central B.C. coastal First Nations that act together to develop land use plans and implement economic opportunities for carbon credits, forestry, ecotourism, non-timber forest products and shellfish aquaculture in the Great Bear Rainforest.

You can see where the member nations are located by clicking here.

The alliance created the framework required to negotiate with the province and coordinate the technical work necessary to establish the Great Bear carbon offsets, while each of the following groups individually approved the carbon credit agreements on their territory: Wuikinuxv Nation, Heiltsuk, Kitasoo/Xaixais, Nuxalk Nation, Gitga'at, Haisla, Metlakatla, and Council of the Haida Nation. – C.P.

How it unfolded

The Coastal First Nations collectively agreed in December 2003 to explore the option of earning carbon offsets as part of their land use planning process. They went on to establish a carbon working committee just before the B.C. government announced that it would protect a chunk of the Great Bear roughly the size of Belize in early 2006.

Hill says the biggest challenge for the Gitga'at was overcoming their distrust of the provincial government. But upon closer scrutiny, they came to see the carbon project as a unique opportunity. Implementing "improved forest practices" to facilitate carbon storage would serve both the Gitga'at desire to stop the clear-cutting and their wish to develop a lower-impact economy based on ecotourism.

"We've got people flocking into our territory to take in the pristine wonder of it," Hill says, "And to me, if it's employing our people and not disrupting the Gitga'at way of life, it's a win-win."

Funding to create the offsets was available: as part of the political deal to create the Great Bear Rainforest protected areas, government and private philanthropists had assembled a $120-million pot of money to help develop an alternative economy and smooth the transition from business-as-usual forestry to ecosystem based management. (A $60-million federal/provincial contribution provides for First Nation economic development initiatives; an equal portion from philanthropists funds conservation management and research).

A breakthrough came late in 2009, when Coastal First Nations and the provincial government agreed in principle to divide any potential revenue from carbon offsets between them. Last year, a formal "atmospheric benefit sharing agreement" was signed – essentially a profit-sharing deal for the carbon contained in trees standing on real

estate that is both First Nations territory and Crown land in the eyes of the law. It decreed that after transaction costs, revenues from Great Bear carbon sales would be split 50/50 between the government and First Nations.

It was an historic moment: First Nations and government temporarily set aside the issue of contested land title and agreed to share in the benefit and responsibility of maintaining the carbon on the land for a century.

Yet the breakthrough came with surprising speed, considering that most treaty negotiations in the province have been stalled for decades. Langer says the province was motivated to complete the carbon deal because the Pacific Carbon Trust – the Crown corporation set up to acquire 600,000 tonnes worth of offsets each year to "neutralize" emissions from B.C.'s public service – was struggling to find enough home-grown offsets to meet that demand.

"There was just not enough volume available in B.C. for [the required] offsets," Langer observes, "so all of a sudden, when a potential project came around that had a large volume of carbon, it was of interest."

New rules = new markets

Despite that interest, advocates for selling carbon offsets from the Great Bear were dogged by a question: outside of the B.C. government, who else would buy their carbon certificates?

Up to now, markets for B.C. forest-carbon offsets have been limited by a lack of internationally recognized rules (called "protocols"), which prescribe how offsets are created. Many companies and other organizations internationally buy carbon offsets, either for reasons of reputation or to meet government mandates. But because of the number of variables involved, offsets not created using recognized protocols are of small interest to most buyers.

In 2008, the provincial government's Climate Action Secretariat, working with Pacific Carbon Trust, set to work developing a protocol for offset projects in B.C. forests. When they were eventually adopted as the B.C. Forest Carbon Offset Protocol (or FCOP), the Coastal First Nations became the first to apply the new rules.

The province hopes they'll be followed by others. With the FCOP in place, B.C. policy-makers hope to see B.C.-"grown" forest-carbon offsets qualify for sale to greenhouse emitters in Quebec and California, when both jurisdictions commission their planned Western Climate Initiative carbon cap-and-trade systems next year. The province is also seeking acceptance for FCOP under the Verified Carbon Standard, among the highest standards for voluntary offsets in the world. Acceptance under that standard would qualify FCOP offsets for sale into a global voluntary-reduction offset market worth over US$420 million in 2010.

Monetizing Great Bear carbon

Meanwhile, Coastal First Nations policy analyst Gary Wouters says that an agreement in principle has already been struck with the PCT to buy the Great Bear offsets.

While it's too early to say exactly how much money is in play (Langer estimates the first "tranche" of Great Bear carbon will earn First Nations close to $3 million), Wouters says they hope to earn a premium for these offsets.

"We want to use the branding of the Great Bear Rainforest and the nature of the unique biodiversity we've created here,"

Whose Carbon? Whose Cash?

Offset Revenue and the Public Interest

The growth of offset sales from B.C. Crown lands raises important questions about the ownership of carbon as a public resource. Currently, forest companies pay stumpage fees (more than $400 million in 2009/10) to the citizens of B.C., through the government, for the right to harvest provincially owned timber. If carbon is a natural resource like any other on the public land base, will there be a carbon equivalent to stumpage fees that will allow all British Columbians to share in the profits from future forest carbon deals?

Nobody knows; and until now there has been no public discussion about Crown carbon revenues. "In terms of revenue or benefits to the Crown on projects, the Ministry of Forests, Lands and Natural Resource Operations is currently developing a policy," says spokesperson Vivian Thomas. "If [forest] tenure holders want to make investments in their holdings to take action on climate change, they could."

Tim Lesiuk adds that current low prices for "commodity" carbon offsets – in the $3 to $5 range per tonne on some voluntary markets – make projects a borderline investment to begin with, so there is not much revenue for the Crown to claim. "But that could change, if and when markets for carbon pick up." – C.P.

says Wouters. “We think Great Bear carbon will be worth more than growing alder trees in Langley.”

Wouters sees that potential for “charismatic” carbon offsets in places like the Great Bear – where exceptional biodiversity values and even social benefits can be bundled together with the carbon stored in forest fibre as added values for which some buyers may be willing to pay extra money.

(How carbon offsets are being “bundled” with these other biodiversity, social and ecosystem service values will be the subject of an upcoming TSS feature: stay tuned.)

Briony Penn, who spent two years in discussions over the development of the new B.C. forestry offset rules as a contractor to the Land Trust Alliance of BC is concerned about some of their contents, especially the inclusion of carbon stored as a result of either reforestation and “afforestation” (planting trees where none existed before). “If you’re going to get into the business of offsets with forests,” Penn says, “the most effective form of [carbon] mitigation is to stop cutting down forests in the first place.”

The same deliberations heard ForestEthics’ concern that squeezing the maximum amount of carbon credit out of B.C. forests might compromise other biodiversity values. For example, a future project might clear-cut old growth forests in order to plant “super tree monocultures” genetically modified to suck up carbon and generate a maximum number of saleable offsets.

The cost of carbon leakage

While many criticisms have been made of carbon offsets as a tool for putting a price on carbon, meeting rigorous standards to bring the Great Bear offsets to market has cost First Nations millions of dollars, says Gary Wouters.

He estimates that nearly half the carbon being sequestered in forests in the north and central coast has been set aside from offset sale to account for something known as “leakage.”

Carbon “leaks” from the Great Bear like this: if Coastal First Nations reduce their timber harvest to sequester more carbon, their former customers will simply buy wood and fibre elsewhere. If they end up buying those from poorly managed forests with high emissions, the reduction of activity in Great Bear in order to store carbon there could be held indirectly responsible for creating additional emissions somewhere else in the world – negating the atmospheric benefit that offsets purport to certify.

Under the province’s new forest-carbon rules, developers must identify where the market will turn to replace the timber supply they intend to remove from the market, and estimate how much carbon will “leak” that way.

Tim Lesiuk, executive director of business development at the Climate Action Secretariat, says the new B.C. rules accounting for leakage err on the side of caution. “FCOP is seen as overly conservative or not producing enough offsets,” he concedes, “but [this ensures] it is doing at least as much good for the atmosphere as it says, and probably more.”

Private sector to the rescue?

First Nations in the Great Bear aren’t the only ones getting into forest-carbon offsets in B.C. In January 2012, the province invited proposals from private interests willing to reforest Crown land damaged by mountain pine beetle and wildfire in exchange for carbon offset revenues from the newly-planted forests.

For the 2012 planting season, the ministry had hoped to target between 500 and 2,000 hectares of Crown land, with plans to increase that to as much as 10,000 hectares annually by 2015. A Pacific Carbon Trust press release says “banks, carbon finance companies, silviculture firms and First Nations can generate significant carbon credits, which they will be able to sell on the open market as the carbon storage value of these replanted areas increases over time.”

In April, Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) spokesperson Vivian Thomas confirmed that four proposals had been received to date, with one under active negotiation. None of the proposed terms were being made public.

“This program is a creative way of encouraging the replanting of these areas that generates carbon credits for program partners and reduce the burden of taxpayers,” Thomas said.

Briony Penn doesn’t see it this way at all. If the public subsidizes the planting of trees for future generations, then that money needs to flow back in some way to communities and taxpayers, she argues (see sidebar “Whose Carbon? Whose Cash?”).

"These decisions are being made now, and there has been absolutely no public discussion about carbon in British Columbia," Penn says.

In June, just as this story was going to print, ministry spokesperson Thomas told Tyee Solutions that the one deal under negotiation had fallen through. "Given the tight timelines, the proponent wasn't able to get the necessary financing together to meet timelines for this year's planting season," she said of the aborted deal. She added that the ministry will be posting another request for proposals in the late summer for the 2013 planting season.

First Nations not racing to get involved

Despite the lure of new revenue, Gary Wouters remains skeptical that many First Nations outside the Great Bear Rainforest will follow its path in the short term.

The upfront costs of defining and qualifying a project, and ongoing management work, are too onerous for most smaller First Nations, he says. "Unless you come together as a collective group and take advantage of the economies of scale, some small First Nations couldn't afford to do it."

The GBR carbon project was also the result of unique circumstances difficult to replicate: there was acceptance of the "ecosystem-based" forest management system by government, and funding specifically dedicated to developing a lower-carbon forest economy.

For other First Nations to seize the same opportunity, Wouters says the province would need to reopen existing land-use agreements and entertain new protected areas and reduced timber harvests on Crown land.

Importance of Great Bear carbon

None of this diminishes the precedent set in the Great Bear. Carbon being drawn from the atmosphere is being captured in forests on land the Crown and First Nations contest – then packaged into offsets and sold with the profits shared by both. The parties have agreed to set aside their treaty impasse and manage the land for carbon over the next 100 years.

If nothing else, it has bought some time in which to do more.

"The Great Bear is that first little baby step on carbon," says Briony Penn. She says its success could lead to a day when the cost of carbon emissions are factored routinely into every decision government and citizens make. "Once Great Bear is completely figured out, we will all know exactly how much carbon is released into the atmosphere every time a hectare of coastal rainforest is cut down," predicts Penn.

The win-win of generating revenue from keeping more forests standing is already apparent in Hartley Bay, where five nights a week Cameron Hill's family eats deer, moose or seafood they have harvested together during the year. The forests also provide medicine, and the raw materials supplying a renaissance in Gitga'at wood carving, weaving and blanket making.

More than a revenue stream, the carbon deal means the Gitga'at have a new level of food, resource and even cultural security. Clear-cutting has been replaced by gentler forays into the woods: later this month, Hill will take his class out to harvest cedar bark for Hartley Bay's weavers.

"I can't stress it enough," he says, "we can go and take from a tree and give it thanks, look after it, and it will heal and never be gone." ■

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Canada's carbon lesson: Just put a price on it

Five years ago, the province of British Columbia launched a quest to slash its carbon emissions. Here's what it has learned.

By Chris Wood, 29 February, 2012

This article originally appeared in the Los Angeles Times.
View full article and comments:
http://www.latimes.com/news/opinion/commentary/la-oe-wood-bcaction-plan-20120229,0,6166154.story

California's implementation of AB 32, the Global Warming Solutions Act, is meeting stiff resistance from greenhouse gas emitters and other opponents of climate change regulation. After one (unsuccessful) attempt to gut it at the ballot box, there remain roadblocks to enforcement and dire predictions of economic ruin if the state goes the whole distance. It might be an instructive moment to check in with the only other North American jurisdiction that's "been there, done that" with California on climate policy.

Five years ago this month, the Canadian province of British Columbia launched a quest to slash its carbon emissions that impressed even then-Gov. Arnold Schwarzenegger. The province's Climate Action Plan aimed to reduce its overall climate emissions by one-third by 2020 from their levels in 2007. An even more ambitious goal was set for the provincial public sector: a target of zero emissions — "carbon neutrality" — by this year.

How's it worked out? Perhaps not as well as the plan's most ambitious cheerleaders hoped, but some real changes are occurring. And as for economic or political poison? No and no.

A months-long inquiry by three reporters I worked with found plenty of skepticism about the climate plan's means but continuing support for its ends.

The province other Canadians sometimes call "British California" for its progressive impulses in 2007 moved against carbon emissions on several fronts. In addition to ordering provincial agencies to zero-out their greenhouse emissions by 2012, it adopted two key elements of AB 32: instituting a low-carbon fuel standard and committing to join California in a regional carbon cap-and-trade exchange.

British Columbia also went beyond AB 32, and any other U.S. state or Canadian province, by directly taxing the carbon in vehicle fuels. That tax now adds about 21 cents to the price of a gallon of gasoline.

How significantly these measures will reduce British Columbia's greenhouse gases remains to be seen. Emissions dipped in 2009, but some of that was no doubt due to the recession. Figures for 2010, when Canada's economy began to grow again, have not yet been calculated.

Still, some early signs are at least promising.

British Columbia drivers are responding to the carbon tax at the pump. Per-capita fuel purchases dropped by 3% more in B.C. than elsewhere in Canada in the wake of the recession, and its drivers now burn less gasoline — and therefore release fewer emissions — on an individual basis than any others in the country.

The goal to eliminate emissions by the provincial public sector — which in Canada includes hospitals, local governments, public schools, universities and provincial prisons — has been met, on paper at any rate.

Throughout the province, hundreds of public agencies beefed up insulation in their offices and installations, bought solar panels or replaced older vehicles with higher-mileage units. Collectively, the government claims, those measures reduced emissions by about 36,000 metric tons a year.

But the bulk of the zeroing-out of the province's public sector carbon footprint — about 20 times the reduction in its actual carbon emissions — was accomplished on paper, through the purchase of credits for "offsets." For a price, agencies could keep emitting greenhouse gases if they bought credits from businesses or private institutions that were making offsetting reductions elsewhere in the economy.

The real value of such offsets, however, isn't clear. Some research suggests that most claimed reductions, which are the basis of credits, are not real and, therefore, that "carbon neutrality" is just a fiction.

On top of that, the way the government enforced the credits programs has rankled the public sector. It is limited to buying credits through a state corporation, at a set price that is higher than the market price of credits. And many object to paying public funds to profitable private firms in exchange for their emission cutbacks. Other elements of the plan have also come in for question, in ways that echo problems in California.

The low-carbon fuel standard has been contentious in both jurisdictions. In California, a court decision (now on appeal) prevents the state from enforcing its standards.

The British Columbia plan calls for reducing carbon in the production of all fuels by 10% by 2020. But making fuel from tar sands emits a lot more carbon than making it from other sources, such as crude oil. Because the plan applies much the same rules to different fuels, it's unlikely the province will meet its 2020 goal for cleaner fuel production.

As for cap and trade, so far it's a nonstarter. California and another Canadian province, Quebec, recently launched trial versions of the carbon cap-and-trade market that British Columbia plans to join. But B.C. has yet to detail corresponding rules for its participation. Meanwhile, even if cap and trade were up and running, a quarter of the province's emissions — mainly from its booming natural gas fields — would remain untamed by any current policy.

What does it all add up to? The climate plan hasn't been a home run, but it has been a base hit. And there are plenty of ways to fix what isn't working well. As important: There have been no game-losing outs either.

British Columbia's economy wasn't sent to the dugout, for example. It fared better than most through the trough of the recession and in November boasted an unemployment rate of 7%, more than 4 percentage points lower than California's 11.3% at the time.

Nor was the political party most responsible for North America's first carbon tax defeated. The British Columbia Liberal Party fought the next election on the issue, against opponents campaigning to "ax the tax" — and won. Indeed, the party won a majority of seats in the legislature.

The nameplates have changed in the governor's office in Sacramento and the premier's office in British Columbia. The new Liberal Party incumbent in the north is Christy Clark.

Earlier this month, Clark introduced a policy to encourage the export of Canadian natural gas to markets in Asia, expanding the industry most responsible for the unaddressed quarter of her province's climate emissions. But at the same time, she is insisting that British Columbia double down with "more ambitious means of offsetting greenhouse gas emissions."

The lesson from Canada for would-be climate leaders is this: Just do it. Put a price on carbon, one way or another. How much is levied, and where and exactly how it's levied, aren't as important as the principle that we all pay something for emissions.

In Canada — and in California — it will take time, and trial and error, to get climate change regulations off the ground and working. It's difficult, yes. Complicated too. But it's not economic or political suicide. ■

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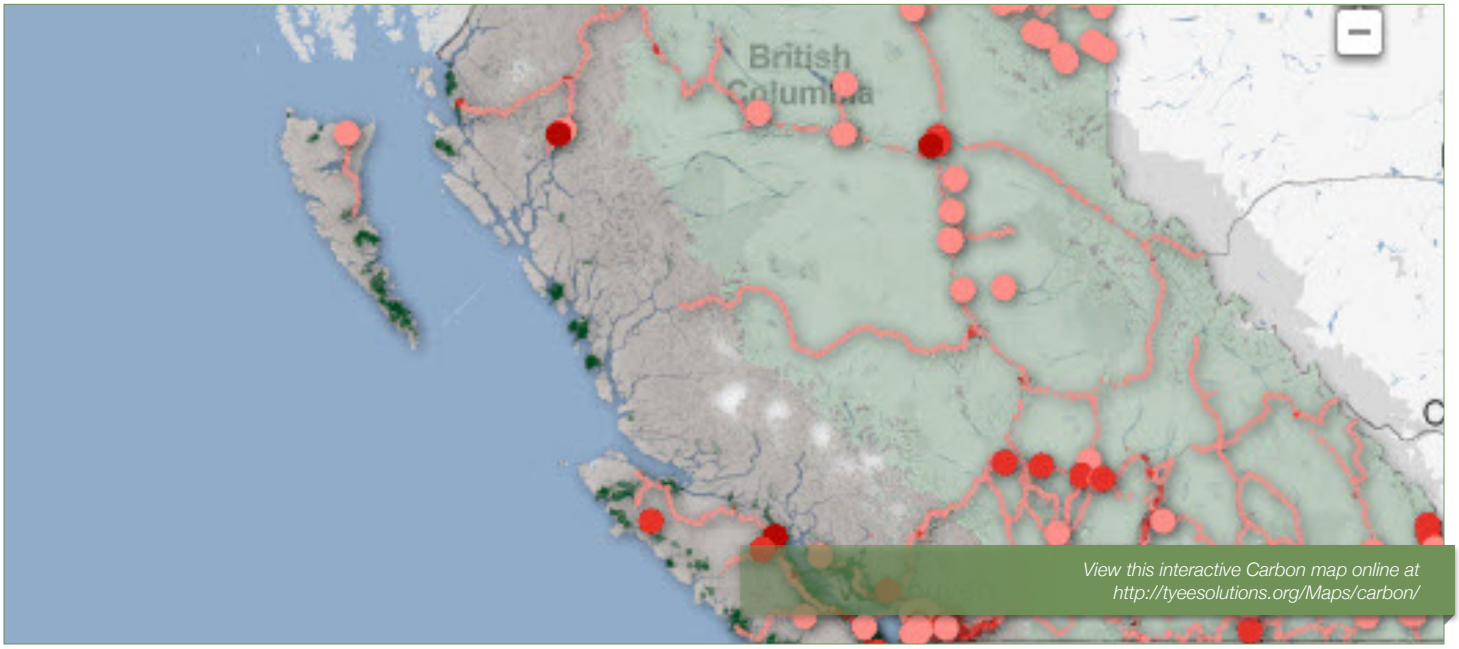

Footprints in the Air

Making BC's carbon visible.

A Tyee Solutions Society project.

View interactive map online here: http://tyeesolutions.org/Maps/carbon/

We all care about climate impact and watch our own carbon 'footprint'. But a lot of our impact on climate comes from things we do together, in our businesses or communities. And when all we hear about is how many megatonnes of emissions are released all across BC, or even Canada, it's hard to focus on where we can make a difference.

We thought it might help if we could actually see exactly where we're letting greenhouse gasses out into the atmosphere: what specific facilities or activities have the heaviest climate footprint.

But we also know that some features of BC's famous natural landscape pull important quantities of carbon out of the air, offsetting some of what humans release. We thought we should be able to see where those carbon 'sinks' are too.

That's what this map does.

It's a way to see at a glance, across the whole province or down to your own municipality, what activities, where, are having the greatest impact on our changing climate, as 'sources' or 'sinks' of atmospheric carbon.

We think it's kind of fun to explore; but then, we built it. We hope that everyone else with an interest in our future will at least find it helpful to visualize how specific choices in everything from shoreline development to traffic management might influence BC emissions.

The map is interactive. Zoom in to check out your community, or out for a provincial view. The buttons activate or remove from the map some of our most significant sink and source activities. (Note that however you set the buttons or scale, the carbon balance indicated reflects the area in the window and the current button settings). Click on coloured dots or pinkish road lines to identify individual industrial facilities or highway sections, and the emissions they're responsible for.

Visualizing our provincial carbon footprint this way revealed several stories to us in new ways. We hope you'll discover others. But here are a few things we've noticed already:

- Check out the blaze of pink across the Peace region in the province's northeast: that's the footprint of our expanding natural gas industry;

- Or follow the B.C. coastline, where dark green patches reveal the astonishing capture of carbon in salt marshes and seagrass beds;

- Traffic crawl lights up our driving emissions: check out the most congested lower mainland commuter routes.

To our knowledge, this is the first time anyone has brought together the necessary information to reveal our provincial climate footprint in such visual detail. Or made it available for British Columbians in a way that begins to let us try out a few simple 'what if' choices ('what if' we lost those precious beds of eelgrass, for example?). You can read more about how the project came to be here.

But like anything new, this one met a few unexpected challenges. One of those was the shocking discovery of just how much nobody knows about our impacts on climate. Read more about those speedbump moments in A few things we learned (or not) along the way.

Inevitably, in trying to bring together relevant, credible data from multiple sources, we found that not everything matched perfectly. We've done our best to create a picture that we believe is both truthful and representative. But it was built, necessarily, from the best estimates of existing data. To see where the original numbers came from and what assumptions we had to make along the way to reach our estimates, go here.

This is the first iteration of an experiment, in more ways than one. Try it out. Pass it on. If you like it, find it useful, or see ways we can improve it, please let us know at info@tyeesolutions.org.

A few things we learned (or not) along the way

Little is obvious in carbon counting

By Christopher Pollon and Hugh Stimson

The Footprints in the Air interactive carbon map is the Tyee Solutions Society's first attempt to visualize the choices British Columbians face in confronting climate change. Our vision was to put British Columbia`s most important carbon sources (emissions to the atmosphere) and carbon sinks (removals from the atmosphere) on the map—literally—along with the ability for viewers to see what our carbon 'bottom line' might look like if some of those weren't in the picture.

To that end we sought out the most credible data available to quantify the most important currents in BC's carbon 'flux'—the scientific term for the net difference between carbon dioxide released into the atmosphere from all sources, and carbon dioxide removed from the air and sequestered in stable carbon stocks (typically in plants or organic matter). The goal and, with some important qualifiers, the result is a rough carbon balance sheet revealing the interplay of emissions and ecosystems at scales from the provincial to the local.

Getting to that result however, was a journey in itself. During the course of the project we discovered that there is a very great deal of raw data out there, and yet very little certainty about what it all adds up to for the current state of our provincial atmospheric carbon flux. In the words of our stoic GIS mapper, Hugh Stimson, the project became, "an illustration of data, and an illustration of a lack of data."

One of the biggest holes we found was in what provincial authorities tally as they count up our greenhouse gas emissions. According to the latest 2009 provincial data, B.C. emitted 67 million tonnes of 'C02 equivalent' (a metric measure used to aggregate emissions from various greenhouse gases with different global warming potentials). But if we include emissions generated by the coal and natural gas we export, that number more than triples, to as much as 240 million tonnes.

Environmental accountants in Canada and elsewhere argue for just such more inclusive accounting of emissions caused by exported commodities. Their impact on our carbon footprint can be dramatic. Take coal: B.C. mines produced over 26 million tonnes of it in 2010, most exported to Asia for use in making steel. If we accepted responsibility for the emissions from just that coal (roughly 64 million

metric tonnes of C02), our official estimate of 2010 climate emissions would nearly double.

BC is similarly selective in accounting for emissions from generating electricity. The province currently does not account for emissions represented by the megawatts of fossil fuel-generated electricity that B.C. Hydro buys from Alberta. The Crown utility typically makes the purchases during non-peak hours, when the Alberta juice is priced at rock-bottom, while selling clean, BC-generated hydro-electricity to California (where utilities must meet strong renewable supply standards) at a profit.

Researchers at the University of British Columbia calculated that distributing such dirty imported coal-fired electricity to consumers almost quadruples the actual carbon footprint of every kilowatt-hour they use. The official provincial estimates we rely on here don't capture those 'upstream' emissions.

We ran into new questions when we attempted to visualize where B.C.'s carbon 'sinks' sequester emissions.

The Carbon Tracker Project, a US government-led effort to measure the interplay of carbon sinks and emissions on a global scale, has concluded that between 2001 and 2010, ecosystems in North America offset about one-third of the emissions from fossil fuels burned in the U.S.A., Canada and Mexico combined.

But the amount of CO2 taken up by the biosphere can vary significantly from place to place and year to year. In 2002, when drought and forest fires ravaged much of the south-western United States, researchers recorded a big decline in annual uptake by terrestrial ecosystems (on a map like ours, the green 'sink' areas might have shrunk, or turned into yellow 'sources').

This raises a troubling prospect: the worse climate change impacts become for natural ecosystems, the less we can rely on our biosphere to sequester carbon.

That may already be happening. When we began, we assumed that BC's vast forests would be an important carbon sink, busily turning atmospheric CO2 into stems, branches and roots. We were startled to be proven wrong.

Our assumption was probably true before the mountain pine beetle outbreak and a surge in forest fires, both driven by climate change. And both BC's coastal rainforests and its share of the northern boreal forest, each considered in isolation, continue to soak up enormous quantities of CO2. But as of 2010, so many dead trees stand or lie rotting on BC's 55 million hectares of forested land, that taken as a whole that vast area is now a net emitter of greenhouse gases—a testament to the destructive power of an insect plague unleashed by warmer winters.

That switch from net carbon sink to net carbon source underscored for us the frustration we encountered in finding reliable, current and detailed information about carbon emissions and sequestration in our forests. While we had some success digging up hard data on traffic, municipalities, and even exotic 'blue carbon' near-shore habitat types, where carbon was moving in the woods proved far more difficult to track.

Provincial agencies, while generally helpful in responding to our requests, tightened up considerably when we asked for data on forest carbon flux. When we requested BC-specific data broken out of larger continental ecozones, the request was denied on the grounds that disclosing B.C.'s forest carbon balance might, by substraction, also reveal, "confidential emissions levels for other provinces and/or territories".

We opted to use the best data we could find from other sources that at least divided BC forests into a few giant ecozones. These must certainly obscure significant differences in carbon uptake from valley to valley or region to region, depending on tree species, age, forestry activity, local micro-climate, forest fires or insect outbreaks, but it was the best information we had available.

Our picture of forest carbon flux is admittedly both crude and tentative as a result. The most prominent feature we visualize here is a swath of green carbon sink extending down through the B.C. interior from north to south. It gives the impression that BC forests are a vast and uniform zone of carbon sequestration. This is misleading. In reality our provincial forests are neither so homogenous nor even necessarily carbon sinks. On the critical latter point, data from provincial and federal agencies point in conflicting directions: Canadian Forest Service data show BC's forests still sucking carbon out of the atmosphere overall; provincial data show the opposite.

Not that Victoria's grasp on goings-on in Crown forests appeared especially robust in other respects. Consider: about 42 percent of the province's forest land has not been inventoried since 1990. An astonishing 30% hasn't been inventoried in more than three decades since 1980. Given

such fundamental uncertainty about how much forest, of what type, we have in B.C., estimating how much carbon it holds is, frankly, a crapshoot—regardless of who crunches the numbers.

A more pleasant surprise was the seemingly supernatural carbon storage associated with so-called 'blue' carbon environments – like eelgrass beds and salt marshes in coastal BC marine waters. Anywhere from 50 to 70 percent of all carbon stored by oceans is believed to be held in such "blue carbon" ecosystems. But despite their recognized importance, huge gaps exist in what we know about their abundance in BC, or the amount of carbon they hold.

Here, we have relied on the pioneering efforts of the Sierra Club of BC's Colin Campbell. Something of a voice in the marine wilderness, Campbell estimates that our coastal blue carbon stocks annually sequester carbon equivalent to the year's emissions from 200,000 cars. (Campbell and a coalition of grassroots volunteers champion improved mapping and protection for these critical blue carbon sinks.)

A final note, on the biggest necessary omission of all from our map: the rest of the world. British Columbia has a vast and relatively pristine land base that is mostly uninhabited. Taking a close look at where we're sequestering or releasing carbon isn't to duck the reality that climate is a global event. Carbon sinks, including those located here, benefit all. Likewise our emissions, and those of others abroad, work to our common detriment.

Perhaps the most important thing we learned along the way is how much further we still have to go, if we're ever going to be able to see clear, and in time, how our social, business, public and collective choices reflect our personal responsibility for global climate change.

Sources and limitations

Where we got the numbers, and what we had to assume
By Hugh Stimson and Christopher Pollon

BC CARBON EMISSIONS

The primary source for our emissions data was the British Columbia government, as follows:

Big industrial facilities

Industrial facilities with emissions greater than 10,000 tonnes of CO2 equivalent (tCO2e) – responsible for about 30 percent of total BC emissions – were identified for the first time by the BC provincial government in 2010.

In that report, individual facilities reporting less than 10,000 tCO2e are aggregated, by company, as "Linear Facilities." Locations are not provided. As such, we did not include them in our map or map-based calculations. Those facilities collectively emit approximately 2.9 million tCO2e per year, meaning that total facility emissions are in fact about 20 percent higher than they appear here.

Municipal Emissions

An estimated 45 percent of British Columbia's greenhouse gas emissions are under the jurisdiction of municipal governments or arise from their operation of everything from community centres to road maintenance equipment.

These governments provide Community Energy and Emissions Inventory Reports (CEEI) that estimate energy use and GHG emission for three primary sectors—buildings, on-road transportation and solid waste—and further provide 'supporting indicators' for housing type, residential density, commuting distances and green space.

We have used the most recent publicly available reports covering all BC municipalities. These date to 2007. The BC Ministry of Environment promised to release updated date for 2010 by April of 2012, but as of June 1 that deadline remains unmet.

CEEI reports include emissions from on-road transportation through communities. But we also referred to other sources for emissions from traffic (see below: Transportation Emissions). To avoid double counting, we reduced community emission totals by the emissions amount reported for all roads passing through those communities

(up to the total amount of transportation-related emissions the community had reported).

CEEI reports also include data on large industrial facilities, but that data is described as a "memo item" and not included in the reported community emissions totals. As such we did not need to adjust the CEEI values to avoid double-counting of facilities emissions.

Transportation Emissions by Highway/Road

Roads and highways on the map have been colour coded based on traffic emissions—the darker the red, the higher the emission—based on data from the BC Ministry of Transport and Infrastructure's Annual Traffic Volumes 2004-2010.

The MoT divides the provincial highway network into segments. Traffic data is collected for each of these segments continuously at roadside count sites. We used "annual average daily traffic" (AADT) data, representing an average of the number of vehicles travelling past a given count site each day over a year, collected over the years 2006-2011.

For each road segment we used data from the most recent year available. In a few cases (about 4 per cent of the total) no data had been recorded after 2005. We excluded those segments from our calculations (explaining some of the blanks on our visualization).

To calculate highway emissions from these traffic data, we also needed to find out the following:

- The average fuel consumption of cars, light trucks, medium trucks, freight light and freight heavy trucks. We got this from federal Natural Resources Canada data provided by BC Ministry of Environment)

- Some measure of the ratio of diesel to gasoline burning vehicles on the road (each release different amounts of emissions). We referenced the data tables on pages 2 and 3 of the the CEEI report for British Columbia.

- A formula for translating fuel consumption into C02 emissions. Here again we turned to NRCan data provided by the BC Ministry of Environment.

Using the foregoing, we calculated a provincial average vehicle emission value of 298 grams of CO2e per km driven. That was arrived at by weighting the fuel efficiency values of various vehicle types (cars, light trucks, heavy trucks, etc) according to the proportion of each vehicle type on the road, the types of fuel they use (gasoline versus diesel) and the average distance that those vehicle types are driven each year in BC. Most of these data came from province-wide summaries provided by the Ministry of Environment. The exception was the proportion of diesel to gasoline fuel use per vehicle type; this, as indicated above, came from the Community Energy and Emissions Inventory, and necessarily included only communities participating in that survey. In some cases we had to assume the equivalency of differently named vehicle categories between data sources; e.g. "commercial vehicle" were assumed to be essentially the same as "light and medium trucks".

From our calculated provincial average vehicle emission of 298 grams of CO2e per kilometre driven, we estimated emissions for each reported highway segment (traffic, times average emissions/km, times length of the segment in kilometres).

The carbon densities calculated for each road segment were thus based on our single province-wide weighted average fuel efficiency. That means that in stretches of road where cars tend to get lower or higher than average mileage, because of local driving conditions, our estimates will be correspondingly inaccurate. As an example, the stretch of Hwy 91 that displays our highest estimated carbon footprint density is notoriously slow-going during rush hour; vehicle fuel efficiencies are likely much lower than average there, and actual carbon emissions accordingly higher than our visualization shows.

BC CARBON SINKS

Eelgrass

We are grateful to the British Columbia Marine Conservation Analysis, a collaborative project to identify areas of high conservation or human-use values on Canada's Pacific coast, for permission to use its eelgrass mapping data. These data compile the best available information from a variety of sources including the Community Mapping Network, Fisheries and Oceans Canada, the Living Oceans Society, Parks Canada and the Province of British Columbia.

Sierra Club marine specialist Colin Campbell provided coefficients to translate organic carbon sequestration by eelgrass and salt marshe to grams of atmospheric C02 (1gm Carbon = 3.67gm CO2). Campbell is the author of a report on BC eel grass which concluded that BC eelgrass

and salt marshes sequester over 180,000 tonnes of C02e/ year. (p2 of that report)

Salt Marshes

Salt marsh distribution was based on data from the BC Shorezone Mapping system, provided to us by the Ministry of Forest Lands and Natural Resource Operations. The Shorezone inventory was developed primarily by reviewing video recordings taken during helicopter and fixed-wing overflights of the entirety of the BC coastline. The flights were principally conducted in 1995. The locations of species associated with salt marsh were drawn from the dataset. The choice of species followed the Washington State Shorezone approach to salt marsh identification. However, the only species associated with salt marsh and present in significant amounts in Canada is Salicornia. The Shorezone database includes areas and also linear bands denoting species presence; in the case of bands, the recorded widths were used to reconstruct their areas.

Forests

The provincial government provided estimates of forest carbon intensity by "ecozones" (based on work done described in 'An inventory-based analysis of Canada's managed forest carbon dynamics, 1990 to 2008,' by Stinson et al, 2011.)

The Canadian Forest Service provided us with several alternative measures of carbon intensity for each ecozone. We chose "net ecosystem exchange"—an inclusive measure of the sequestration and emission of carbon from all forest-related processes.

However the spatial scale of an ecozone constituted a significant limitation. These are extremely large areas, often reaching beyond B.C.'s borders. We learned that new data was currently being prepared at the much more granular level of management units (timber supply area and tree farm licenses) and Biogeoclimatic Ecosystem Classification (BEC) zones; these results were unfortunately not ready to be released. In consequence, and in order to avoid counting carbon being sequestered (or released) in adjacent jurisdictions, we were forced to assume a uniform carbon flux across each ecozone.

To determine B.C.'s share of the carbon flux within transborder ecozones, we first calculated a carbon exchange value per square kilometer of forest for that ecozone (based on its area of forest and the total net ecosystem exchange value provided to us for that zone). We then isolated the managed forests area within B.C., multiplying that by the average per-kilometer carbon exchange value to produce now, provincial-only totals.

The real carbon that forests sequester or release obviously varies greatly by location and topography within ecozones. Necessarily having to treat these vast landscapes as uniform in the absence of more refined spatial data will have introduced inevitable errors to our visualization, especially in zoomed-in views, which we find particularly troubling.

Thanks to the following..

What made this visualization possible

Late last year, the journalists of our Carbon Hub conducted an assessment of British Columbia's provincial Climate Action Plan, with its pioneering goal of slashing B.C.'s carbon emissions, after five years in force. Their reports ran in episodes on TheTyee.ca, the Solutions Society's primary media partner, and across North America.

As our reporting progressed we came to realize however that, rather like the proverbial blind men and the elephant, it was very difficult to portray anything more than one small part of the whole account of British Columbia's province-wide carbon performance in a single individual text story. It was hard to see the whole picture. And numbers alone, like the 67 million tonnes of carbon we're told B.C. lets escape annually into the atmosphere, don't shed much additional light.

Inspired by other pioneering experiments in what's loosely called 'digital journalism,' or 'data visualization,' or 'cartographic story-telling,' we thought we might be able to do a bit better.

Tyee Solutions engaged journalist Christopher Pollon to develop the highly specialized and, as it turned out, widely dispersed information the project would need from the contacts he's developed over many years writing about resource issues and other stories for the Tyee, The Globe and Mail and others.

He teamed with GIS (it stands for geographic information systems) consultant Hugh Stimson, a specialist in the mapping of places and events who likes to work with community and environmental groups. Using free and open-source software, he managed to wrestle multiple sets of only semi-compatible data, often tabled in differing

formats, into one visual whole with scrolling, zooming and querying capabilities.

Footprints in the Air was edited by Tyee Solutions Society Contributing Editor Chris Wood, and assisted by TheTyee.ca web manager, Geoff D'Auria. ■

Tyee Solutions Society is a non-profit producing catalytic, solutions-oriented journalism on social, economic and environmental issues of broad concern to Canadians.

For more information visit www.tyeesolutions.org.