

**SUBMISSION OF
POTENTIAL GREENHOUSE GAS REDUCTION MEASURES
AND ENABLING MEASURES
TO THE
B.C. CLIMATE ACTION TEAM**

VERSION 2

FEBRUARY 20, 2008

DEVELOPED BY 22 ENVIRONMENTAL NON-GOVERNMENTAL ORGANIZATIONS OF BRITISH COLUMBIA
AND COMPILED BY THE DAVID SUZUKI FOUNDATION

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Overview

Aim of the document

To assist the B.C. Climate Action Team (CAT) and member Peter Robinson in their mandate to develop an action plan to achieve B.C.'s greenhouse gas emissions (GHG) reduction target, British Columbia's environmental NGO sector has assembled a series of climate protection policies in this document for consideration.

These action measures were developed during a collaborative process amongst environmental non-governmental organizations, led by David Suzuki Foundation (DSF) CEO Peter Robinson and DSF staff. Two meetings and several conference calls were convened during December 2007 and January 2008, to solicit input. The purpose of the process was to broadly consult B.C.'s environmental experts and gather the most effective, innovative and broad-ranging policy ideas to bring forward. The process used in the development of the options presented was seen as fundamental step, encompassing many key principles of the B.C. environmental community including broad and open participation. The consultation process has helped to build a common understanding of policy priorities for a range of emissions sectors.

This document and the description of the measures contained within it are capable of being revisited, refined and strengthened to meet changing needs as the work plan of the Climate Action Team moves forward over the coming months. As such, this document may constitute only the first iteration of an important input to the Climate Action Team.

Contributors and supporters

The materials contained within this document are the combined contribution of many staff from a large number of organizations. Although most measures in the document are credited to a single contributor, many of these measures were actually developed through the active collaboration of several individuals from different organizations.

The following have explicitly requested being listed as supporters of, or contributors to, this submission:

- Margaret Mahan - Better Environmentally Sound Transportation (BEST)
- Tom Hackney – British Columbia Sustainable Energy Association (BCSEA)
- Chloe O'Loughlin and Sarah Patton - Canadian Parks and Wilderness Society - BC Chapter (CPAWS BC)
- Marc Lee - Canadian Centre for Policy Alternatives (CCPA)
- Ian Bruce, Nicholas Heap and Dr. Faisal Moola – David Suzuki Foundation (DSF)
- Eric Swanson - Dogwood Initiative
- Les Bogdan - Ducks Unlimited Canada
- Sean Nixon – Ecojustice (formerly, Sierra Legal)
- Candace Batycki and Merran Smith - ForestEthics

- Deborah Conner and Christianne Wilhelmson - Georgia Strait Alliance
- Bill Turner - The Land Conservancy (TLC)
- Sheila Harrington - Land Trust Alliance of British Columbia
- Oonagh O'Connor – Living Oceans Society
- Nikki Skuce – One Sky
- Matt Horne and Alison Bailie - Pembina Institute
- Jason Emmert and Michael Alexander – Smart Growth BC
- Lisa Matthaus and Colin Campbell – Sierra Club BC
- David Fields - Society Promoting Environmental Conservation (SPEC)
- Chuck Childress, Richard Fletcher, and Rob McWilliam - Texada Action Now
- Patricia Chew -West Coast Environmental Law
- Andrea Reimer - Wilderness Committee
- Casey Brennan - Wildsight

While all of the groups listed above support the general approach of the recommendations listed, some groups may not support all of the detailed measures as stated.

How the measures are organized

The measures in this document have been organized by emissions sector, largely corresponding to those presented in the emissions inventory used by the B.C. Climate Action Secretariat. These sectors have been arranged in descending order, with the biggest emission sector (Transportation) placed first. In addition to the sectors in the provincial emission inventory, there are also measures listed under several land use sectors (urban, natural and farmland), recognizing the importance of emissions from direct human activity or the loss of stored carbon from sinks in these areas.

The power of preventive measures

One important theme that became apparent during discussions at these meetings was the importance of preventative measures in achieving large emission reductions. At present, the government is committed to:

- A number of highway expansion projects in the Lower Mainland (i.e. twinning the Port Mann Bridge) and elsewhere in the province;
- Maintaining subsidies for conventional oil and gas development.
- Lifting the present moratorium on offshore oil and gas development
- Providing additional financial and regulatory incentives for coal-bed methane and for natural gas development in new areas of the province

In every case, a decision not to proceed with or maintain these programs would produce huge reductions in future greenhouse gas emissions relative to current plans. Moreover, these emission reduction measures would be technically simple to implement and would produce large savings in government expenditures.

Version 1: Summary of changes from the preliminary draft

Version 1 of this document incorporates the following changes to the preliminary draft of this document, dated January 23, 2008:

- The Living Oceans Society, One Sky, Sierra Club BC and Smart Growth BC were added to the list of organizations formally requesting to be listed as participants in the development of this document.
- There are text changes to the following measures within the main report:
 - Domestic and inter-jurisdictional aviation;
 - Increase foot passenger / HOV mode share on ferries in B.C.
 - Maintain B.C. moratorium on offshore oil and gas and tankers;
 - Adopting a carbon stewardship approach to land-use management; and
 - Preserving the ocean and its vital role as a carbon sink.
 - Science-based GHG emissions cap
- There are text changes to the following appendices:
 - Maintain B.C. moratorium on offshore oil and gas and tankers;
 - Adopting a carbon stewardship approach to land-use management; and
 - Preserving the ocean and its vital role as a carbon sink
- In addition to the text changes noted above, text in the "Status of group approval," "Level of group support," and "Barriers to consensus" sections of Appendices 2, 3a, 3b, 3c and 24 has been removed, since the "group" referred in these headings is the Climate Action Team itself.
- There are changes to the individuals and organizations listed as submitters and supporters for a number of measures within the main report and appendices.

Version 2: Summary of changes

Version 2 of this document incorporates the following changes to Version 1 of this document, dated January 31, 2008:

- The following measure has been added:
 - Transit
- There are text changes to the following measures within the main report:
 - No new electricity generation facilities that generate GHGs
- There are text changes to the following appendix:
 - 2a - Moratorium on Highway Expansions
- An appendix has been added:
 - 2b – Livable Region Coalition Backgrounder

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Measures

Carbon tax

Submitted by Ian Bruce, David Suzuki Foundation

Description: A price on carbon emissions addresses a fundamental problem fuelling B.C.'s contribution to global warming – that the atmosphere is treated as a free waste dump for harmful, heat-trapping greenhouse gas emissions. Emissions pricing policies such as a carbon tax will encourage all B.C. consumers and firms to seek cleaner, lower-emission alternatives to polluting activities. A strong carbon emission price will also spur innovation, investment, and jobs in B.C.'s growing clean-energy sector but most importantly, it will help get clean, renewable energy technologies into use and effectively reduce B.C.'s emissions.

Type: Regulatory

Implementer: Climate Action Secretariat

Reductions estimate: Very large

> 1 Mt CO₂e: Very Large



See **APPENDIX 1 (Carbon Emission Price [e.g. Carbon Tax])** for additional information on this measure.

Transportation (on-road)

Sustainability standard for biofuels

Submitted by Tom Hackney, BCSEA

Description: Large amounts of greenhouse gas emissions are perversely produced worldwide due to poorly executed biofuel standards and requirements. Large areas of tropical forests in Asia and South America are being deforested for the production of oil crops to meet biofuel content requirements in the European Union, resulting in net increases in greenhouse gas emissions above simple fossil fuel use; general environmental destruction; and competition for land with local populations needing food crops. The Renewable Fuel Standard and Low Carbon Fuel Standard currently under development in B.C. should be drafted to avoid contributing to these problems. The definition of “life cycle” attributes and standards should address: net GHG effects (including production, transport, and use of the fuel); environmental harm through land-use changes or other causes; and social harm from the alienation of agricultural land from food production. The more technical issues could be addressed by a certification process. There should be an efficiency standard of at least 3:1 (energy gain per energy input), and there should be a priority on wood waste (slash, not fresh-cut beetle-kill wood). Broader social and environmental issues may not be able to be addressed by a suitably streamlined process, and it may be necessary to introduce geographic limits (e.g. B.C. production only). Government should engage the public on how these issues will be addressed before the standard is finalized.

Type: Regulatory

Implementers: Ministry of Energy, Mines and Petroleum Resources

Reductions estimate: Large (0.5 Mt per year, assuming a general 5% biofuel standard, with a fuel that results in 25% lower GHG emissions than fossil fuels)

< 1.0 Mt CO₂e: Large



Moratorium on highway expansion

Submitted by Dave Fields, SPEC

Description: Expanding highways has resulted in increases of personal VKT and has encouraged unsustainable land-use forms that further increase dependence on the automobile in every case studied. Metro Vancouver and the City of Burnaby have studied the potential on-road emissions from the planned Gateway Program and have determined a GHG increase of 4% above business as usual. Land-use impacts, as yet unexamined, would very likely result in higher emissions. A moratorium on highway expansions should be adopted to immediately stop doing harm to the global and built environments and a close examination with external inputs (i.e., transportation experts, citizens et al.) of other transportation policies should be undertaken to arrive at options that would not only reduce GHGs outright but enable further reductions and social benefits. These options would include priority for large-scale transit expansion, road pricing, reduced transit fares, pay-as-you-go insurance, and so on. Other cities, including Curitiba and Zurich, already offer examples of what can be achieved by putting the goals of livability and health first.

Type: Policy / Regulatory

Implementers: Ministry of Transportation and Highways

Reductions estimate: Very large (estimates as high as 3.87 Mt reductions from projected 2020 emissions)

> 1 Mt CO₂e: Very Large



See the following for additional information on these measures:

APPENDIX 2a (Moratorium on Highway Expansions); and

APPENDIX 2b (Select responses by federal agencies to Gateway Program documents submitted to EAO).

Climate-friendly schools transportation package

Submitted by Andrea Reimer, Wilderness Committee

Description: Most weekdays, 10 months of the year, 650,000 students and 65,000 staff migrate to and from K-12 schools in the province, generating approximately 1.25 Mt of CO₂ emissions and accounting for up to 30% of on-road travel on school-day mornings. The number of students being driven to school in urban areas particularly has skyrocketed in the last 40 years, creating a significant burden for our climate, roads, and air quality and developing lifelong habits that lead to poorer health and “auto captive” lifestyles. This impact will continue to increase as the number of school-age children and youth living in British Columbia’s urban areas is projected to rise along with general population growth over the next 15 to 35 years.

This suite of proposals aims to address these issues through three broad policy initiatives:

- ***Support for Neighbourhood Schools:*** Reduce the current Capacity Utilization Thresholds for schools in urban districts, and reinstate maximum distances between homes and schools in urban areas.
- ***Transit for School-Aged Children and Youth:*** Prohibit the charging of fees to ride transit to and from school and activities during the school day for school-age students aged 6 to 18.
- ***Expand TransLink Employer Pass Program to Include Board of Education Employees:*** Amend the terms of TransLink’s Employer Pass Program to include 10-month employees, provide funding support to boards of education, and include parking fees on board of education property.

Type: Regulation / Fiscal incentives

Implementers: B.C. Ministry of Education, Boards of Education, TransLink, B.C.T.F.

Reductions estimate: Large (0.72 Mt)

< 1.0 Mt CO₂e: Large



See the following for additional information on these measures:

APPENDIX 3a (Neighbourhood Schools – a Cornerstone of Urban On-Road GHG Reductions);

APPENDIX 3b (Transit for School-Aged Children and Youth); and

APPENDIX 3c (Expanding TransLink’s Employer Program Pass for Board of Education Employees in Metro Vancouver).

Interior container ports

Submitted by Nicholas Heap, David Suzuki Foundation

Description: Shifting cargo transport from truck to rail – especially over long distances where rail is more cost-effective than trucking – could reduce greenhouse gas emissions from the transportation sector. A recent study found that both Prince George and Kamloops could support “export transload” facilities, where mainly forest-sector exports could be containerized and moved by rail to port. These facilities could be built as the first phase of a plan to develop “integrated freight logistics parks” for all B.C. Interior imports and exports in these locations. When fully built out, these facilities could greatly reduce GHG emissions from long-distance trucking to and from the coast, as well as from short-haul trucking between the port facilities and warehouses in the Lower Mainland. Traffic congestion in the Lower Mainland would also be reduced.

Type: New infrastructure

Implementers: BC Ministry of Transportation and Highways, rail companies, local governments (zoning)

Reductions estimate: Medium

< 0.5 Mt CO₂e: Medium



See APPENDIX 4 (Establish “Integrated Freight Logistics Parks” in BC Interior) for additional information on this measure.

Fiscal measures to reduce average vehicle kilometres travelled per family

Submitted by Margaret Mahan, Better Environmentally Sound Transportation.

Description: Use a variety of tax credits, tax reductions, and other fiscal measures to encourage average per-car trip reduction in B.C., particularly in urban areas. Measures would include:

- Provincial tax exemption on bicycles and electric vehicles;
- Incentives to municipalities for implementation of flexible car pooling (operated by private and NGO entities);
- Provincial financing of low-speed vehicle infrastructure and dedicated bus lanes (TransLink, BC Transit, and municipalities).

Type: Regulations, fiscal incentives

Implementers: BC Ministry of Transportation and Highways, local governments

Reductions estimate: Medium (10 fewer vehicle trips per week = average annual reduction of 3.3 tonnes CO₂; 1% of B.C. population, or 3% of families would yield reductions of approximately 0.12 Mt CO₂e)

< 0.5 Mt CO₂e: Medium



On-road freight technologies and practices

Submitted by Alison Bailie and Matt Horne, Pembina Institute

Description: GHG emissions can be reduced from road freight through installation of more energy-efficient technologies (either as add-on technology to existing trucks or as part of new trucks brought on through routine or accelerated scrappage). Changes to operating practices (such as reductions in idling of engines or reductions in excess travel speeds) can be controlled by installation of equipment in trucks. Options for large trucks include installing speed-limiters, anti-idling devices, wide-based tires, and aerodynamic improvements. Hybrid fuel-electricity technologies are a key opportunity for medium trucks, especially those operating primarily in city conditions. Purolator Courier is reporting energy savings in the order of 30% from its fleet of hybrids in Vancouver. Policies could focus on carbon tax on fuels, regulation of technologies, policy change to ensure that technologies can be installed (weight restrictions adjusted).

Type: Regulation, pricing

Implementers: Ministry of Transportation and Highways, Ministry of Finance, trucking industry

Reductions estimate: Very large (1.5 Mt CO₂e, from *Mind the Gap* report)

> 1 Mt CO₂e: Very Large



See APPENDIX 5 (On-road Freight technologies and practices) for additional information on this measure.

Light-duty vehicle fuel efficiency, beyond California tailpipe standards

Submitted by Alison Bailie and Matt Horne, Pembina Institute

Description: There is nothing stopping B.C. from moving beyond the California standards using a combination of more stringent regulation and emissions pricing policies.

Japan and the European Union have adopted or are in the process of adopting efficiency standards that are more stringent than the California standards. By 2016, both the EU and Japanese fleets will be approximately 20% more efficient than new vehicles being sold in California. This objective could be achieved by an increase in the market share of high-efficiency technologies (e.g. hybrid vehicles); a shift to smaller, lighter, and less powerful vehicles; or a combined approach.

Type: Regulation

Implementers: BC MEMPR / Ministry of Environment, automobile manufacturers and dealers

Reductions estimate: Very large (2.6 Mt CO₂e, after accounting for CA tailpipe standards and Low-GHG fuel standards)

> 1 Mt CO₂e: Very Large



See APPENDIX 6 (Light Duty Fuel Efficiency, beyond CA Tailpipe Standards) for additional information on this measure.

Electric and low-speed vehicle infrastructure and planning

Submitted by Tom Hackney, BCSEA

Description: Electric vehicles are several times more energy efficient than fossil-fuel powered vehicles. In the long term, energy sustainability can only realistically be contemplated if society shifts away from fossil-fuel based transportation. Current expectations for motor vehicle performance are largely psychologically based – in other words, we don't really need to move so quickly in such big vehicles. Achieving the shift in B.C. would require: some technical development of suitable electric and/or hybrid/electric vehicles (could be imports); provision of re-charging infrastructure and appropriate code standards for home recharging; planning and development of sufficient electricity resources in the province to power the vehicles; revision of highway and city traffic standards and codes to accommodate different performance standards of vehicles, including particularly low-speed standards; regulating vehicle freight standards to discourage wasteful freight planning (e.g., just-in-time delivery systems).

The government should:

- Implement broad-based planning on how it can shift from a high-speed fossil-fuel based model to a system planned for energy efficiency and deploying more efficient vehicles;
- Immediately create infrastructure and code standards to address home and commercial vehicle recharging;
- Immediately revise highway standards and planning to accommodate slower-speed traffic; and
- Immediately start co-operative planning with local traffic authorities to encourage the implementation of street standards that will encourage and accommodate a wide variety of low-speed vehicles on city streets.

Type: Planning and regulatory

Implementers: Ministry of Transportation

Reductions estimate: Eventually in the order of 8 to 10 Mt per year, assuming 50 to 60% reduction in GHG emissions from road travel

> 1 Mt CO₂e: Very Large



Rebate/ buy back old inefficient vehicles

Submitted by Alison Bailie and Matt Horne, Pembina Institute

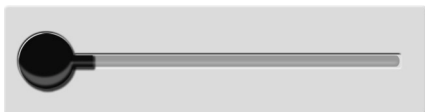
Description: This option is an expansion of the existing B.C. policy that offers rebates on old vehicles. In this case, the focus would be on inefficient vehicles and the rebate would be in the form of rebate cheques that could be applied to low-emissions transportation (bus pass, bicycles, scooter, etc.). Significant rebates would be needed to inspire this change.

Type: Rebates

Implementers: Ministries of Transportation and Highways and Finance

Reductions estimate: Likely small

< 0.1 Mt CO₂e: Small



Asphalt Recycling for all cost-effective road resurfacing projects

Submitted by Nicholas Heap, David Suzuki Foundation

Description: An estimated 1200 to 1700 lane-kilometres of asphalt-paved provincial highway are resurfaced annually, and a much greater total of asphalt roads within local governments are also resurfaced. Asphalt contains 5-7% oil. The “warm in-place” technique of asphalt recycling of asphalt has been estimated to reduce GHG emissions by 27 tonnes per lane-kilometre relative to the standard “mill and fill” technique, which is used for an estimated 70% of total highway resurfacing. The “warm in-place” technique greatly reduces transportation emissions from the transport and disposal of asphalt, as well as from the production of the oil and aggregate used. Mandating that all cost-effective resurfacing be done by this measure (i.e. jobs of more than 20 lane-km), and that resurfacing jobs within municipal road systems be aggregated into jobs that are cost-competitive for this technology could reduce oil consumption and resulting GHG emissions from asphalt.

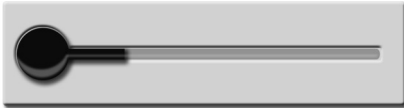
Note: DSF has not yet decided whether or not to endorse this measure, since much of the information presented in this measure requires confirmation. It is submitted with the aim of presenting a broad range of possible options for consideration.

Type: Policy, regulation and/or operating procedures

Implementers: Ministry of Transportation and Highways, local governments

Reductions estimate: Medium. (0.46 Mt) See appendix for assumptions.

< 0.5 Mt CO₂e: Medium



See **APPENDIX 7 (Mandate Asphalt Recycling for all cost-effective road resurfacing projects)** for additional information on this measure.

Pay as you drive (PAYD) vehicle insurance

Submitted by Tom Hackney, BCSEA

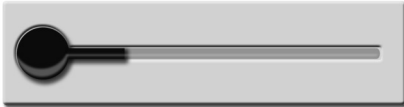
Description: At present, once people have paid the up-front costs of a car or other personal transportation vehicle, they are exposed to relatively low running costs. Distance-based insurance is not only logical, because the actual insurance risk is based largely on distance travelled, but also useful as a visible incentive to move driving behaviour in a more climate-friendly direction. Government should mandate distance-based insurance for personal vehicles.

Type: Regulatory and fiscal

Implementers: Ministry of Transportation; Insurance Corporation of BC

Reductions estimate: Possibly in the order of 0.2 to 0.5 Mt per year – very approximate estimate.

< 0.5 Mt CO₂e: Medium



See APPENDIX 8 (Pay-As-You-Drive Vehicle Insurance) for additional information on this measure.

Road Congestion Pricing (Road Tolling)

Submitted by Tom Hackney, BCSEA

Description: BC's Lower Mainland and the Capital Region District both suffer from increasing vehicular congestion, causing increased greenhouse gas emissions and much air pollution, with its attendant negative health effects. Along with policy measures to increase the use of public transit and to reduce expenditures on highway expansions (world-wide experience has shown that building more highways tends to increase congestion, not reduce it), it would be beneficial to send a direct cost signal to users of private vehicles. Tolling should be introduced on the major entry points to Vancouver, and in Victoria, on the Malahat highway. This can be implemented via an Automated Number Plate Recognition (ANPR) system. The pricing should start in the range of \$10 per entry, but could be adjusted to optimize congestion reduction. The revenues should be recycled into transportation efficiency programs, especially public transit.

Type: Regulatory and fiscal

Reductions estimate: possibly in the order of 0.5 - 1 Mt per year

< 1.0 Mt CO₂e: Large



See **APPENDIX 9 (Congestion Pricing)** for additional information on this measure.

Transit

Submitted by Tom Hackney, BC Sustainable Energy Association

Description: Motor vehicle emissions cause some 40% of BC's total greenhouse gas emissions. BC must greatly increase its transportation efficiency in order to make a fair contribution to reducing its greenhouse gas emissions. Public transit is much more energy efficient than private vehicle transportation (except foot and bicycle), and should be a large part of BC's long-term transportation strategy. The government should immediately begin a program of spending (in the order of \$500 million per year, above the recently announced transit plan: \$5 billion for BC by 2020, \$3 billion from the federal government, \$3 billion from local partners) that would be aimed at creating – in addition to newly proposed transit programs – Bus Rapid Transit systems (dedicated bus lanes, traffic signal priority, pre-paid boarding at stations) and Frequent Service Networks (high frequency of service rather than scheduled service). These would be implemented in the Lower Mainland and the CRD and elsewhere, where volumes allowed. Monies to invest in transit should be re-allocated from current highway expansion expenditures. These re-allocated monies should also be used to help reduce transit fares, so as to encourage ridership.

Type: Fiscal and planning

Implementers: Ministry of Transportation

Reductions estimate: eventually in the order of 8 MT per year – very rough estimate

> 1 Mt CO₂e: Very Large



Other measures

- Rebate/ buy back old inefficient vehicles
- Eliminate water movement by truck

Transportation (non-road)

Reducing emissions from shipping throughout the WCI region

Submitted by Lisa Matthaus, Sierra Club of B.C.

Description: Very recent shipping-industry disclosures indicate that the sector can no longer be viewed as a minor player in terms of GHG emissions. Globally, ocean-going ships consume at least 2 billion barrels of oil a year and emit 1.2 billion tons of carbon dioxide. Only six countries in the world have greater carbon-dioxide emissions than the shipping industry: the United States, Japan, Germany, Russia, India, and China. In the WCI region, it is anticipated that as world trade and oil prices rise, WCI ports expand, and “short-sea” routes replace local road hauling, ships will emit twice as much greenhouse gases as aviation in the WCI region. Federal environmental regulators have legal authority once ships come within 200 miles of the country's coastline, so they can enforce their own strict emission standards on ships regardless of whether they are locally or foreign-owned. New provincial statutes can also address the sector. The WCI, supported by NGOs involved, can mandate stricter rules on fuel efficiency, bunker C fuel availability, and subsidy removal; promote the use of cleaner distillate fuels, port shore-side power infrastructure, and green technology transfer; and encourage harmonization of any new regulatory regimes with U.S. coastal states.

Note: In addition to these authors, this policy proposal is also strongly supported by the Georgia Strait Alliance.

Type: Regulatory disincentive; distillate fuel and port-fee reduction incentive

Implementers: BC Ministry of Transportation / Ministry of Environment for Water Stewardship and Sustainable Communities / Ministry of Economic Development and Minister Responsible for Asia-Pacific Initiative and the Olympics / Ministry of State for Intergovernmental Relations / Ministry of Finance/ BC Port Authorities / (Transport Canada),

Reductions estimate: Effects beyond B.C.: Very large. Prevent the BAU doubling from 2002 emission levels and tripling by 2030

> 1 Mt CO₂e: Very Large



Domestic and inter-jurisdictional aviation

Submitted by Tom Hackney, BCSEA

Description: Domestic aviation causes about 2.5% of B.C.'s GHG emissions. GHG emissions from flights over B.C. airspace and using B.C. airports and fuelling facilities are greater, though not captured in GHG accounting due to flaws in the international GHG accounting system. Globally, GHG emissions from aviation are in the order of 5 to 10% of total emissions. Any long-term plan to reduce global GHG emissions and minimize the effects of climate change will have to address aviation. Much aviation is essentially luxury consumption (especially tourism) and not related to vital needs. It would be appropriate to minimize it. Domestically, the B.C. government should implement policies, planning, and fiscal measures to discourage domestic aviation, encouraging ground transportation for all but vital and emergency uses. Inter-jurisdictionally, the B.C. government should advocate parallel measures to reduce national and international aviation. The B.C. government should start a regional coalition of provinces and states to promote this issue and develop support for effective action.

Note: Wilderness Committee does not endorse this measure in its current form.

Type: Fiscal and regulatory for domestic aviation; policy for inter-jurisdictional

Reductions estimate: 1 Mt per year for domestic aviation (assuming 50% reduction); large amounts of unassigned reductions for national and international

> 1 Mt CO₂e: Very Large



Increase foot passenger / HOV mode share on ferries in B.C.

Submitted by Nicholas Heap, David Suzuki Foundation

Description: Much of the space and most of the shipped weight, on ferries in B.C. is taken up by vehicles. Encouraging more foot-passenger or high-occupancy-vehicle (HOV) traffic, and discouraging single-occupancy-vehicle (SOV) traffic would result in much lower per passenger GHG emissions for the ferry system, and for the transportation sector as a whole.

Possible approaches include:

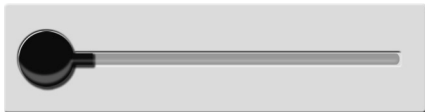
- Improved (faster) transit links between urban centres and ferry terminals;
- Locating car-rental outlets at ferry terminals;
- Expanding park-and-ride lots at terminals;
- Giving boarding priority to HOVs during peak seasons;
- Making the per-passenger fare for foot passengers or additional vehicle passengers significantly less expensive than for vehicle drivers; and
- Establishing high-speed passenger-only ferry services.

Type: Financial incentives, new infrastructure

Implementers: BC Ferries, BC Ministry of Transportation and Highways, local governments (zoning)

Reductions estimate: Small

< 0.1 Mt CO₂e: Small



Off-road fuel efficiency improvements

Submitted by Alison Bailie and Matt Horne, Pembina Institute

Description: Off-road transportation includes mobile transportation that occurs on-site, such as at airports or industrial sites. Emissions from these activities are significant in B.C., accounting for almost 7% of total provincial GHG emissions in 2007 – more than twice the emissions from domestic aviation. Opportunities for reductions will be specific to the individual site and include fuel-efficiency improvements, increased maintenances, ensuring that the vehicle or equipment used is the appropriate size, and using fuels with lower GHGs. The simplest policy approach will be carbon tax on fuels for these vehicles.

Note: In addition to these authors, this policy proposal is also strongly supported by the Georgia Strait Alliance.

Type: Pricing

Implementers: Ministry of Environment and Finance

Reductions estimate: Large (1.0 Mt CO₂e, from *Mind the Gap* report)

< 1.0 Mt CO₂e: Large



Other measures

- GHG emissions standard for ferries in B.C.
- Remove existing subsidies on bunker fuel
- Fuel efficiency for onsite (off-road) heavy trucks
- Limit international shipping

Oil and Gas / Fossil Fuel Production

Maintain B.C. moratorium on offshore oil and gas and tankers

*Submitted by Oonagh O'Connor, Living Oceans Society and Christianne Wilhelmson,
Georgia Strait Alliance*

Description: The value of our oceans in British Columbia can be measured in many ways as coastal marine systems are among the most ecologically and socio-economically vital on the planet. These waters have also provided sustenance for First Nations for centuries and play an integral role in native culture. Today, our oceans are of great economic and cultural importance for all coastal communities and play a vital role as a natural carbon sink.

However, there is growing concern that coastal marine ecosystems, along with the goods and services they provide, are threatened by global climate change caused by human activity. Climate change has already triggered significant changes in the environment, and as the impacts grow, we risk serious harm to marine ecosystems, with far-reaching consequences for human health and welfare. Given their global importance, coastal marine environments are a major focus of concern regarding the potential impacts of climate change.

We have many opportunities to conserve the health of our coastal waters and communities, including the reduction in our dependence on fossil fuels. One way to do this is by committing to maintain the moratorium on offshore oil and gas development in BC, thereby limiting the risks to our oceans that come with this industry, including the significant production of GHGs.

The provincial government has the opportunity to show leadership on climate change and take action that is consistent with its commitment to reduce GHGs by joining with the Western States of Oregon, Washington, and California to create a permanent ban on coastal drilling in B.C.'s waters.

Type: Policy / Legislation

Implementers: Premier / BC Ministry of Energy and Mines

Reductions estimate: Very large (73 Mt / yr, given that 1092 Mt of CO₂ is predicted over 15-year project lifetime. Estimate does not include GHGs from energy required for drilling and transport).

> 1 Mt CO₂e: Very Large



See **APPENDIX 10 (Maintain BC moratorium on offshore oil and gas and tankers)** for additional information on this measure.

Elimination of oil and gas production subsidies

Submitted by Eric Swanson, Dogwood Initiative

Description: The production of fossil fuels in B.C., including natural gas and oil, accounts for ~21% of B.C.'s annual GHG emissions. B.C. has historically attracted development of these resources by offering various financial incentives (hereafter generally referred to as "subsidies") to industry in order to mitigate the large upfront capital costs of fossil-fuel development projects. This equates to subsidizing the emission of B.C.'s second largest source of GHGs by sector. Subsidies traditionally include financial assistance with infrastructure costs (roads, pipelines), or royalty regimes that are light-weight at the front end, allowing industry to pay off their initial costs prior to paying significant royalties to B.C. Without such assistance, the attractiveness of B.C. to the oil and gas industry would decrease, as would the annual rate of fossil-fuel production and associated GHG emissions. Thus, by eliminating subsidies to and/or increasing royalties from the oil and gas industry, B.C. could substantially decrease the annual GHG emissions from this sector; whereas if subsidies continue, emissions will rise with increasing production and focus on new unconventional reserves (e.g., shale gas, tight gas, coalbed methane).

Type: Current inconsistency / Preventative disincentive

Implementers: BC Ministry of Energy, Mines, and Petroleum Resources

Reductions estimate: Difficult to determine, but potentially very large

> 1 Mt CO₂e: Very Large



Eliminate unconventional gas (coalbed methane [CBM], tight, and shale gas) production in B.C.

Submitted by Casey Brennan, Wildsight; and Nikki Skuce, One Sky

Description: Unconventional gas production is much more carbon intense than traditional natural-gas production. As the natural-gas industry in B.C.'s portion of the western sedimentary basin matures, it is natural for industry to look to other less accessible sources of supply. While we recognize our society's dependence on fossil fuels and the relative desirability of burning natural gas over other fossil fuels, the province should not encourage through incentives or direct subsidies the move to production from these dirtier sources. In fact, a price should be attached to the production from these sources that send a signal to industry that these more carbon-intense sources will be priced according to the overall cost to society. In addition, by setting strong energy-efficiency targets and implementation measures in both the production and consumption of oil and gas, the need for unconventional oil and gas development in the province is eliminated, at least until 2020.

Type: Regulatory and fiscal

Implementers: Ministry of Energy, Mines, and Petroleum Resources

Reductions estimate: Difficult to estimate because this is largely a preventative measure, although leases for tight and shale gas have been sold in the N.E. and CBM leases have or could be sold in many places around B.C. Gas flaring is also already occurring at some of these exploratory sites.

Fossil-fuel production and export

Submitted by Tom Hackney, BCSEA

Description: B.C. fossil fuels – mainly coal and gas – result in some 100 Mt per year of greenhouse gas emissions in the countries where they are consumed (B.C. and U.S. for gas; largely China for coal). The general use of fossil fuels is incompatible with the long-term stability of earth's climate and the health and well-being of humans and other living things. As a first clear step toward long-term sustainability, B.C. should place a declining cap on its fossil-fuel production, starting at present levels and declining by 2% each year. Eventually, production rates would be brought into line with long-term sustainability. The cap would be enforced by imposing a prohibitive royalty (e.g. 500% above the normal rate) on production above the cap.

Type: Regulatory and fiscal

Implementers: Ministry of Energy, Mines, and Petroleum Resources

Reductions estimate: Initially 2 Mt per year, rising by 2 Mt per year – however, not attributed to B.C.'s GHG emissions inventory

> 1 Mt CO₂e: Very Large



Methane and CO₂ reduction in natural gas operations

Submitted by Alison Bailie and Matt Horne, Pembina Institute

Description: In the 2006 Throne Speech, the B.C. government committed to developing policies to reduce GHG emissions in the entire oil and gas industry to 2000 levels by 2016, a reduction of 26% from current levels. This policy increases the reduction target to 33% reduction from current levels by 2020, which can be achieved by establishing annual emission-reduction targets based on best management practices (BMP), with a shadow price for GHG emissions of at least \$30 per tonne of CO₂ equivalent in 2008 increasing to \$100 per tonne of CO₂ equivalent in 2020 for both new and retrofit operations. A multi-stakeholder group would be initiated to establish targets and evaluate progress. If targets were not met within a short time period, the B.C. government would move to technology-based regulations, increased royalties, and/or limits on production.

Type: Industry consultation and targets, followed by regulation if needed.

Implementers: BC MEMPR, Oil and Gas Commission, natural gas companies.

Reductions estimate: Large (0.5 Mt CO₂e additional to 26% target)

< 1.0 Mt CO₂e: Large



See **APPENDIX 11 (Methane and CO₂ Reduction in Natural Gas Operations, Including Fuel Use and Emissions Reduction in Venting and non-routine Flaring)** for additional information on this measure.

Buildings – Residential and Commercial

Labelling and feebates for homes and buildings

Submitted by Alison Bailie and Matt Horne, Pembina Institute; Tom Hackney, BCSEA

Description: A labelling and feebate policy for homes would:

- Require all new homes and buildings to have energy (or GHG) performance rating at occupancy.
- Require all existing homes and buildings to have energy (or GHG) performance rating at the time of sale (unless a rating was provided in the last x number of years) or when renovations exceeding \$20,000 in value occur.
- Require all energy (GHG) performance ratings to be reported in real-estate listings.
- Provide significant incentives for new and existing homes and buildings exceeding performance thresholds and assess financial penalties for those failing to meet the thresholds. The performance thresholds should be similar to the green building code requirements for new homes and buildings. The incentives and penalties would be applied at the point of sale or retrofit completion. While the system of incentives and penalties could be revenue neutral, the government may need to apply additional funds to this option. For example, costs of energy upgrades could be mitigated by applying the property transfer tax to them. As well, the government should implement a revolving loan and/or subsidy program, so that the direct costs to owners and buyers will be reduced to a practically manageable level. This policy will go beyond announced initiatives (Green Building Code, subsidy programs for building retrofits) and provide the market signals that help spur highly efficient and carbon-neutral buildings for both new and existing stock.

Type: Regulation and financial incentives and disincentives

Implementers: BC MEMPR, Ministry of Forests and Range, Office of Building and Construction Standards; BC Housing

Reductions estimate: Large (1.2 Mt CO₂e from *Mind the Gap* report)

< 1.0 Mt CO₂e: Large



See **APPENDIX 12 (Labelling and feebates for homes and buildings)** for additional information on this measure.

Energy Efficiency Retrofits for Existing Buildings

Submitted by Nicholas Heap, David Suzuki Foundation

Description: The vast majority of the building stock [~90%?] existing in 2020 will consist of buildings that are already built today, and these buildings will not be affected by new building codes. Several options described below would provide incentives for building owners to improve the energy efficiency of these existing buildings:

- **Better Buildings Partnership (BBP) model:** a public/private partnership of government and energy service contractors that pro-actively seeks out buildings that could benefit from energy efficiency retrofits, provides information and expertise on energy efficiency opportunities, and helps finance energy efficiency retrofits.
- **Local Improvement Charges for EE retrofits (LICs):** municipalities would pay for energy efficiency improvements to homes, with benefiting properties paying up to 100% of the cost of these improvements through a surcharge on their annual property taxes.
- **Leaky condo retrofits:** The marginal cost of making energy efficiency upgrades in conjunction with water infiltration repairs is much lower than they would be if they were installed as a separate retrofit. The Homeowner Protection Office could guarantee low-interest loans that pay for the cost of these energy efficiency retrofits.

All three options aim to generate energy cost savings that exceed the annual payments on the retrofits installed, so that the building owner saves money from the first year after implementing the retrofits.

Type: Regulation, financial incentive.

Implementers: Ministry of Housing, Local governments, and/or Homeowner Protection Office

Reductions estimate: Medium. (0.726 Mt) See appendix for assumptions.

< 0.5 Mt CO₂e: Medium



See APPENDIX 13 (Energy Efficiency Retrofits for Existing Buildings) for additional information on this measure.

Accelerate Green Building Standard

Submitted by Alison Bailie and Matt Horne, Pembina Institute

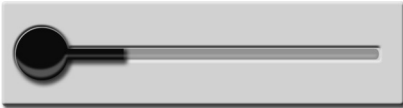
Description: While the B.C. Green Building Standard does not include an ongoing schedule for updates, we expect the government will continue with this policy as has been the case in most jurisdictions with decent energy-standards for buildings. In addition to ensuring a schedule for updates is implemented, the province will need to consider a pace of improvements that exceeds what has been occurring in other jurisdictions, such as California. Making homes and buildings more efficient than the improvements projected for B.C.'s Green Building Standard is not only possible, but it has already been done in a number of B.C. homes and buildings. If the energy efficiency of our homes and buildings improves by 5% per year between 2010 and 2020, they will be more than 50% more efficient than current construction in 2020 and emit 0.4 fewer million tonnes of greenhouse gas emissions.

Type: Regulation

Implementers: Ministry of Energy, Mines and Petroleum Resources

Reductions estimate: Medium

< 0.5 Mt CO₂e: Medium



B.C. solar program: 100,000 Solar Roofs

Submitted by Tom Hackney, BCSEA

Description: Solar energy could contribute significantly to B.C.'s energy needs through photovoltaic generation and reduction of heating loads, especially water but also space. The distributed nature of solar generation also beneficially diversifies B.C.'s energy system, in particular reducing electricity transmission and distribution requirements. The development of a solar industry in B.C. is a key spin-off benefit. The government should introduce regulations in the building code to require solar installations to the extent practical and to pre-plumb and pre-wire for solar. There should be solar upgrade requirements for existing buildings that are sold. Installations with large water-heating loads, such as large swimming pools, should be required to have solar heating as the principle heat source. The government should also offer incentives to develop solar generation, through an advanced renewable tariff (ART) specifically designed for solar energies.

Type: Regulatory and fiscal

Implementers: Ministry of Energy, Mines, and Petroleum Resources; Ministry of Forests and Range, Office of Building and Construction Standards

Reductions estimate: Eventually in the order of 1 to 2 Mt per year – very approximate estimate.

> 1 Mt CO₂e: Very Large



See **APPENDIX 14 (100,000 Solar Roofs)** for additional information on this measure.

Other measures

- Low-emission concrete through use of fly ash or natural pozzolans in cement

Urban Development

Strengthening growth-management legislation

Submitted by Jason Emmert, Smart Growth BC

Description: In 1995, the Growth Strategies Act gave regional districts more authority to undertake regional planning in order to make communities across B.C. more compact and to control urban sprawl. Although this important piece of legislation has been in place in B.C. since the mid-1990s, of the 27 regional districts only six regional districts have completed an RGS and only four others are in the process of developing one. The regional growth strategies that have been put in place have had some success at controlling sprawl and thus some measurable impact on reducing automobile usage. It has been particularly successful in the Lower Mainland. However, stronger legislation will be needed in order to meet the 33% GHG reduction target set out by the province. Some lessons can be taken from other jurisdictions (i.e., the states of Oregon and Maryland) on improving the effectiveness of regional planning and growth management.

An update to the Local Government Act is necessary to strengthen Regional Growth Strategy legislation. The main change would require each regional district to have in place a regional growth strategy by the end of 2009. Each RGS would include specified GHG targets, urban containment boundaries, and density thresholds. It would also give new authority to the regional governments to enforce growth-management provisions and establish an independent oversight body to monitor progress towards meeting goals.

Type: Targets, enabling legislation, and reductions

Implementers: Municipal and regional governments

Reductions estimate: Very large (approx. 1.8 million Mt CO₂e assuming a 25% drop in VKT by 2020)

> 1 Mt CO₂e: Very Large



See **APPENDIX 15: (Strengthening Growth Management Legislation)** for additional information on this measure.

Mortgage incentive for families to live close to transit

Submitted by Michael Alexander, Smart Growth BC

Description: This mitigation would be a pilot project to test whether including a family's cost of transportation as a factor in qualifying for a mortgage would encourage families to live in town centres, and to do so without increasing mortgage risk. This measure would not be a stand-alone reduction measure but would improve the effectiveness of other measures such as investment in public transit, growth management legislation, and tax increment financing. This mitigation option requires some foundational research to determine what qualifies as location-efficient in B.C. The Brookings study cited below provides a start.

Type: Regulation

Implementers: Financial Institutions Commission, CMHC, and Ministry of Community Services

Reductions estimate: Makes a contribution to creating more compact communities, for which reduction estimates range from (1 million to 2.2 million tones)

See **APPENDIX 16 (Mortgage Incentive for Families to Live Close to Transit)** for additional information on this measure.

Other measures

- Make full cost of parking visible; separate real-estate prices for dwelling units and parking spaces / garages

Natural Areas

Adopting a carbon stewardship approach to land-use management

Submitted by (in alphabetical order by affiliation): Chris Henschel, CPAWS Canada; Chloe O'Loughlin, Jim Pojar and Eva Riccius, CPAWS BC; Dr. Faisal Moola, David Suzuki Foundation; Candace Batycki, ForestEthics; Michael Dunn and Sheila Harrington, Land Trust Alliance of British Columbia; Sara J. Wilson, Natural Capital Research and Consulting; and Dr. Richard Hebda, University of Victoria.

Description: British Columbia's forests, particularly the rich and productive coastal and interior wetbelt rainforests as well as its peatlands are huge reservoirs of carbon, storing carbon in living plants and soil. However, when natural ecosystems are converted to other uses or are heavily degraded by human land use, much of this stored carbon is released back into the atmosphere as carbon dioxide. A Carbon Stewardship approach to land-use management is needed in B.C., both to reduce the direct emissions from land-use practices and to sustain the capacity of our natural ecosystems (i.e., sinks) to remove and store carbon. Carbon Stewardship (e.g., protection of intact natural areas) also increases ecological resiliency and provides increased options for adaptation by species and ecosystems to climate change.

Note: In addition to these authors, this policy proposal is also strongly supported by the Nature Trust. Not all groups submitting this proposal have endorsed all of the mitigation measures described therein.

Type: Legislation, regulation

Implementers: Ministries of Agriculture and Lands, Forests, Energy and Mines, Environment, Community Services, other ministries, municipalities, land trusts, and other public and private land holders.

Reductions estimate: Medium; effects beyond B.C. B.C. ecosystems (especially its productive old-growth forests) are globally important for their carbon sequestration and storage services.

< 0.5 Mt CO₂e: Medium



See APPENDIX 17 (Adopting a Carbon Stewardship Approach to Land Use Management) for additional information on this measure.

Preserving the ocean and its vital role as a carbon sink

Submitted by Oonagh O'Connor, Living Oceans Society, Sarah Patton, CPAWS – BC and Deborah Conner, Georgia Strait Alliance.

Description: Deep cuts in emissions are critical to deal with climate change in the near and long term. Maintaining the cycling potential of the oceans as the world's largest carbon sink is a very important and complementary strategy. The oceans play an integral role in the earth's carbon cycle. Through natural cycling processes, roughly half of the CO₂ released by human activities between 1800 and 1994 is now stored in the ocean, and about 30% of modern CO₂ emissions released to the atmosphere are taken up by oceans today. Maintaining the ocean's potential to act as an efficient atmospheric carbon sink is becoming increasingly important as CO₂ levels rise. Important in this regard is ensuring that oceans do not become overly acidified, or in the worst case, saturated with respect to carbon.

Actions that the provincial government must take to ensure that oceans continue to play a crucial mitigating role as efficient carbon sinks include: 1) increasing research and science capacity to study and monitor shifts in ocean ecosystems, including both impacts and changes to organisms and habitat; 2) establishing a network of marine protected areas in collaboration with the federal government through marine-planning processes in B.C. waters; and 3) developing policies that would regulate and enforce pollution standards with ongoing independent monitoring and enforcement; 4) protecting the ecological integrity of our oceans by creating and implementing policies to ensure that resource extraction occurs only within ecologically sustainable limits determined by informed conservation science; and 5) pass legislation that prohibits the sequestration of industrially produced carbon emissions.

By acting to implement the above policies, we will help to maintain the health of the ocean and by doing so maintain the carbon cycling potential of our oceans.

Note: In addition to the authors of this document, this policy proposal is also strongly supported by the Nature Trust.

Type: Mitigative measure

Implementers: B.C. Ministry of Environment and Ministry of Agriculture and Lands.

Reductions estimate:

See APPENDIX 18 (Preserving the Ocean and Its Vital Role as a Carbon Sink) for additional information on this measure.

Other measures

- Policies to mitigate land-use conversion / loss of natural ecosystems (i.e., green field development)

Agricultural Lands

Local food and organic food

Submitted by Tom Hackney, BCSEA

Description: Huge greenhouse gas costs are embedded in our (the developed world's) food-production and distribution systems, mainly through fossil-fuel based transportation and (for non-organic food) fossil-fuel based fertilizers, herbicides, and pesticides. 1) The provincial government should develop a comprehensive long-term plan to meet B.C.'s food needs as much as possible with locally produced and organic food and to minimize the transportation component of food consumed in B.C. 2) In the short term, the provincial government should review its legislation and operations and remove disincentives to locally produced and organic food, and remove incentives to long-distance transport of food. 3) In the short term, the relevant government agencies should act on a wide range of simple measures to support locally and organically grown food in B.C., including a repeal of meat-processing regulations that prevent local meat processing by small-volume producers, marketing-board policies that favour large producers and export production, increased support for "eat local" programs, etc.

Type: Broad-based planning and policy; remediation of existing policies and regulations

Implementers: Ministries of Agriculture and Lands; Transportation; Health; Economic Development; Intergovernmental Relations Secretariat

Reductions estimate: Ultimately 15 Mt per year, across transportation, manufacturing, and agriculture sectors – a very rough estimate

> 1 Mt CO₂e: Very Large



Other measures

- Organic agriculture
- Enable small-scale farms within the Agricultural Land Reserve
- Allow Agricultural Land Reserve private property inclusion in conservation easements
- Cellulosic ethanol from agricultural waste

Electricity Generation

Advanced renewable tariff (ART)

Submitted by Nicholas Heap, David Suzuki Foundation; and Nikki Skuce, One Sky

Description: BC Hydro’s existing “net metering” and “standing offer contracts” programs will not encourage large-scale development of low-impact renewable energy. A properly designed ART (a.k.a. “feed-in tariff”) could result in the installation of thousands of MW of renewable energy in B.C., offsetting demand for fossil-fuel energy. The ART would also enable domestic manufacturing of renewable energy technologies and the creation of thousands of new jobs in B.C., as has already occurred in many jurisdictions including Germany, Spain, and Japan. An effective ART would: 1) remove the existing 10-MW upper limit on eligibility and guarantee access to the grid to anyone who wants to deliver renewable energy; 2) establish different contracted rates for each renewable energy technology sufficient to encourage development, with regular review of the rates for new applicants; 3) include contractual long-term premiums (20 years or life of the system) to ensure financial investment; and 4) include BCUC pre-approval of ART projects as a whole, rather than on a case-by-case basis. All development of new energy facilities should be done under a proactive, properly enforced land-management strategy to ensure that even large amounts of development do not compromise ecosystem integrity.

Note: Wilderness Committee does not endorse this measure.

Type: Financial incentive

Implementers: B.C. Ministry of Energy and Mines / BCUC / BC Hydro

Reductions estimate: Effects beyond B.C. - Very large

> 1 Mt CO₂e: Very Large



See APPENDIX 19 (Implement Advanced Renewable Tariffs [ARTs]) for additional information on this measure.

No new electricity generation facilities that generate GHGs

Submitted by Rob McWilliam and Richard Fletcher, Texada Action Now

Description: We will never reverse the trend of increasing GHGs if we don't first shift out of forward drive. To do this B.C. needs to adopt a policy of full sequestration for new fossil-fuel generation (coal and natural gas). If B.C. permits new gas-fired generation without full sequestration it will worsen B.C.'s GHG emissions and require much tougher policies in other sectors. With sequestration it will be possible to achieve early success in the electrical sector and allow B.C. to take a more considered and incremental approach in other sectors such as mining and forestry.

If carbon-free and sustainable sources of energy (or processes) are able to compete fairly against fossil-fuel sources, transparent pricing is required. In electricity, the costs of sequestration must be fully priced into the generation price purchased by BC Hydro. The costs of carbon must be placed on the generators, and borne by the generators for the life of the project – NOT simply passed on to the customers through BC Hydro, or to the environment. In other words, carbon pricing risk of generating carbon-fired electricity must be borne by the project sponsor for the life of the project. Nor is it adequate to simply play a shell game with GHG emissions, using the GHG levels generated by an antiquated peaking plant like Burrard Thermal and using those as offsets for a newer more efficient fossil fuel fired place. There must be actual reductions in GHGs from the totals for existing electricity plants through use of measures such a time of day pricing that will even out demand and let us make real inroads into GHG levels from electricity generation.

Type: Regulation

Implementers: B.C. Ministry of Energy, Mines, and Petroleum Resources

Reductions estimate: Very large (reduced need for offsets)

> 1 Mt CO₂e: Very Large



See APPENDIX 20 (No new electricity generation facilities which generate GHGs) for additional information on this measure.

Preventative Measures:

- 1) Current BC policy requires carbon neutrality for coal-fired electricity generation, as only those projects employing full sequestration of carbon emissions can be approved. BC must extend the sequestration requirement to natural gas fired electricity generation otherwise policy would be inconsistent and the building of gas-fired plants would be highly damaging to BC's GHG objectives.
- 2) To meet the goal of sustainable energy self-sufficiency BC must extend the long-standing

ban on offshore oil and gas tankers to southern inland waters. It would be highly damaging for BC to sanction the movement of LNG tankers in the Strait of Georgia, and by doing so, move to a carbon import economy when BC is striving for clean energy self-sufficiency. In addition, movement of LNG tankers in inland waters would be highly damaging to marine and economic activity in a core BC economic zone.

- 3) The BC Utilities Commission Act currently requires the BCUC to set electricity rates that are fair and reasonable. Under the new green energy plan BC should legislate for revised tests under the Act:
 - a) The BCUC must set rates for electricity that are fair and reasonable which also reflect the full cost of physical carbon neutrality; and
 - b) Major energy projects must reflect the cost of carbon mitigation for the life of the project and carbon pricing risk must be borne by the project sponsor.

Renewable energy for remote communities

Submitted by Nikki Skuce, One Sky

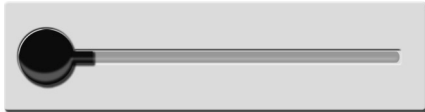
Description: A number of B.C. residents live “off-grid”, and several First Nations communities in particular are not serviced by BC Hydro. Programs and incentives to support renewable energy electrification for these targeted audiences would reduce GHG emissions (as well as other waste) from diesel generators. While these communities comprise a small portion of B.C.’s population, tax reductions and incentives as well as sponsored expertise for assessments would improve implementation of renewable energy applications for remote communities. Benefits and improvements to remote communities through clean-energy applications would be multiple (reduction in high transport and fuel costs, local job opportunities for renewable energy installations and maintenance, etc).

Type: Financial incentive

Implementers: MEMPR and Aboriginal Affairs

Reductions estimate: Small

< 0.1 Mt CO₂e: Small



Principles and Enabling Measures

Climate Justice

Submitted by Marc Lee, CCPA

Description: Three issues are highlighted:

- **Just Transition Plans for Affected Workers:** One important challenge of addressing climate change will be the transition from an economy that is heavily reliant on fossil fuel use to one that gradually focuses more on emerging industries. The solution to this shift in jobs is to ensure that those who *do* lose their jobs are given options, particularly in those related sectors experiencing overall growth. These include retraining programs, income support, and relocation allowances.
- **Tax Credits to Offset Regressivity in a Carbon Tax:** Like sales or consumption taxes, a carbon tax will be regressive – low income people will pay a greater share of their income to the tax. Likewise, a cap-and-trade system will also produce higher prices with regressive distributional impacts. But what really matters is where the money goes and how it is used. Approaches where government captures the revenue are appealing, as these funds can be used to fund tax credits (targeted to low-income families or on a per capita basis) and to support programs that reinforce green behaviour.
- **Democratic Engagement:** The Climate Action Team process has been criticized for failing to include key constituents, including a broad range of community health and social service, voluntary, educational, and faith-based organizations, rural communities, the labour movement, anti-poverty groups, cultural communities and immigrant groups, as well as the general public. To complement the actions of the CAT, the government should lead by engaging citizens through more deliberative processes, as it has done in the past on other issues of importance to British Columbians through the Citizens' Assembly on Electoral Reform and the Conversation on Health.

Note: Wilderness Committee has reservations about a Citizen's Assembly accurately reflecting citizens' views.

Type: Policy

Implementers: Climate Action Secretariat

Reductions estimate: Enabling measure.

See APPENDIX 21 (Climate Justice) for additional information on this measure.

Science-based GHG emissions cap

Submitted by Colin Campbell, Sierra Club BC and Marc Lee, CCPA

There is growing scientific consensus that we must do everything in our power to avert a 2 degree Celsius temperature increase above pre-industrial times (i.e. 200 years ago). Global temperature is already about 0.7 degrees above that level, and because there is a lag between emissions and higher temperature, another 0.5 degrees is likely "locked in" due to the current stock of greenhouse gases in the atmosphere. The implication is stark: deep emissions reductions are required starting immediately.

With this in mind, even as the 2020 targets for BC will be challenging to achieve, there is good reason to believe that BC's 2050 target (GHG emissions 80% below 2007 levels) is not ambitious enough. If we take the 2 degree limit seriously, and also account for an equal per person amount of emissions on a global scale, BC's emissions reductions by 2050 will need to be around 95%. This effectively means becoming a carbon neutral society - and this will entail a new industrial revolution that decarbonizes the economy.

BC's 2050 target should be determined in a global context. It should assume a path for BC towards equal per capita emissions on a global basis, at some point in the future. And it should be consistent with emission reductions that keep global average temperature increase to 2 degrees above pre-industrial times. At the request of the Sierra Club BC and the BC Government and Service Employees Union, the University of Victoria Earth System Science Model was run to determine the total carbon permissible as emissions to meet this requirement. This turns out to be 223 Gt carbon globally by 2100. If BC's share is calculated by proportion of world population (0.065%), then 144Mt (i.e. million tonnes) of carbon is available for emitting in BC between now and 2100. For perspective, at present rates of emission (approx. 19Mt/yr) this budget would be fully expended in 7.5 years. This figure frames the overall challenge for BC, and should initiate discussion on how BC achieves an equitable role in the global context.

Type: Regulation

Implementers: Climate Action Secretariat

Reductions estimate: Enabling measure

See APPENDIX 22 (BC GHG Emissions Pathway: Stabilization and Equity) for additional information on this measure.

Incorporating GHGs into all environmental assessments (EAs)

Submitted by Nikki Skuce, One Sky

Description: In order to improve projections and mitigation options in mining, energy, industrial development and other sectors, greenhouse gas emissions need to be required in the Terms of Reference of Environmental Assessments in B.C. As well as quantifying the potential climate-change impacts of a project over its lifecycle, reduction strategies and precautionary principles should also be incorporated.

In addition, current triggers for EAs are sometimes too narrow to incorporate potentially large GHG emitting projects. Various Oil and Gas projects, including coalbed Methane projects, need to be encompassed in the overall definition of “projects”.

Type: Regulatory and preventative measure

Implementers: All relevant B.C. Ministries part of EAs and for specific projects

Reductions estimate: Large as more of a precautionary measure. Would need additional legislation and regulations to reduce existing emissions in these sectors.

< 1.0 Mt CO₂e: Large



See APPENDIX 23 (Include GHGs in all Environmental Impact Assessments) for additional information on this measure.

GHG reduction targets for local governments and communities

Submitted by Casey Brennan, Wildsight

Description: The opportunity for GHG emission reductions from this initiative is quite substantial. Local Governments have been encouraged by the province to sign the B.C. Climate Action Charter (BCCAC) which commits them to become carbon neutral by 2012. The provincial program to assist municipalities to reduce GHG emissions is taking shape but there are some concerns that baseline assessment will not be detailed or accurate enough and that programs to support municipalities will not be comprehensive enough to achieve the goal. Baseline data is being collected initially only for emissions at the community level, not yet at the municipal level. There is also concern of lack of funding for the necessary planning and data collection phase of the development of a greenhouse gas emission reduction plan, or carbon neutral action plan.

Type: Public education, regulatory & fiscal

Implementers: lead implementers will be each individual municipality in partnership with civil society the private sector and other public sector agencies including Government of British Columbia Ministries of; Environment, Community Services, Transportation, Energy Mines and Petroleum Resources many other provincial ministries should play a role, B.C. Transit, B.C. Rail, B.C. Ferries, B.C. Union of Municipalities, Federation of Canadian Municipalities, Government of Canada Ministries of; Environment, Natural Resources and Transportation

Reductions estimate: approximately 11 Mt per year by 2020 but difficult to quantify accurately due to overlap with difficulty of estimating future emissions under business as usual.

> 1 Mt CO₂e: Very Large



See APPENDIX 24 (GHG Reduction Targets for Local Governments and Communities) for additional information on this measure.

Include emissions beyond B.C. in CAT mandate

Submitted by Alison Bailie and Matt Horne, Pembina Institute; Casey Brennan, Wildsight; and Tom Hackney, BC SEA

Description: The GHG emissions reported for British Columbia in the Environment Canada GHG inventory appear to be the basis for the GHG reduction targets being considered by the Climate Action Secretariat. These emissions represent only a subset of emissions for which B.C. is responsible. The secretariat needs to include all emissions that B.C. is responsible for and capable of influencing or provide clear information on these exclusions. The types of excluded emissions are:

- *GHG emissions associated with imports:* GHGs are emitted outside of B.C. in the production of electricity, fuels, and other products that are imported into the province. B.C. can influence these emissions by ensuring that imported products meet standards (maximum tons of GHG per unit of imported good).
- *GHG emissions associated with exports:* GHGs are emitted outside of B.C. in the consumption of goods produced here – in particular fossil-fuel exports. B.C. can influence these emissions by ensuring that our exports include a significant carbon price. B.C. may need to cap fossil-fuel exports, particularly to regions that do not have stringent climate-protection policies.
- *GHG emissions associated excluded from provincial reporting:* The Environment Canada (EC) inventory as reported for provinces excludes emissions from halocarbon and SF₆ consumption, use of mineral products, and fugitive emissions from refineries. In addition, the EC inventory notes: “According to the IPCC Guidelines (IPCC/OECD/IEA, 1997), emissions resulting from fuels sold for international marine and aviation transportation should not be included in national inventory totals, but should be reported separately as emissions from ‘bunkers’ or ‘international bunkers’.” B.C. can influence GHG emissions from all these activities, and the CAS needs to apply pressure and resources to obtain the data on these emissions for B.C.

Type: Information

Implementers: Climate Action Secretariat

Reductions estimate: Very large. Including these emissions will provide additional opportunities for reductions, relative to a reference case, and will more appropriately reflect B.C.’s full responsibility for GHG emissions

> 1 Mt CO₂e: Very Large



Other measures

- Electricity generation policy should address environmental impacts through integrated land-use planning, effective regulations, and adequate enforcement
- Conduct GHG emissions analysis for all government funding
- Household challenge – education and outreach
- Recognize GHG benefits of maintaining existing infrastructure
- Implement consumer responsibility for GHGs in products / provide information on embodied emissions in products.