Climate Change Legislation & TRANSPORTATION TRANSFORMATION

*Daniel Kiselbach, Emma Lehrer and Kelsey Thompson**

Daniel Kiselbach

I. Introduction

The Minister of Finance for British Columbia introduced a consumer based carbon tax on July 1, 2008,[1] which was one of the first substantial carbon taxes in North America. While it is expected that carbon regulations will be introduced in the near future in other jurisdictions across North America, and some jurisdictions have already implemented carbon regulations, Canada's transportation sector is already being affected by new climate change legislation and policy. The recent introduction of various Federal and Provincial government greenhouse gas reduction legislation, regulations and policies have targeted energy intensive transport. In addition, the European Union (EU) has passed some equally aggressive climate change legislation which will have a particular impact on the aviation industry. Transportation businesses should plan now to respond to these new changes. This article provides an overview of current air emissions regulations and discusses how governments are expected to tax or regulate air emissions in the near future in Canada and the EU.

II. The Transportation Industry and Greenhouse Gas Emissions

Studies show that the transportation sector is a leading contributor of greenhouse gases. The six greenhouse gases listed in the Kyoto Protocol include carbon dioxide; nitrous oxide; methane; sulphur hexafluoride; hydrofluorocarbons; and perfluorocarbons, and are created by the production and combustion of fossil fuels and contribute to climate change when released into the atmosphere. In Canada, transportation represents the country's largest source of greenhouse gases, accounting for 27% of total greenhouse gas emissions.[2]

As a party to the Kyoto Protocol, Canada's federal government is responsible for monitoring and reporting national greenhouse gas emissions pursuant to the United Nations Framework Convention on Climate Change (UNFCCC). The National Inventory Report[3] reveals that domestic aviation, domestic marine, and railways each contribute between 3-4% of national transportation emissions. Another 20% of emissions come from pipelines, and off-road diesel and gasoline. Finally, road transportation contributes the remaining 67% of greenhouse gas emissions. Greenhouse gas emissions from road transport have increased substantially since the 1990s. The primary source of this trend is the increase in the number of passenger-kilometres travelled, in other words people drove further. Another major cause is the trend in personal vehicle use from automobiles to minivans, sport utility vehicles (SUVs) and small pickup trucks.[4] These larger vehicles emit an average of 40% more greenhouse gas emissions per kilometre than automobiles. Additionally, emissions from heavy-duty vehicles have almost doubled as a result of just-in-time delivery production systems.[5]

Thus, the transportation sector has been and is expected to continue to be a key target of emission control and climate change legislation. Currently, both the federal and provincial governments regulate greenhouse gas emissions.

III. Federal Air Emission Regulations

Under the federal *Canadian Environmental Protection Act* [*CEPA*], regulations exist to limit the sulphur content in diesel[6] and gasoline[7] to comply with maximum allowable emissions. In addition, *Renewable Fuels Regulations*[8] are in place which require fuel producers and importers to have an average of 5% renewable content in gasoline. A further requirement for an average of 2% renewable content in diesel will be implemented through future amendments to the Regulations subject to technical feasibility, such as biodiesel being used successfully under Canadian weather conditions.

*Miller Thomson, LLP, Vancouver, British Columbia, Canada. Emma Lehrer and Kelsey Thompson are articled students with Miller Thomson.

In addition, the *Motor Vehicle Fuel Consumption Standards Act*[9] authorizes the federal government to regulate fuel consumption standards for any class of motor vehicle. In April 2005, car manufacturers entered into a Memorandum of Understanding with the Federal government, whereby the manufacturers committed to voluntarily cut greenhouse gas emissions by selling light duty vehicles that met U.S. fuel consumption standards.[10] However, critics have argued that a voluntary agreement will not do enough to reduce light duty vehicle emissions. As a result, the federal government acknowledged the need to provide regulatory standards and accordinly has enacted the *Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations*,[11] pursuant to the *CEPA*. The Regulations establish mandatory greenhouse gas emission standards for new vehicles of the 2011 and later model years that are aligned with U.S. standards. The Regulations require that vehicle manufacturers and importers meet fleet average greenhouse gas emission standards for their passenger automobiles and light trucks as well as vehicle-specific standards for emissions of methane and nitrous oxide. They also include provisions that establish compliance flexibilities, to ensure the automobile industry has appropriate lead-time for technological improvements. Finally, they include reporting requirements relating to the greenhouse gas emission performance of the manufacturer's fleets, to establish compliance with the Regulations.

The federal government has also approved other initiatives and incentives with the goal of reducing greenhouse gas emissions, such as eliminating federal excise tax on certain low carbon fuels like natural gas, propane, ethanol and methanol etc. and an ecoAUTO rebate program to encourage Canadians to purchase fuel-efficient vehicles.

IV. Federal Regulations Respecting Aviation, Marine and Rail

The federal government shares the responsibility to legislate in matters with respect the environment, but it is also able to regulate transportation under other heads of power such as navigation and shipping.[12] Under this head of power, the federal government has enacted legislation regulating the aviation, marine, and rail sectors. For example, emissions from the shipping sector are governed by the *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals*[13] made under the *Canada Shipping Act, 2001*.[14] Rail transportation is governed by the *Canada Transportation Act;*[15] however, there are no regulations specifically dealing with rail emissions. While the authority to regulate locomotive emissions exists under the *Railway Safety Act*,[16] Environment Canada monitors locomotive emissions through information provided under a Memorandum of Understanding with the Railway Association of Canada, which sets a cap on annual emissions.[17] However, this could be an area targeted for increased legislative and regulatory control in the future.

The aviation sector is also governed, in part, by a voluntary compliance program. Airline travel is expected to expand over the next 20 years, which will result in an increase in emissions. In anticipation of this expansion, in 2005, the federal Minister of Transport entered into a Memorandum of Understanding with the Air Transport Association (ATA) of Canada to reduce greenhouse gas emissions. This voluntary agreement requires ATA members to improve their fuel efficiency by an average of 1.1% per year.[18] In addition, the government is working through the International Civil Aviation Organization (ICAO) to reduce aviation emissions by developing a carbon dioxide emissions standard for new carrier types which is anticipated by 2013.[19] There is also, ongoing discussion regarding a global approach to greenhouse gas emissions management for the aviation industry, including emissions targets. However, it is too early to ascertain the effect this global approach will have on domestic policy. It is expected that the federal government will impose aviation emissions regulations pursuant to the federal *Aeronautics Act*[20] or the *Canada Transportation Act*.

V. Provincial Air Emission Regulations

Although the federal government regulates fuel content, the provinces have played a much more predominant role in the emission regulation field. In British Columbia, provincial air emissions regulations have been in place for years and new provincial legislation includes renewable and low carbon fuel requirements; legislation addressing climate change targets; legislation introducing a carbon tax; and finally legislation providing a framework for a cap and trade system.

British Columbia has established various emissions regulations under its *Environmental Management Act*.[21] These include the *Cleaner Gasoline Regulation*[22] and the *Gasoline Vapour Control Regulation*;[23] which respectively establish gasoline standards to reduce emissions of volatile organics, nitrogen oxides and sulphur oxides; and prevent the escape of gasoline vapours. However, the Act has not served as the only legislation driving climate change in the province. British Columbia has enacted new legislation, the *Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act*, which, similar to the Federal *Renewable Fuels Regulations*, enables the government to set requirements for the amount of renewable fuel and fuel blends for transportation

in British Columbia. The Act and Regulation[24] require fuel suppliers of gasoline or diesel to ensure that the renewable fuel comprises at least a prescribed percentage of that fuel, which is currently set at 5% renewable fuel content by volume in gasoline and 3% renewable content in diesel, in addition to a low carbon fuel requirement aimed at a 10% reduction in carbon intensity by 2020. The Act and Regulation also contain reporting requirements to ensure the objectives of the Act, to reduce the environmental impact of transportation fuels and contribute to a new low carbon economy, are met. With respect to future emissions legislation, the government plans to reduce tailpipe emissions by implementing vehicle greenhouse gas emission standards equivalent to those laid out in California's 2004 Low-Emission Vehicle II regulations,[25] which are expected to cut greenhouse gas emissions standards by 30% relative to current vehicle models.[26]

Provincial legislation specifically addressing climate change has also been created. In 2007, British Columbia enacted the *Greenhouse Gas Reduction Targets Act*,[27] which commits the province to reducing emissions by 33% below 2007 levels by 2020 and 80% by 2050, along with interim reduction targets of 6% by 2012 and 18% by 2016 to guide and measure progress. Pursuant to the *Reduction Targets Act*, the government of British Columbia has committed to ensuring all provincial public sector operations are carbon neutral[28] and has enacted accompanying regulations which address the quality of greenhouse gas offsets, for the purposes of fulfilling the provincial government's commitment to a carbon neutral public sector.[29] These regulations will be discussed further below.

In addition, as noted, the Minister of Finance for British Columbia introduced a revenue neutral carbon tax scheme in its 2008 Budget.[30] The tax is described as "revenue neutral" because the revenue raised by the carbon tax will be returned to taxpayers through reductions in other taxes with the goal of reducing British Columbia's income tax to strengthen British Columbia's competitiveness. In addition, to offset the burden on lower income residents, the province provides a refundable Low Income Climate Action Tax Credit.

The tax applies to the retail purchase or use of fuels in British Columbia, such as gasoline, diesel, natural gas, heating fuel, propane and coal; and includes aviation fuel, and is payable at the time of purchase or at the time of use.[31] Businesses operating in the transportation industry, especially aviation, should note the exemptions from the tax that are provided for under section 14 of the *Carbon Tax Act*, and those listed under Part 4 of the *Carbon Tax Regulation*.[32]

Initially the tax was introduced in 2008 at $10 per tonne of carbon emissions, rising $5 per tonne a year until 2012, when it will reach $30 per tonne. This translates to a tax of 2.14 cents per litre of gasoline, as of July 1, 2008, increasing to 7.24 cents per litre by 2012. The purpose of a phased approach was to give individuals and businesses time to reduce their use of fossil fuels. Whether there will be future rate changes will depend in part on whether the province is meeting its emission reductions targets, the impact of a cap and trade system, the actions of other governments and the advice of the Climate Action Team.[33]

Carbon taxes serve the dual-purpose of reducing carbon fuel consumption and generating funds to finance "green" initiatives. The theory is that, by putting a price on the amount of greenhouse gas emitted, the economy will respond by reducing fuel consumption, improving fuel efficiency, switching to cleaner fuels or implementing new technologies, with the result being an overall reduction in emissions.[34] Whether this theory proves valid is questionable given that the staggering increase in the price of gas over the past few years has not been accompanied by a radical decrease in emissions. Furthermore, critics of carbon taxes argue that it is an unfair burden on consumers who have to pay the tax for daily living, for example those who live in rural areas, rather than taxing the industries which are the big polluters. However, the government has recognized that the carbon tax will not, on its own, meet British Columbia's emission-reduction targets, but rather it will be integrated with other complementary measures such as a cap and trade system.[35]

British Columbia has been the first province to introduce hard caps on greenhouse gas emissions pursuant to the *Greenhouse Gas Reduction (Cap and Trade) Act*.[36] The *Cap and Trade Act* provides a basis for setting up a market-based cap and trade framework to reduce greenhouse gas emissions from large emitters operating in the province. A cap and trade system involves setting an overall cap or limit on allowable emissions. Emitters who reduce emissions below the cap are able to sell their excess quota. Emitters whose emissions exceed the cap must purchase emission credits to bring them within their allowable limit. Under the British Columbia *Cap and Trade Act*, the province will establish caps for designated large greenhouse gas emitters by issuing tradable compliance units that correspond with specific periods of time. Emitters will be required to surrender to the government the number of compliance units that are equivalent to the amount of greenhouse gas emissions from its operations. Failure to do so could result in penalties under the *Cap and Trade Act*.[37] In addition, the *Reporting Regulation* sets out the requirements for the reporting of greenhouse gas emissions from British Columbia facilities emitting

10,000 tonnes or more of carbon dioxide equivalent emissions per year, beginning on January 1, 2010.

At this time it is still unclear how this system could be applied to the transportation sector generally, and more specifically whether aviation and shipping will be part of the cap-and-trade system in British Columbia. However, it has been recommended by British Columbia's Climate Action Team[38] that aviation and shipping should be included in any cap and trade system as it is anticipated that air travel is only increasing and, as a result of the lack of alternative fuels available for aircrafts, as there are for motor vehicles, air travel will begin to represent an increasing proportion of emissions.

From an international perspective, the *Cap and Trade Act* provides the framework for British Columbia to participate in a market-based cooperative approach to reduce greenhouse gas emissions with other members of the Western Climate Initiative:[39] Arizona; California; Manitoba; Montana; New Mexico; Ontario; Oregon; Quebec; Utah; and Washington. This regional climate partnership is designing a cap and trade program, which could be used as the model for a continental cap and trade program in the United States, Canada, and Mexico.[40] Despite the foregoing, on January 25, 2011, the National Round Table on the Environment and the Economy released a report which explores the economic and environmental implications of harmonization with the United States on climate policy.[41] The report concluded that given the uncertainty about U.S. commitment and direction on climate change and the difference between Canadian and U.S. economies and emissions profiles, and the need to stay competitive, the report recommended that Canada should begin to implement emissions rules now and harmonize with the U.S. in the future.[42] Therefore, businesses in the transportation sector should expect that Canada may go forward with its own economy-wide cap and trade system and leave harmonization for the future.

VI. Other Measures

The ultimate success of a carbon tax depends heavily on the existence of fuel efficient alternatives. In the transportation sector, taxing gas at the pump will not reduce the number of drivers on the road unless safe, efficient and convenient public transportation is available. In this regard, British Columbia has announced plans to make substantial investments in alternative transport. British Columbia recently pledged $14 billion to fund a Provincial Transit Plan, which is intended to double transit ridership by improving and expanding the public transit system. The Union of British Columbia Municipalities has also allocated $50 million to help communities build a safe network of bicycle paths. British Columbia is also investing in alternative fuel sources and fuel cells to advance the development of a hydrogen highway. In addition, the province has introduced an expanded Scrap-it program to get older and less efficient vehicles off the road and is providing provincial sales tax exemptions on the purchase of hybrid and fuel efficient vehicles.

Finally, British Columbia's Climate Action Team is recommending greater use of marine and rail transport and more efficient operation of major ports.[43] British Columbia has recently completed Canada's first electric shore power project at Port Metro Vancouver to reduce marine diesel engine emissions from cruise ships.[44] As well, British Columbia is working with its four Pacific Coast neighbours: Alaska; Washington; Oregon; and California, collectively the Pacific Coast Collaborative, to standardize environmental practices and standards for the pacific ports.[45]

Aside from a legislative and governmental perspective, other measures have been implemented independently by individual companies and business sectors to reduce their greenhouse gas emissions. For an example in the transportation industry, there has been a shift towards the use of natural gas vehicles. Natural gas vehicles have become popular for return-to-home fleets such as taxis, couriers, police and municipal vehicles, because of the ease of refuelling them at a home base. They are also becoming an option for public transportation. For example, Greater Vancouver's TransLink recently demonstrated the use of hydrogen-enriched natural gas in four of its transit buses as part of the Integrated Waste Hydrogen Utilization Project.[46] Finally, progressive members of the U.S. trucking industry have recognized the need to reduce emissions by transitioning their heavy truck fleets from traditional diesel vehicles to natural gas vehicles.[47] There is the potential that in the future, natural gas vehicle technologies could be applied to rail and marine vessels. While currently natural gas marine technology is available (rail is not), it is expensive to integrate into new vessel designs and a large amount of diesel is still used during idling.[48]

With respect to trucking fleets, there are two types of engine product technologies sold by Canadian companies for use in natural gas buses and trucks and there is currently one natural gas commercial heavy engine which achieves diesel engine efficiency and is certified to 2010 emission standards. These engines reduce lifecycle carbon emissions by 25%.[49]

Despite the available technologies, currently there are not any natural gas tractor trailer trucks in use in Canada except for engineering development vehicles. One factor contributing to this is the lack of a commercial supply on liquidated natural gas. However, this situation is changing. In British Columbia, Terasen Gas, now FortisBC, has announced plans to sell liquidated

natural gas for transportation use and has applied to the British Columbia Utilities Commission to provide fuelling services through Terasen Gas owned and operated compressed natural gas and liquefied natural gas fuelling stations. In Québec, Gaz Métro has announced similar plans and one of Canada's largest trucking companies has plans to purchase 50 natural gas trucks for its routes between Montréal and Québec city and Montréal and Toronto.[50] Finally, Transport Canada's ecoFREIGHT program works with the freight transportation industry to increase use of technologies and practices that reduce fuel consumption, criteria air contaminants and greenhouse gas emissions.[51]

While the purchase price of these vehicles is higher, they have a reduced operating cost and a longer operating life. In addition to illustrating environmental corporate responsibility and giving their consumers a greener product, companies employing natural gas fleets are being proactive in adjusting to and anticipating potential future climate change legislation. Finally, there is the potential that initiatives such as employing natural gas trucking fleets could provide economic opportunities for these companies through carbon offsets.

VII. Carbon Offsets in British Columbia–The Pacific Carbon Trust

In light of the British Columbia government's commitment to a carbon neutral public sector and with increasing numbers of organizations starting to reduce their emissions with the goal of becoming carbon neutral, the government has set up the Pacific Carbon Trust (PCT), a Crown corporation of the government of British Columbia which offers British Columbia based carbon offsets. A carbon offset represents a reduction or sequestration of greenhouse gases made in order to compensate for, or offset, emissions that are being made elsewhere. These offsets can typically be achieved through financial support of projects aimed at increased energy efficiency that lead to the reduction of greenhouse gasses, for example renewable energy projects like wind farms. The PCT provides a marketplace for carbon offsets. Corporations that reduce their emissions through qualifying energy initiatives can sell those emissions offsets or savings to the PCT, which will then add those offsets to its portfolio of offsets that can be purchased by corporations and individuals who wish to counter their emissions and move towards carbon neutrality.[52] All PCT offsets are in compliance with the British Columbia *Emission Offsets Regulation*.[53]

The Regulation was drafted to address the quality of carbon offsets being generated in British Columbia, to enable the government to meet its commitment to carbon neutrality. Emission reductions that are established according to the requirements under the Regulation qualify as "Offsets." Proponents of emissions projects seeking to qualify Offsets must prepare a project plan and submit the plan to a verification body for review.[54] Generally, to be recognized as an Offset under the Regulation, reductions must be supported by a verified project report; ownership must pass to the PCT; and reductions must not have been previously recognized by another greenhouse gas program.[55] More specifically, the Regulation provides for seven criteria of an offset project:

1. *Within Scope*–emission reductions must be from one of the six recognized greenhouse gases noted earlier in this article and must be quantified according to their carbon dioxide equivalent global warming potential. In addition, reduction must occur from sources sinks or reservoirs and occur within the boundaries of the province of British Columbia;
2. *Real*–the offset project must result from a specific action or decision which leads to a quantified and independently verified emission reduction;
3. *Quantifiable*–the project developer must describe the formulae to be used to estimate or measure emission reductions;
4. *Additional*–project emission reductions must be incremental to the emission reductions that would have occurred in any event of the project activity. In addition, there must be either financial, technological or other barriers to carrying out the project that are overcome by the incentive of having reductions being recognized as an Offset. Finally, the project must have started no earlier than November 29, 2007;
5. *Verifiable*–the project plan must be validated and reports must be verified by separate and independent third party assurance providers;
6. *Counted Once*–an emission reduction cannot be recognized as an Offset if it has been employed or used as an offset in another program;
7. *Clear Ownership*–the proponent of the project must provide an assertion that it has a superior claim of ownership to that of any other person with respect to the emission reductions to be achieved.[56]

While the requirements to qualify as an Offset are strict in order to ensure quality, smaller projects may still be able to sell their emission reductions to the PCT through aggregated projects. Currently the majority of projects transacted to date under the Regulation are large single facility projects. However, project structures are continually developing and proponents are beginning to propose projects that aggregate a series of smaller project activities, which reduces the transaction costs for the smaller aggregated proponents and

encourages emission reductions from smaller sectors.[57]

The PCT provides new economic opportunities for British Columbia companies to sell their emission reductions as Offsets. As consumers become more aware of growing environmental issues and the need to reduce emissions and live a carbon neutral lifestyle, consumers are in turn expecting that businesses will do the same to provide greener options for consumers in the marketplace. Currently, the PCT is actively sourcing up to 1 million tonnes of carbon offsets annually. With offsets selling at $25 a tonne, this represents a $25 million a year industry, an industry which is only expected to grow as more and more industries recognize the need to move towards carbon neutrality.[58] In addition, the government of Canada also plans to administer an offset system under the *CEPA*.[59]

VIII. A View of Climate Change Legislation in Europe

In March 2007 the leaders of the EU endorsed an integrated approach to climate and energy policy and set aggressive energy targets to be met by 2020, known as the 20-20-20 targets. These targets included a 20 % reduction below 1990 levels in EU greenhouse gas emissions; a commitment of 20% of EU energy to come from renewable resources; and improved energy efficiency to produce a 20% reduction in primary energy use compared with projected levels.[60] In addition, there are ongoing United Nations negotiations regarding a potential increase in the EU's emissions reductions to 30% if the other major emitting countries commit to their share of reductions under a global climate agreement.[61]

In order to meet these targets, the European Parliament and Council agreed to a "climate and energy package" that became law in June 2009 and consists of four pieces of legislation.[62]

The first part of the climate and energy package involved a revision of the Emissions Trading System. The Emissions Trading System, which now operates in the 27 EU member states plus Iceland, Liechtenstein and Norway, is built on the cap and trade principle. A cap on emission allowances will apply from 2013 onward and the number of allowances will be reduced each year so that total emissions will decrease until the 20% emissions target is met in 2020. Heavy fines are imposed on companies that do not surrender enough allowances to cover all its emissions at the end of each year.[63]

The second aspect of the climate and energy package is an "Effort Sharing Decision" which governs emissions from sectors that are not covered by the Emissions Trading System, including the transportation industry. Each member state has agreed to a binding national emissions limitation target for 2020 accompanied by a monitoring, reporting, and compliance system. Each country's target is set according to its relative wealth with emissions targets ranging from a 20% decrease, for the richer member states, to a 20% increase in emissions for the poorer countries. In addition, each member state will have binding annual targets that will progress from 2013 to 2020 to allow time for the sectors to adapt.[64] The Decision has the goal of reducing emissions by 10% in these sectors by 2020, which combined with the reductions from the Emissions Trading System will help the EU meet its 20% target. It is anticipated that some of the policies and measures of the member states to meet these targets will include shifts away from transportation based on fossil fuels and expansion of public transportation.[65]

The third element of the climate and energy package is the binding national renewable energy targets that are intended to collectively meet the 20% renewable energy target set for 2020. EU legislation has set a low carbon fuel standard which requires a 10% reduction by 2020 of the greenhouse gas intensity of all petrol and diesel used in road transport and gasoil used in non-road vehicles. In addition to setting targets to reduce the greenhouse gas intensity of fuels, the legislation also deals with other aspects of fuel quality including reducing the sulphur content.[66]

Finally, the EU has implemented a legal framework to promote the development and safe use of carbon capture and storage (CCS), a technique used to trap carbon dioxide as it is emitted and to store it underground. The CCS Directive lays down various requirements to regulate CCS including, for example, requirements for site selection, closure and post-closure obligations, and transfer criteria, and establishes liability for any damage caused by leakage.[67]

In addition, the European Commission has launched the NER 300, which is a demonstration of low-carbon technologies, including CCS and renewable energy technologies such as wind energy and concentrated solar power, aimed to encourage private sector investors and EU member states to invest in commercial low-carbon demonstration projects.[68]

IX. Climate Change and Europe's Aviation Sector

Transportation is the second largest greenhouse gas emitting sector, after energy, in the EU and is responsible for approximately 25% of EU greenhouse gas emissions which is a 36% increase from emissions levels in 1990.[69] As a result, the European Commission has put policies in place specific to the transportation sector to reduce these emissions, such as including aviation in the Emissions Trading System and setting limits on carbon dioxide emissions from light-duty vehicles.

Emissions from the aviation sector have been on the rise as a result of the decreasing cost of air travel. In order to mitigate the environmental impact of this increase, the EU has decided to add the aviation sector to the Emissions Trading System and thereby impose a cap on carbon dioxide emissions for all flights that arrive at or depart from an EU airport or from Iceland, Liechtenstein and Norway. Airlines will receive allowances covering a set level of carbon dioxide emissions for their flights per year. At the end of each year, airlines must surrender the number of allowances that are the equivalent to their emissions over the year. Allowances may be traded between other operators under the Emissions Trading System or can be banked for future years.[70]

The total quantity of aviation allowances have been determined based on the carbon dioxide emissions from annual average aviation emissions for 2004, 2005, and 2006. The total quantity of aviation allowances to be allocated in 2012 will be equal to 97% of those historical aviation emissions and will be reduced to 95% between 2013 and 2020. A Directive passed in 2008 provides that 82% of the allowances will be given for free to operators, 15% of the allowances will be allocated by auction, and the remaining 3% will be reserved for future distribution to expanding airlines and new airlines joining the market. The decision specifying the allocation of the allowances is anticipated to be published by the end of September 2011.

Administration of the Emissions Trading System will be carried out by the individual Member States. When an airline's operations are based in the EU and the operator has a licence issued by a Member State, that Member State will be the administrator. However, where an airline's operations are based somewhere else, the Member State in charge of administration will be the State with the greatest estimated aviation emissions performed by that aircraft operator in a base year. Recent lists of aircraft operators and their administering Member States are provided on the European Commission website.[71] In April 2009, the Commission adopted an electronic standard protocol for reporting emissions and tonne-kilometres from aircraft operators.[72] Operators should check the lists on the website and contact their administering Member State to ensure that reporting deadlines are met.

X. Conclusion

This article has provided a brief outline respecting current air emissions regulations and plans for future regulations in Canada and the EU. As can be seen, the governments have introduced and are developing a number of policy and legislative initiatives aimed at reducing greenhouse gases. In British Columbia, the main thrust of these initiatives have been in the area of personal transportation. However, this does not mean that the new and emerging legislation will not have an impact on the larger transportation industry. British Columbia's revenue neutral carbon tax may be a model for other jurisdictions to follow in North America. In addition, mandatory carbon credit payments at points of travel to offset emissions associated with air travel have been recommended, as well as the potential for the inclusion of emissions from air travel into the new cap and trade system,[73] which would result in something similar to what has been implemented in the EU; all of which can be expected to make fuel dependent transportation related activities more expensive in the near future. In addition, the ability of the federal government to manage air, marine and rail transport, may be an area that it will target in its efforts to reduce emissions in the transportation industry and lead to increased regulation. Businesses in the transportation sector should monitor the situation and plan to deal with the expected costs associated with climate change legislation as well as recognize the economic opportunities available through creation of offset projects.

Endnotes

1. "Revenue Neutral Carbon Tax" *Ministry of Environment*, online: Government of British Columbia <http:www.env.govv.bc.ca/cas/mitigation/tax.html>.
2. "National Inventory Report, 1990-2008: Greenhouse Gas Sources and Sinks in Canada" Canada's Submission to the UN Framework Convention on Climate Change (April 2010) at 51, online: <http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=492D914C-2EAB-47AB-A045-C62B2CDACC29>.
3. *Ibid*. at 52.
4. *Ibid*. at 23.
5. "Canadian Environmental Sustainability Indicators 2006" *Statistics Canada*, online: <http://www.statcan.ca/english/freepub/16-251-XIE/2006000/findings/greenhouse/status.htm#2>.
6. *Sulphur in Diesel Fuel Regulations*, SOR/2002-254.
7. *Sulphur in Gasoline Regulations*, SOR/99-236.
8. SOR/2010-189.
9. R.S.C. 1985, c. M-9, s. 3. Note: while this Act was passed in 1992, it was not proclaimed into force until 2007.

10. Transport Canada, *Motor Vehicle Fuel Consumption Standards Act Proclaimed*, online: Government of Canada < http://www.tc.gc.ca/eng/mediaroom/releases-nat-2007-07-h215e-2339.htm>.
11. SOR/2010-201.
12. *Constitution Act*, 1867 s. 91(10).
13. *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals*, S.O.R./2007-86.
14. S.C. 2001, c. 26.
15. S.C. 1996, c. 10.
16. R.S.C. 1985, c. 32.
17. Railway Association of Canada, *Memorandum of Understanding Regarding Locomotive Emissions with the Railway Association of Canada*, online: Government of Canada <http://www.ec.gc.ca/epe-epa/default.asp?lang=En&n=923A1F38-1>.
18. Transport Canada, *2009 Canadian Aviation Industry Report on Emissions Reductions*, online: Government of Canada < http://www.tc.gc.ca/eng/programs/environment-ecofreight-about-voluntary-voluntaryagreementsair-2134.htm>.
19. Environment Canada, *A Climate Change Plan for the Purposes of the Kyoto Protocol Implementation Act*, at 10, online: Government of Canada < http://www.climatechange.gc.ca/Content/4/0/4/4044AEA7-3ED0-4897-A73E-D11C62D954FD/KPIA_2010.pdf>.
20. R.S.C. 1985, c. A-2.
21. S.B.C., 2003, c. 53.
22. *Cleaner Gasoline Regulation*, B.C. Reg. 498/95.
23. *Gasoline Vapour Control Regulation,* B.C. Reg. 226/95.
24. *Renewable and Low Carbon Fuel Requirements Regulation*, B.C. Reg. 394/2008.
25. *Greenhouse Gas Reduction (Vehicle Emissions Standards) Act*, S.B.C. 2008, c. 21, not yet in force.
26. *Ministry of the Environment Legislation and Regulations*, online: Government of British Columbia <http://www.env.gov.bc.ca/cas/legislation/index.html>.
27. *Greenhouse Gas Reduction Targets Act*, Bill 44 -2007. For another example see Alberta's Climate Change and Emissions Management Act, S.A. 2003, c. C-16.7.
28. *Carbon Neutral Government Regulation*, B.C. Reg 392/2008.
29. *Emission Offsets Regulation*, B.C. Reg. 393/2008.
30. *Carbon Tax Act*, S.B.C. 2008, c. 40.
31. *Ibid.* s. 8-11.
32. B.C. Reg. 125/2008.
33. Tony Crossman and Shi-Ling Hsu, "British Columbia Climate Change Law and Policy", *The Law of Climate Change in Canada* (Aurora: Canada Law Book, 2010) at 5-36.
34. *Ibid.* at 5-34.
35. *Ministry of Environment Revenue Neutral Carbon Tax*, online: Government of British Columbia <https://www.env.gov.bc.ca/cas/mitigation/tax.html>.
36. S.B.C. 2008, c. 32.
37. B.C. Reg. 272/2009.
38. BC Climate Action Team, *Meeting British Columbia's Target: A Report from the BC Climate Action Team* (2008) at 20, online: Government of British Columbia. <http://www.env.gov.bc.ca/cas/mitigation/pdfs/CAT_FINAL_REPORT_July_23_2008.pdf>.
39. *Western Climate Initiative*, online: < http://www.westernclimateinitiative.org/>.
40. Minister of State for Climate Action, *British Columbia Climate Action for the 21st Century*, online: Government of British Columbia < http://www.env.gov.bc.ca/cas/pdfs/climate_action_21st_century.pdf>.
41. National Round table on the Environment and the Economy, *Climate Prosperity-Parallel Paths: Canada-U.S. Climate Policy Choices*, online: Government of Canada < http://www.climateprosperity.ca/eng/studies/canada-us/report/canada-us-report-eng.pdf>.
42. *Ibid.*
43. BC Climate Action Team, *Meeting British Columbia's Target: A Report from the BC Climate Action Team* (2008) at 17, online: Government of British Columbia <http://www.env.gov.bc.ca/cas/mitigation/pdfs/CAT_FINAL_REPORT_July_23_2008.pdf>.
44. *Shore Power Regulation*, B.C. Reg. 291/2008.
45. Minister of State for Climate Action, *British Columbia Climate Action for the 21st Century*, online: Government of British Columbia < http://www.env.gov.bc.ca/cas/pdfs/climate_action_21st_century.pdf>.
46. *Canadian Natural Gas Vehicle Alliance*, online: Canadian Natural Gas Vehicle Alliance <http://www.cngva.org/en/home/vehicles–stations/transit-buses.aspx>.
47. *Heckmann Corp will Employ Largest LNG Transport Fleet in North America*, online: NGV Global News <http://www.ngvglobal.com/heckmann-corp-will-employ-largest-lng-transport-fleet-in-north-america-0405>.
48. *Study of Opportunities for Natural Gas in the Transportation Sector*, online: <http://www.cngva.org/media/4302/marbek_ngv_final_report-april_2010.pdf>.
49. *Improved Canadian Technologies*, online: Canadian Natural Gas Vehicle Alliance <http://www.cngva.org/en/home/vehicles–stations/improved-canadian-technology.aspx>.
50. *Highway Tractors*, online: Canadian Natural Gas Vehicle Alliance <http://www.cngva.org/en/home/vehicles–stations/highway-tractors.aspx>.
51. *ecoFREIGHT*, online: Transport Canada, < http://www.tc.gc.ca/eng/programs/environment-ecofreight-menu-1131.htm>.
52. Pacific Carbon Trust, online: <http://www.pacificcarbontrust.com/About/tabid/57/Default.aspx>.
53. B.C. Reg. 393/2008.

54. *Ibid*. at s. 3(1).
55. Pacific Carbon Trust, Guidance Document to the BC Emission Offsets Regulation v2.0, (2010) at 6, online: < http://www.pacificcarbontrust.com/LinkClick.aspx?fileticket=lZCb%2f%2bt1cMU%3d&tabid=80&mid=572>.
56. *Ibid*. at 8.
57. *Ibid*. at 33.
58. Pacific Carbon Trust, online: <http://www.pacificcarbontrust.com/About/tabid/57/Default.aspx>.
59. *Canada's Offset System for Greenhouse Gases*, online: Environment Canada <http://www.ec.gc.ca/creditscompensatoires-offsets/default.asp?lang=en&n=0DCC4917-1>
60. Climate Action, *The EU Climate and Energy Package*, online: European Commission <http://ec.europa.eu/clima/policies/package/index_en.htm>.
61. *Ibid*.
62. *Ibid*.
63. Climate Action, *Emissions Trading System*, online: European Commission <http://ec.europa.eu/clima/policies/package/ets/index_en.htm>.
64. Climate Action, *Legal Framework*, online: European Commission <http://ec.europa.eu/clima/policies/effort/framework_en.htm>.
65. Climate Action, *Effort Sharing Decision*, online: European Commission <http://ec.europa.eu/clima/policies/effort/index_en.htm>.
66. Climate Action, *Fuel Quality*, online: European Commission <http://ec.europa.eu/clima/policies/transport/fuel/index _en.htm>.
67. Climate Action, *A Legal Framework for the Safe Geological Storage of Carbon Dioxide*, online: European Commission <http://ec.europa.eu/clima/policies/lowcarbon/ccs_directive _en.htm>.
68. Climate Action, *NER 300,* online: European Commission <http://ec.europa.eu/clima/policies/lowcarbon/ner300 _en.htm>.
69. Climate Action, *Reducing Emissions from Transport*, online: European Commission <http://ec.europa.eu/clima/policies/transport/index _en.htm>.
70. Climate Action, *Reducing Emissions from the Aviation Sector*, online: European Commission <http://ec.europa.eu/clima/policies/transport/aviation/index _en.htm>.
71. Climate Action, *Aircraft Operators and their Administering Member States*, online: European Commission <http://ec.europa.eu/clima/policies/transport/aviation/operators _en.htm>.
72. Climate Action, *Monitoring, Reporting and Verification for Aviation*, online: European Commission <http://ec.europa.eu/clima/policies/transport/aviation/monitoring _en.htm>.
73. BC Climate Action Team, *Meeting British Columbia's Target: A Report from the BC Climate Action Team* (2008) at 20, online: Government of British Columbia <http://www.env.gov.bc.ca/cas/mitigation/pdfs/CAT_FINAL_REPORT_July_23_2008.pdf>.