équiterre

MAKING THE FEDERAL EXCISE TAX ON FUEL INEFFICIENT VEHICLES MORE EFFECTIVE

These recommendations were prepared for Équiterre

Authors: Rachel Samson and Sara Rose-Carswell
Carist Consulting Incorporated
(http://www.caristconsulting.com/index.html)
September 2016

Table of Content

ABOUT: ÉQUITERRE

Changing the world, one step at a time

With more than 140,000 followers, 20,000 paying members and 1953 media mentions (in 2014), Equiterre is Quebec's most prominent environmental group[i] and one of the most influential ENGO federally. For over 20 years, Equiterre (legal name ASEED) has worked with citizens, farmers, organizations, think tanks, businesses, municipalities and governments of all stripes to influence environment and climate change policies and related practices in Quebec and Canada. Équiterre's national policy work is led out of its Ottawa office.

Contact: Annie Bérubé
Director, Government Relations, Équiterre
aberube@equiterre.org
www.equiterre.org

RECOMMENDATION

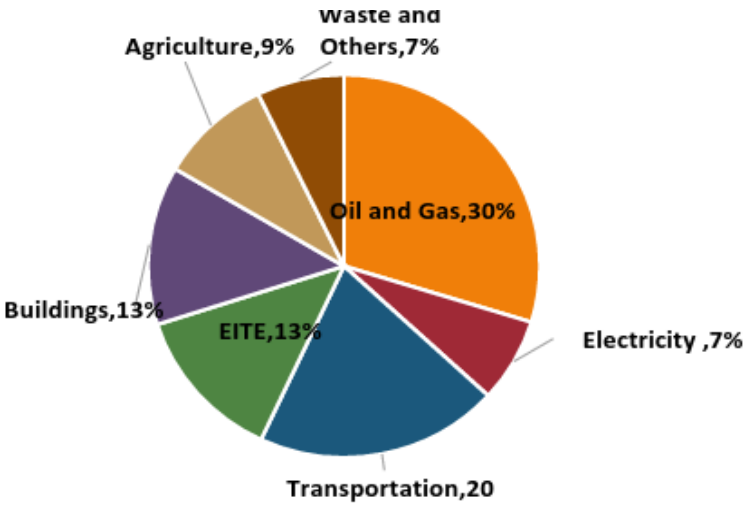
Make the Federal tax on Fuel Inefficient Vehicles more Effective: The current tax on fuel inefficient vehicles in Canada applies to too few vehicles and at too low rates to be effective in influencing vehicle purchasing decisions and contributing to climate change goals. Adjusting the tax to include more vehicles, and increase rates for more expensive vehicles, could result in an additional $200 - $600 million in additional annual revenue for the federal government, while reducing GHG emissions by between 1 and 2 Mt annually (see Annex 2 for caveats and details relating to these estimates).

INTRODUCTION

Canada has committed to reduce GHG emissions by at least 30% below 2005 levels by 2030. According to the Pan-Canadian Framework on Clean Growth and Climate Change, GHG emissions are projected to rise to 742 Mt of CO2 equivalent in 2030. New climate policies as well as measures announced in the Pan-Canadian Framework are expected to leave a gap of 44 Mt to reach the 524 Mt 2030 target.[1] In addition, according to Canada's Mid-Century Long-Term Low Greenhouse Gas Development Strategy more ambitious policies will be required now to put us on a deep decarbonization pathway to 2050. Fiscal policy changes now are critical to shifting private investors' capital to put Canada on this long-term low carbon economy trajectory.

There are several key sectors of the economy where greenhouse gas emissions are projected to substantially grow to 2030 under current measures: oil and gas, freight transport, chemicals and fertilizers, and buildings.[2] Greenhouse gas emissions from oil and gas and chemical and fertilizer sectors should be responsive to the proposed national carbon pricing mechanism. However, relatively low carbon prices (in the range of $10 to $30/tonne), will be insufficient to induce all of the key changes that are needed to transition to a low-carbon economy and achieve GHG targets in 2030, particularly in the transportation sector where individual and company choices on driving behavior and vehicle purchase are key drivers of emissions growth. Without immediate fiscal incentives, this sector could continue to be locked into high emitting vehicle fleet for years to come.

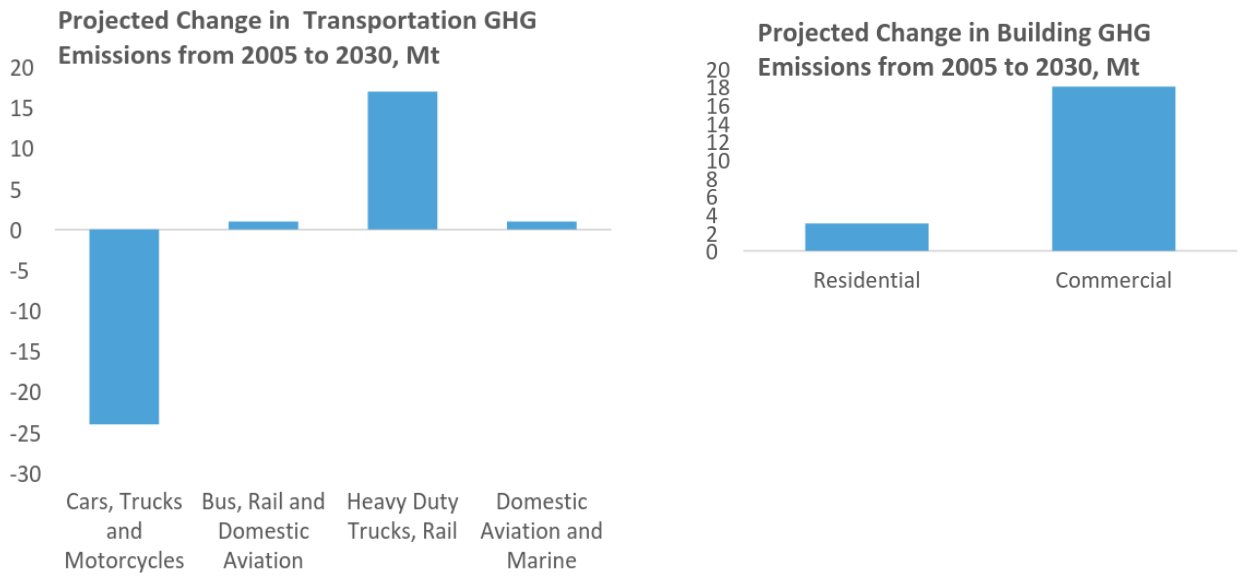
Figure 1: Projected 2030 GHG Emissions, % of Total Emissions by Economic Sector



[1] Government of Canada (2016), Environment and Climate Change Canada, *Canada's Second Biennial Report on Climate Change*, http://ec.gc.ca/GES-GHG/default.asp?lang=En&n=02D095CB-1 (accessed September, 2016).
[2] *Ibid.*

Source: Government of Canada (2016), Canada's Second Biennial Report on Climate Change

Figure 2: Freight Transport is a key area of projected emissions growth in Canada to 2030



Source: Canada's Second Biennial Report on Climate Change (2016)

Achieving Canada's 2030 emission reduction goals will require additional, complementary policies beyond carbon pricing that help to align economic and social policy frameworks towards long term GHG reduction objectives.

Making the Federal tax on Fuel Inefficient Vehicles more Effective: The current tax on fuel inefficient vehicles in Canada applies to too few vehicles and at too low rates to be effective in influencing vehicle purchasing decisions and contributing to climate change goals. Adjusting the tax to include more vehicles, and increase rates for more expensive vehicles, could result in an additional $200 - $600 million in additional annual revenue for the federal government, while reducing GHG emissions by between 1 and 2 Mt annually (see Annex 2 for caveats and details relating to these estimates).

MAKING THE FEDERAL TAX ON FUEL INEFFICIENT VEHICLES MORE EFFECTIVE

The Government of Canada currently places an excise tax on the purchase of a few classes of the most inefficient vehicles on Canadian roads, known as the "green levy".[3] Thus far, the tax appears to have little influence on purchasing decisions, as too few vehicles are covered, the tax is based on fuel efficiency instead of CO2 emissions, and there is limited awareness of the tax and its role in achieving climate change goals.

Trends in Vehicle Purchasing

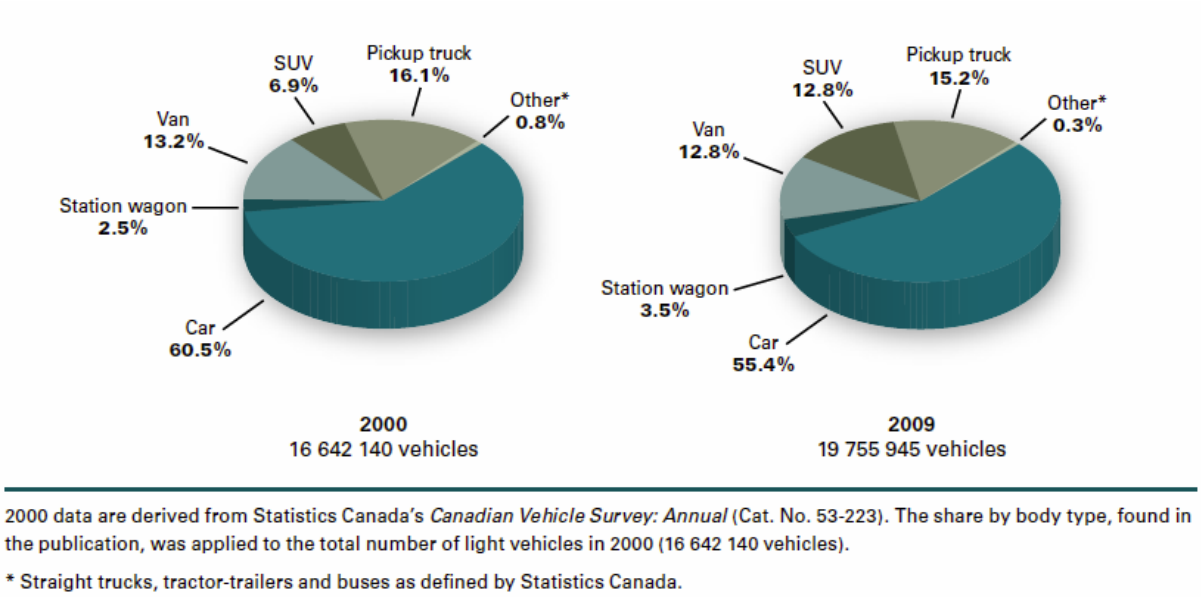
In 2015, Canadians purchased new vehicles in record numbers, with light trucks (pickup trucks, SUVs and vans) once again among the most popular choices.[4] According to the last Canadian Vehicle Survey conducted (2009) between 2000 and 2009, the number of vehicles in the "light truck" category increased relative to cars. The number of SUVs almost doubled, and this category of the light vehicle fleet increased from 6.9 percent to 12.8 percent. Meanwhile, the share of cars *decreased* from 60.5 percent to 55.4 percent, while the share of station wagons increased by 1 percentage point to reach 3.5 percent in 2009. At the time of the 2009 survey, there were 1.47 vehicles per Canadian household on average (an increase from 1.43 in 2000).[5]

[3] Most of the tax is on luxury brand automobiles, so a small portion of the passenger vehicle fleet. For a complete list of vehicles taxed under the green levy, see Annex 1.

[4] 2015 Top 5 selling vehicles in Canada: Ford 150 (118,837), RAM 1500 (91,195), Honda Civic (64,950), GMC Sierra (53,727), Ford Escape 47,726) Sources: Autotrader.ca website: http://www.autotrader.ca/newsfeatures/20160106/canadas-25-best-selling-cars-in-2015/#jByYtGscwY5y958w.97, See also http://www.autofocus.ca/news-events/news/canadas-30-best-selling-vehicles-in-2015 (accessed in July 2016)

[5] Government of Canada (2011), Natural Resources Canada, *Canadian Vehicle Survey 2009*, http://oee.nrcan.gc.ca/publications/statistics/cvs09/pdf/cvs09.pdf (accessed in August 2016).

Figure 3: Light Vehicles by Body Type, 2000 and 2009

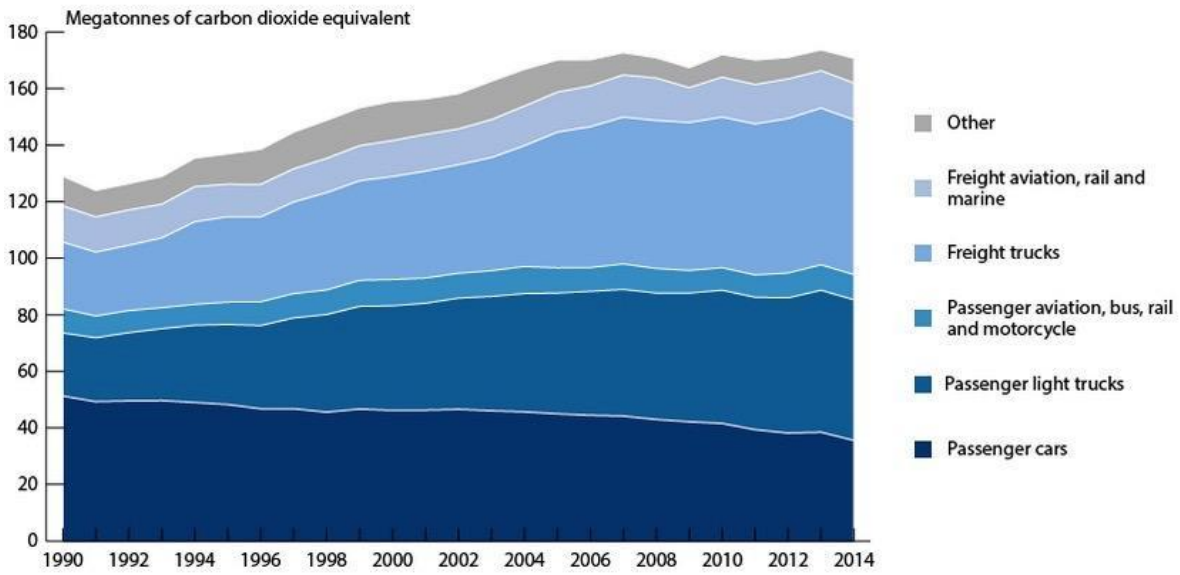


Source: Natural Resources Canada, 2009 [6]

Figure 4 below illustrates that in the 2014 passenger fleet, passenger "light trucks" were a greater source of GHG emissions than all other passenger vehicles. Although both passenger cars and light trucks have become relatively more fuel efficient, this does not offset the increases in emissions due to the shift in the vehicle fleet towards light trucks since 1990.[7]

[6] Government of Canada (2011), Natural Resources Canada, *Canadian Vehicle Survey 2009*, http://oee.nrcan.gc.ca/publications/statistics/cvs09/pdf/cvs09.pdf (accessed in August 2016).
[7] *Ibid.*

Figure 4: Transportation sector greenhouse gas emissions, Canada 1990 - 2014



Source : Environnement et Changement climatique Canada[8]

Environmental Performance of Efficient vs. Inefficient Vehicles

There is significant variation in CO2 emissions per kilometer across vehicles (Table 1). In most vehicle classes, there is a range of choice, with a number of vehicles receiving some of the top CO2 performance rankings and hybrid or electric options available. Luxury sports cars are the worst performers across car categories, but there are also a number of non-luxury vehicles that receive poor CO2 ratings. There are fewer choices and less variation in performance in vans and pick-up trucks, but some vehicles still outperform their counterparts.

In the mid-size car category, for example, the worst performing vehicle emits 3.5 times more CO2 per kilometer than the best performing vehicle. In the standard SUV category, the worst performing vehicle emits 2.5 times more than the best performing vehicle. In the van and standard pick-up truck categories, the worst performers emit 1.2 and 1.5 times more CO2 than the best performers respectively. Increased private and publicly funded innovation across all categories - driven by more stringent standards for new vehicles - holds the potential to expand the range of options available with strong environmental performance.

[8] CANADA. MINISTÈRE DE L'ENVIRONNEMENT ET DU CHANGEMENT CLIMATIQUE. *Émissions de gaz à effet de serre par secteur économique,* https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=Fr&n=F60DB708-1,2016 (consulté en août 2016).

Table 1. Comparison of Environmental Performance of Vehicles by Class

	Make/Model	Fuel Efficiency (Combined City-Highway L/100 km)	CO2 Emissions (g/km)	CO2 Rating (1=worst, 10=best)
CARS				
MINICOMPACT (L)				
Best	Fiat 500 Hatchback	6.8	160	8
Worst	Aston Martin DB9 GT	15.6	365	2
TWO-SEATED (S)				
Best	Mazda MX-5	7.8	183	7
Worst	Lamborghini Aventador Roadster	19.3	452	1
Battery-Electric Option	SMART FORTWO Electric drive	2.2	0	10
SUBCOMPACT (S)				
Best	Ford Fiesta SFE	6.6	153	8
Worst	Bentley Continental GT Convertible	16	375	2
Plug-In Hybrid Option	BMW i3 REX	6.0	22	10
Battery-Electric Options	BMW i3	1.9	0	10
	Chevrolet Spark EV	2.0	0	10
	Mitsubishi i-MiEV	2.1	0	10
COMPACT (C)				
Best	Prius c	4.7	111	10
Worst	Rolls-Royce Phantom Drophead Coupe	17.2	404	2
Plug-In Hybrid Option	Chevrolet Volt	5.6	32	10
Battery-Electric Option	Ford Focus Electric	2.2	0	10

MID-SIZE (M)				
Best	Toyota Prius	4.5	104	10
Worst	Bentley Flying Spur (12 cylinder)	16	375	2
Plug-in Hybrid Option	Hyundai Sonata Plug-in	5.9	63	10
Battery-Electric Option	Nissan LEAF	2.1	0	10
FULL-SIZE (M)				
Best	Ford C-Max Hybrid	6.0	140	9
Worst	Rolls-Royce Phantom EWB	17.2	404	2
Plug-in Hybrid Option	Mercedes-Benz S 550e	9.0	141	9
Battery-Electric Option	Tesla Model S	2.3 – 2.6	0	10
VANS				
MINIVANS (V)				
Best	Mazda 5	9.7	226	5
Worst	Chrysler Town and Country FFV	12	282	4
PASSANGERS VANS (VP)				
Best	Ford T-150 Wagon	14.6	342	3
Worst	Chevrolet Express 3500 Passenger	19.8	465	1
	GMC Savana 3500 Passenger	19.8	465	1
PICKUP TRUCKS				
SMALL (PS)				
Best	Chevrolet Colorado (2.5 L, A6)	10.5	247	5
	GMC Canyon	10.5	247	5

Worst	Nissan Frontier 4WD (transmission M6)	13.7	322	3
STANDARD (PL)				
Best	Ford F-150	10.9	256	5
Worst	Toyota Tundra 4WD (5.7 L)	16.3	380	2
SPORT UTILITY VEHICULES (SUVs)				
SMALL (US)				
Best	Toyota RAV4 Hybrid AWD	7.2	169	8
Worst	Jeep Wrangler Unlimited 4x4 (A5)	13.4	314	4
STANDARD (UL)				
Best	Toyota Highlander Hybrid AWD LE	8.4	195	7
Worst	Mercedes-Benz AMG G 65	21.4	476	1
Plug-in Hybrid Option	BMW X5 xDrive40e	9.9	153	8
Battery-Electric Option	Tesla Model X	2.5 – 2.6	0	10

Source: NRCan 2016 Fuel Consumption Guide

Current Federal Taxation of Fuel inefficient Vehicules

The federal excise tax on fuel inefficient vehicles or green levy was enacted by the federal government in March 2007, to replace the existing heavy vehicle weight tax. The green levy still applies to *"automobiles (including station wagons, vans, sport utility vehicles) designed primarily for use as passenger vehicles, but not including pick-up trucks, vans equipped to accommodate 10 or more passengers, ambulances, and hearses, in accordance with the vehicle's fuel-efficiency rating."*[9]

The list of vehicles actually targeted under the green levy illustrates the very narrow target for this tax (see Annex 2 for a complete list).[10] It is similar in design to the U.S. "Gas Guzzler Tax", in capturing only the most polluting vehicles on the market, and is a tax based solely on the vehicle's average weighted fuel consumption.[11] The calculation of the green levy is determined by Natural Resources Canada and combines 55% of a vehicle's city fuel consumption rating with 45% of the highway fuel consumption rating. [12]

Automobiles that have a weighted average fuel consumption rating of 13 or more litres per 100 kilometres will be subject to the excise tax at the following rates:

- at least 13 but less than 14 litres per 100 kilometres, $1,000;
- at least 14 but less than 15 litres per 100 kilometres, $2,000;
- at least 15 but less than 16 litres per 100 kilometres, $3,000; and
- 16 or more litres per 100 kilometres, $4,000.[13]

---

[9] Government of Canada (2007), Canada Revenue Agency, *Imposition of Excise Tax on Fuel-Inefficient Vehicles*, http://www.cra-arc.gc.ca/E/pub/et/etsl64/etsl64-e.html (accessed in July 2016)

[10] Government of Canada (2007), Canada Revenue Agency, *Notice to All Licensed Manufacturers and Wholesalers, and Importers of Automobiles,* http://www.cra-arc.gc.ca/E/pub/et/etsl64/etsl64-e.html (accessed in July 2016)

[11] United States Government (2016), Environmental Protection Agency, *Gas Guzzler Tax,* https://www3.epa.gov/fueleconomy/guzzler/index.htm (accessed in July 2016).

[12] Government of Canada (2007), Canada Revenue Agency, *Notice to All Licensed Manufacturers and Wholesalers, and Importers of Automobiles,* http://www.cra-arc.gc.ca/E/pub/et/etsl64/etsl64-e.html , and Government of Canada (2007), Canada Revenue Agency, *Imposition of Excise Tax on Fuel-Inefficient Vehicles*, http://www.cra-arc.gc.ca/E/pub/et/etsl64/etsl64-e.html (accessed in July 2016).

[13] Government of Canada (2007), Canada Revenue Agency, *Imposition of Excise Tax on Fuel-Inefficient Vehicles*, http://www.cra-arc.gc.ca/E/pub/et/etsl64/etsl64-e.html. Or see http://www.cra-arc.gc.ca/E/pub/et/etsl64/etsl64-e.pdf (accessed in July 2016).

Box 1. Canada's Gas Guzzler Tax...

The Excise Tax on Fuel-Inefficient Vehicles ("Green Levy") targets only the worst polluters in the Canadian passenger fleet. Many are from luxury brands such as Bentley and Rolls Royce, or expensive racing cars like Aston Martin or Lamborghini. Levies ranging from $1,000 to $4,000 are unlikely to discourage a luxury car buyer, nor do they fully account for external environmental costs. The tax does capture some mid-price range, 8 cylinder engine, "muscle car" models like the Chevrolet Camaro Z/28, or the Dodge Challenger, where tax may have more of an effect on buyers. Only three SUVs pay excise tax. The Toyota Sequoia, and Nissan Armada are the most polluting SUVs with a weighted fuel consumption of over 14.6 L/100 km, and are taxed at $2,000. The Jeep Grand Cherokee 4x4, is taxed at $1000. With a 6.4 L, 8 cylinder engine, it averages 16.6 L/100 km in the city and 10L/100 km on highways. Many Canadian vehicles which are below the 13 L/100 km threshold greatly exceed this level for city driving, but currently pay no tax. Source: http://www.cra-arc.gc.ca/E/pub/et/etsl64/list/lst_vh-2015-eng.html, For a list of vehicles taxed in Canada, see Annex 1.

The tax applies mainly to luxury vehicles, performance/racing cars, and large, expensive SUVs. However, it is not set at a high enough level to create a shift in consumer purchasing decisions towards more efficient vehicles. Consider the worst performer in the two-seater car category, the Lamborghini Aventador Roadster. Under the current approach, purchasers of the vehicle – which costs more than $400,000 – would be required to pay only $4000. This is less than 1% of the vehicle purchase price, for a car that emits 2.5 times the best performer in its class. The Aston Martin DB9, which rates worst in its class of minicompact vehicles, and retails for more than $200,000, would be required to pay only $1000.

The fuel consumption threshold for application of the tax is also too high, with many of the worst performing vehicles in each category not captured and the van, pick-up truck and heavy-duty vehicle categories exempt.

Box 2. "Pickup" trucks are not taxed

The federal excise tax on fuel-inefficient vehicles does not apply to pickup trucks. The small and compact car market share in Canada is increasing, but trucks such as Ford's F-150 (#1) and Ram 1500 (#2) are repeatedly the top-selling passenger vehicles in Canada. NRCan's 2016 CO2 ratings (see **Table 1**) rank vehicles from 1 (*worst*) to 10 (*best*). Ford's F-150 scores highest in the standard pickup truck category at 5. Worst is the Toyota Tundra 4WD (5.7 L engine) with a score of 2.

Sources: http://www.autotrader.ca/newsfeatures/20160106/canadas-25-best-selling-cars-in-2015/#jByYtGscwY5y958w.97; and http://www.autofocus.ca/news-events/news/canadas-30-best-selling-vehicles-in-2015

Many OECD Countries have Vehicle Purchase or Registration Taxes

Many OECD countries have some kind of registration tax for vehicles, with the majority of these based on CO2 emissions standards, as well as relative fuel or energy efficiency. In Finland, diesel cars pay an additional tax (currently set at EUR 0.055 per day per 100 kilograms of weight) that is not applicable to gasoline cars.[14] New Zealand has road user charges based on the type of vehicle per kilometre driven by diesel vehicles. [15]

Norway, a leader in electric vehicle market penetration (see Box 4, below), has a registration tax on vehicles, and an annual excise duty for light and heavy vehicles. In 2011, the registration tax created EUR 2.6 billion in fees and is the largest source of environmentally related revenues for the Norwegian government out of a total of EUR 8.2 billion. [16]

In the *bonus-malus* scheme used in France since 2008, the purchase of a car is either taxed or subsidized depending on the efficiency of the vehicle. Vehicle taxes also depend on other factors, such as emissions, power and fuel type.[17] The most polluting cars under this scheme are subject to a tax of $2,600 Euros (approximately Cdn $3760). Less polluting cars can receive a price reduction up to $1,000 Euros (approximately Cdn $1450). While the *bonus-malus* has been very effective in creating a shift to more efficient and cleaner vehicles, it was costly and the net environmental effect was negative, at least in the short term, due to increased upstream and downstream effects, as well as vehicle mileage (see Box 3). [18]

[14] Harding, M. (2014).
[15] Harding, M. (2014).
[16] Bragadóttir, H. et al. (2014). See Table 30, p. 82.
[17] Harding, M. (2014).
[18] D'Haultfœuille, X. et al., (2012), *The Environmental Effect of Green Taxation: The Case of the French "Bonus/Malus"* retrieved at: http://www.crest.fr/images/doctravail/doctravail2012/2012-13.pdf.

Box 3. France's Bonus-Malus Feebate: a lesson in revenue neutral design

In an evaluation of the *bonus-malus* feebate, its effect on the French vehicle market was described as "*spectacular*". While the regime promoted a shift from larger to smaller, more efficient cars, new car sales rose by 13% and overall GHG emissions increased. The French government expected the *bonus-malus* to be a revenue neutral measure, but it ended up costing the government 285 million Euros in 2008. Evaluation of the program concluded that the main policy design problem was with the "pivot point": dividing less polluting vehicles which receive a rebate (*bonus*) from those more polluting which will pay the tax (*malus*). The pivot point was too low and the rebates too generous. "As the first-order terms in the policy effects are manufacturing or traveling scale effects, the most important point to ensure CO2 reductions is to calibrate it in order to decrease or keep constant total sales". The study concluded however that feebates can still be very efficient tools if carefully designed.
Source: D'Haultfœuille, X. et al., "The Environmental Effect of Green Taxation:The Case of the French "Bonus/Malus"(2012), pp.2, 35, http://www.crest.fr/images/doctravail/doctravail2012/2012-13.pdf

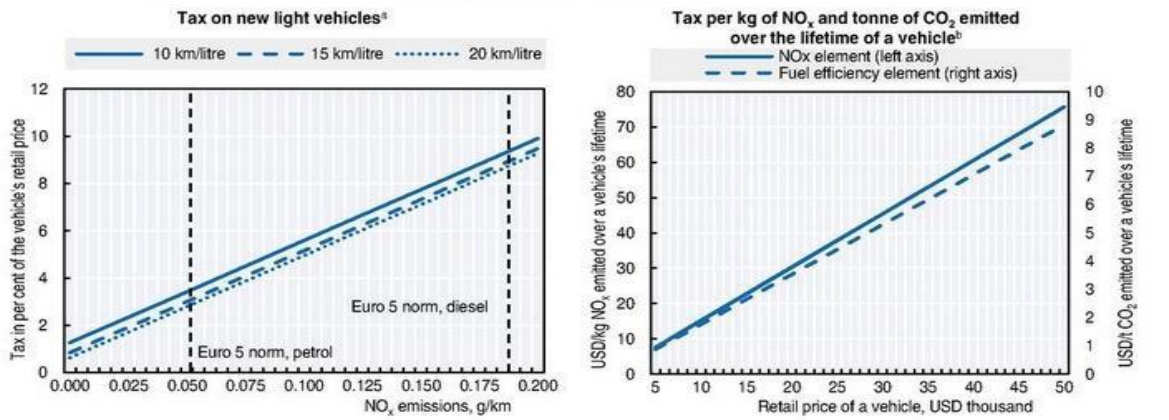
Box 4. A GST exemption for Zero Emission Vehicles? Norway's waiver on VAT...

Norway is considered a successful model of electric vehicle (EV) adoption, currently with the highest market penetration of EVs in the world (26.5% March 2015). A key factor noted for success has been Norway's VAT exemption for EV purchases. Unlike many feebate programs which must budget for a limited rebate program, the Norway VAT exemption allows for an ongoing "rebate". Norway has a registration tax on new vehicles and EVs are exempt from this as well. The combination of these and several other fee exemptions makes the purchase of EVs more attractive to Norwegian consumers and helps level the playing field with gasoline and diesel vehicles.
Source: Pacific Institute for Climate Solutions, "Norway's Electric Vehicle Revolution: lessons for British Columbia", https://pics.uvic.ca/sites/default/files/uploads/publications/Norway%20EV%20Briefing%20Note%20October%202015.pdf

Chile is another OECD country using a vehicle registration tax. The Chilean tax varies according to both a vehicle's test-cycle urban fuel efficiency and NOx emissions, as well as the vehicle retail price. The NOx element of the tax is being phased in gradually. In 2016, the NOx element will be 75% of the full value to be applied from 2017. It is not yet possible to assess the overall impact of the tax but indicators suggest that consumption is increasing market share

for low-emission vehicles.[19] In Figure 5 below Chilean vehicle registration taxes vary depending on the NOx emissions for different levels of fuel efficiency. The tax rate per unit of both NOx and CO2 lifetime emissions increases with the price of the vehicle. More expensive vehicles (USD 20,000 and up) are taxed over USD 30 per kg of NOx. The CO2 tax on lifetime vehicle emissions is lower, but captures all vehicles below the USD 30,000 threshold, and is based on the new Chilean tax for stationary sources of carbon emissions (USD 5/tonne CO2E). The Chilean registration tax does not apply to commercial vehicles or SUVs.

Figure 5: Chile's vehicle tax is lower for cleaner and cheaper vehicles



a) The tax level depends on the price of the vehicles. In this chart, data refer to vehicles with an assumed retail price of CLP 6 000 000 (approximately USD 9 000). The tax rates shown are for 2017.
b) The calculation assumes that each vehicle is driven 200 000 km over its lifetime. The tax rates shown are for 2017.
Source: OECD calculations.

StatLink http://dx.doi.org/10.1787/888933388501

Source : OCDE. Environmental Performance Reviews: Chile 2016.

[19] OECD/ECLAC (2016), *OECD Environmental Performance Reviews: Chile 2016*, OECD Publishing, Paris.DOI: http://dx.doi.org/10.1787/9789264252615-en The tax referred to is being phased in since being enacted by the Chilean Government in January 2015.

Vehicle Taxes can Influence Purchasing Decisions

Nicholas Rivers and Brandon Schaufele conducted a review of the Ontario feebate program which ran from 2000-2011, and is no longer in place.[20] Ontario's feebate program (the *Tax and Credit for Fuel Conservation* program) began as a taxation scheme similar in design to the current federal excise vehicle tax. Table 2 lists the fee in 1989 at $600 for cars with a city/highway fuel consumption of over 9.5-12L/100km, and a maximum of $3500 for cars over 18 L/100 km.

In 1990, the government of Ontario tried to double and extend this initial schedule but political pressure resulted in a compromise. More vehicles, including SUVs, were added in 1990, but passenger vans and light trucks remained exempt. As shown in Table 2, a separate fees list for SUVs was created with much lower fees than for cars. The government also began the rebate for more efficient vehicles (fuel consumption rates below 6 L/100 km). Vehicle efficiency did improve over the subsequent feebate period, allowing more cars to become eligible for rebates. Offsetting this was a dramatic increase in the number of SUVs in the fleet, shown in Figure 6 below.

Table 2: Schedule of new vehicle fees and rebates for the Ontario Feebate Program 1989 to 2010

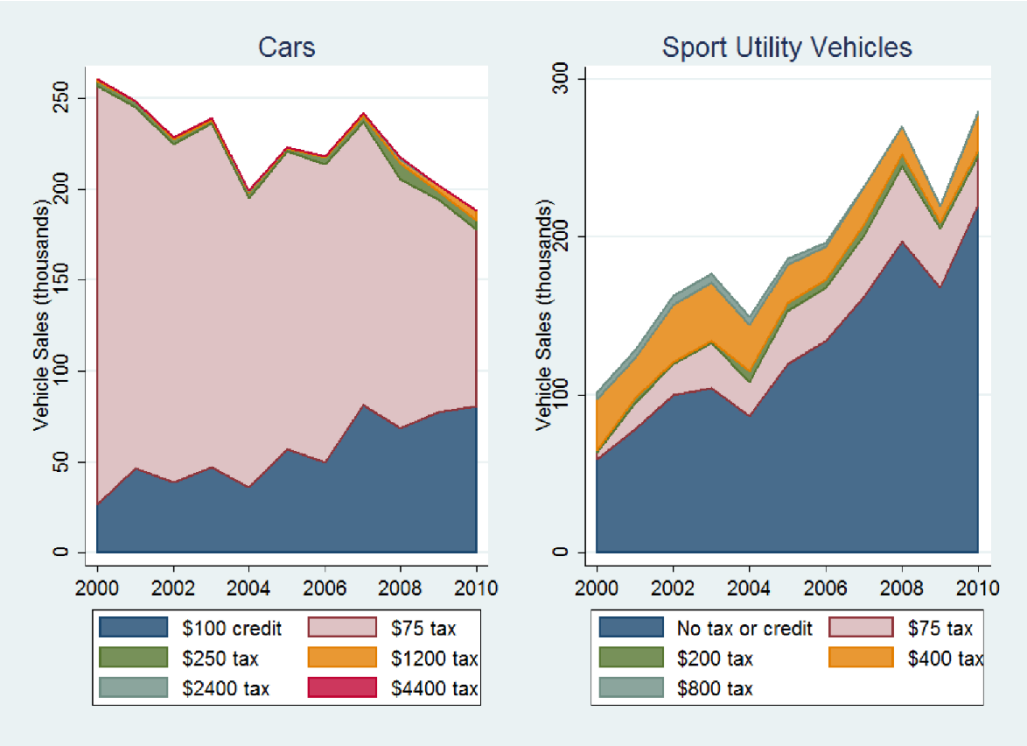
Highway fuel efficiency rating (L/100km)	1989 Cars	1990 Cars	1991-2010 Cars	1991-2010 SUVs
less than 6.0	-	-	-100	-
6.0-7.9	-	-	75	-
8.0-8.9	-	200	75	75
9.0-9.4	-	700	250	200
9.5-12.0	600	1200	1200	400
12.1-15.0	1200	2400	2400	800
15.1-18.0	2200	4400	4400	1600
over 18.0	3500	7000	7000	3200

All fees and subsidies are in nominal Canadian dollars. Sources: Government of Ontario (1989), Government of Ontario (1991) and Government of Ontario (2010).

Source: Rivers, N. and Schaufele, B., 2014, *New Vehicle Feebates: Theory and Evidence*

[20] Rivers, N. and Schaufele, B., (2014) *"New Vehicle Feebates: Theory and Evidence"*, retrieved at: http://www.ivey.uwo.ca/cmsmedia/1361413/new-vehicle-feebates.pdf

Figure 6: Sales of passenger cars and SUVs in Ontario by vehicle feebate class



Source : RIVERS, N. et B. SCHAUFELE, B. *New Vehicle Feebates: Theory and Evidence,* http://www.ivey.uwo.ca/cmsmedia/1361413/new-vehicle-feebates.pdf, 2014.

Ontario indicates this small change of $175 per vehicle resulted in consumers purchasing other vehicles. That Mustang sales also fell in Ontario relative to vehicle markets in other Canadian provinces at the time is further confirmation. The authors caution it is not clear these results would hold true for other models, however. [21]

In order to draw broader conclusions about the efficiency of feebates, the study analyzed the data available from Ontario and other provinces to find the "true underlying behavioural response" to the feebate, and to conclude whether it was "welfare improving". Rivers and Schaufele were able to confirm that Ontario's feebate had a significant effect on the mix of vehicles in the passenger fleet, and that a $1000 dollar fee reduces the per vehicle market share by approximately 30%.[22] These results apply across vehicle specifications and other studies have yielded similar results. In other OECD countries the results of similar studies have been in the same approximate range of $1000.[23]

[21] Rivers, N. and Schaufele,B. (2014).
[22] Rivers, N. and Schaufele, B. (2014).
[23] Rivers, N. and Schaufele, B., (2014).

The Federal Excise Tax on Fuel-Inefficient Vehicles should be redesigned to increase its effectiveness

The primary goal of the excise tax on fuel-inefficient vehicles should be to influence consumer purchasing decisions, shifting demand towards lower emitting vehicles. Shifting the vehicle fleet will reduce GHG emissions from transportation, while also helA central conclusion of the Rivers study is that modest fees and rebates can create meaningful changes in vehicle purchasing decisions. The results of a small tax increase on sales of the Ford Mustang illustrates the effect of a relatively modest feebate on consumer decision making. In 2004 the Mustang was redesigned with increased engine size and more horsepower and as a result moved from 8.9L/100km to a greater than 9.0 L/100km fuel consumption rating. Its fee rate suddenly rose from $75 to $250. The analysis of the data in ping to grow the market for new vehicle innovations that improve environmental performance.

The current coverage of the tax is too narrow and the tax is too low to effectively influence consumer choice. A broader range of vehicles should be included, and tax rates should be tied to both CO2 emissions and the retail price of vehicles. Other OECD countries are basing their vehicle taxes on CO2, and the measure should be more directly linked to Canada's climate change objectives. It also addresses the issue of diesel vehicles, which may be more fuel efficient but emit greater CO2 emissions per litre.

There is now comprehensive environmental and consumer information for vehicle buyers which can also assist in the re-design of the federal excise tax on fuel inefficient vehicles. In addition to the combined fuel consumption rating, NRCan now provides information on individual vehicle CO2 emissions, as well as a CO2 rating. All light passenger vehicles (including large vans, SUVs and light trucks) are given a CO2 rating ranked from 1 (worst) to 10 (best).[24] A list of the most efficient vehicles, including conventional and "advanced technology" vehicles is also available.[25] In January 2016, the federal government announced new, improved environmental labeling standards for all vehicles that will help improve consumer awareness. [26]

---

[24] Government of Canada (2016), Natural Resources Canada, 2016 Fuel Consumption Guide, http://www.nrcan.gc.ca/energy/efficiency/transportation/cars-light-trucks/buying/7487 (accessed in August 2016).

[25] Government of Canada (2016), Natural Resources Canada, Most Fuel Efficient Vehicles, http://www.nrcan.gc.ca/energy/efficiency/transportation/cars-light-trucks/buying/7479 (accessed in July 2016).

[26] Government of Canada (2016), Natural Resources Canada, EnerGuide Label for Vehicles, http://www.nrcan.gc.ca/energy/efficiency/transportation/cars-light-trucks/buying/7483 (accessed in July 2016).

RECOMMENDATIONS

1. **Apply the federal excise tax on fuel inefficient vehicles to all cars and SUVs that receive a CO2 rating below 6 (based on NRCan's annual Fuel Consumption Guide).** This preserves a range of vehicle choices at a variety of price points that would not be subject to the tax, while extending the coverage of the tax to a greater number of vehicles.

2. **Apply the excise tax to all minivans and pick-up trucks that receive a CO2 rating below 5.** The lower threshold reflects the lower level of market choice for consumers in these categories. As technology improves and lower emission choices become available, the threshold could be increased.

3. **Base the rate of the tax on the CO2 rating and retail vehicle purchase price, with those with the worst rating (1) and highest retail prices facing the highest taxes.**

   For example:

Vehicule	Tax as a % of Vehicule Purchase Price
1	10%
2	9%
3	8%
4	7%
5	5%

Such a tax structure would mean that the Lamborghini Aventador Roadster, ranked at a 1 and retailing for around $400,000, would face a tax of $40,000. On the other hand, a vehicle ranked at a 5 and costing $30,000 would face a tax of only $1,500.

4. **Develop a CO2 rating for heavy-duty vehicles that will allow for the implementation of a similar tax as lower-emitting heavy-duty vehicle options are developed.**

5. **Rename the tax to link it directly to climate change objectives.** For example, it could be called the tax on High-Emission Vehicles.

ESTIMATED IMPACTS

The estimates provided should be considered rough, ballpark estimates only. Please see Annex 2 for details on the assumptions, calculations and caveats behind these estimates.

Revenue impact: The proposed tax change could be expected to result in additional revenue of up to $600 million per year, depending on the tax rate applied, but would likely decrease over time as more low emission vehicles become available.

GHG reduction impact: The changes could result in approximately 1-2Mt of GHG emission reductions per year by 2030, depending on consumer responsiveness to the tax.

Competitiveness and Household Impacts: The competitiveness and household impacts of the tax changes should be minimal. For the most part, consumers will have a choice of vehicle in the same class that would not be subject to the tax. With the tax tied to vehicle purchase price, those paying less for a vehicle will also pay less tax. While those purchasing vans and pick-up trucks, either for work or personal requirements, have fewer low emission choices than car buyers, technology is improving rapidly. Several vehicles in the van and pick-up truck categories currently receive a CO2 rating of 5 and would therefore not be subject to the tax. The number of options with better CO2 ratings is expected to increase over the next 5 years, with Nissan and Chrysler developing electric and plug-in hybrid minivans and Nissan, Ford and others developing electric pick-up trucks. Federal and provincial investments in improved electric vehicle charging infrastructure will also help improve the viability of these options.

OTHER CONSIDERATIONS

Use of Revenue: Some countries and provinces have chosen to use revenue from a tax on high-emitting vehicles to provide a financial incentive for low-emitting vehicles. Referred to as a feebate, the approach is intended to further accelerate the shift towards lower emitting vehicles. However, the case of the Bonus-Malus regime in France shows that it is difficult to match revenues with expenditures in such a program, making it an implementation challenge. Several provinces also already offer financial incentives for the purchase of electric vehicles. Increased revenues could also be used to justify the enhancement of innovation programs that will help accelerate the development of low-emission vehicle options, particularly in the van, pick-up truck and heavy-duty vehicle categories.

Unintended consequences: It is possible that an increase in tax on certain vehicles may cause drivers to keep their cars, or buy used ones, rather than purchase more efficient new models. This issue could be addressed by, for example, waiving the new vehicle tax on those that trade in their older, inefficient vehicle for a more efficient vehicle.

ANNEXES

ANNEX 1. CURRENT APPLICATION OF FEDERAL EXCISE TAX ON THE MOST FUEL INEFFICIENT VEHICLES

X = Regular Gazoline Z = Premium Gazoline

Model	Engine Size (L)	# Cylinders	Trans	Fuel Type	City F.C. L/100 km	Hway F.C. L/100 km	Weighted F.C. L/100 km	Fuel inefficient vehicle tax ($CDN)
ASTON MARTIN								
DB9	5.9	12	A6	Z	16.2	10.7	13.725	1,000
Vanquish	6	12	A8	Z	15.8	9.6	13.01	1,000
V8 Vantage	4.7	8	M6	Z	16.3	10.4	13.645	1,000
Vantage GT	4.7	8	M6	Z	16.3	10.4	13.645	1,000
V8 Vantage S	4.7	8	M6	Z	16.3	10.4	13.645	1,000
V12 Vantage S	6	12	AM7	Z	17.7	10.9	14.64	2,000
AUDI								
R8	4.2	8	M6	Z	19.1	11.3	15.59	3,000
R8	5.2	10	AM7	Z	17	9.6	13.67	1,000
R8	5.2	10	M6	Z	19.1	11.7	15.77	3,000
R8 Spyder	4.2	8	M6	Z	19.1	11.3	15.59	3,000
R8 Spyder	5.2	10	AM7	Z	17	9.6	13.67	1,000
R8 Spyder	5.2	10	M6	Z	19.1	11.7	15.77	3,000
BENTLEY								
Continental GT	6	12	AS8	Z	17	9.8	13.76	1,000
Continental GT Convertible	6	12	AS8	Z	18.1	10.4	14.635	2,000
Flying Spur	6	12	AS8	Z	18.2	10.4	14.69	2,000
Mulsanne	6.8	8	As8	Z	20.3	12.7	16.88	4,000
BMW								
760Lix DriveSedan	6	12	AS8	Z	16.9	9.8	13.705	1,000
CHEVROLET								
Camaro Z/28	7	8	M6	Z	16.3	10.4	13.645	1,000
Camaro ZL1	6.2	8	AS6	Z	18	11.1	14.895	2,000
DODGE								
Challenger SRT Hellcat	6.2	8	A8	Z	16.2	9.6	13.23	1,000
Challenger SRT Hellcat	6.2	8	M6	Z	16.3	10	13.465	1,000
Challenger SRT Hellcat	6.2	8	A8	Z	16.2	9.6	13.23	1,000
Viper SRT Coupe	8.4	10	M6	Z	17.6	10.4	14.36	2,000
JEEP								
Grand Cherokee FFV 4x4	6.4	8	A8	Z	16.6	10.7	13.945	1,000

LAMBORGHINI								
Aventador coupe	6.5	12	AM7	Z	20.7	11	16.335	4,000
Lamborghini Aventador Roadster	6.5	12	AM7	Z	22.7	13.1	18.38	4,000
Huracan	5.2	10	AM7	Z	15.6	10.9	13.485	1,000
Veneno Roadster	6.5	12	AM7	Z	20.9	12.2	16.985	4,000
LAND ROVER								
Range Rover Supercharged	5	8	AS8	Z	15.5	10.6	13.295	1,000
RR (LWB) Supercharged	5	8	AS8	Z	15.5	10.6	13.295	1,000
LEXUS								
LX 570	5.7	8	AS6	Z	17.1	11.6	14.625	2,000
MASERATI								
Granturismo	4.7	8	AS6	Z	16.4	9.7	13.385	1,000
Granturismo Convertible	4.7	8	AS6	Z	16.4	9.9	13.475	1,000
MERCEDES-BENZ								
C 63 AMG Coupe	6.2	8	AS7	Z	16.1	10.4	13.535	1,000
G550	5.5	8	AS7	Z	18.1	13.6	16.075	4,000
G63 AMG	5.5	8	AS7	Z	17.5	13.4	15.655	3,000
GL 550 4 Matic	4.7	8	AS7	Z	15.8	11.2	13.73	1,000
GL 63 AMG	5.5	8	AS7	Z	15.9	11.4	13.875	1,000
ML 63 AMG 4matic	5.5	8	AS7	Z	15.5	11.5	13.7	1,000
S600	6	12	AS7	Z	15.9	9.7	13.11	1,000
S65 AMG	6	12	AS7	Z	16.7	10	13.685	1,000
S65 AMG	6	12	AS7	Z	16.2	9.6	13.23	1,000
SLS AMG GT COUPE	6.2	8	AM7	Z	16.4	10.7	13.835	1,000
SLS AMG GT COUPE	6.2	8	AM7	Z	16.4	10.7	13.835	1,000
NISSAN								
Armada 4WD	5.6	8	A5	X	17.3	11.4	14.645	2,000
ROLLS ROYCE								
Ghost	6.6	12	AS8	Z	17.3	10.5	14.24	2,000
Ghost EWB	6.6	12	AS8	Z	17.3	10.5	14.24	2,000
Phantom	6.7	12	AS8	Z	18.9	10.9	15.3	3,000
Phantom EWB	6.7	12	AS8	Z	18.8	11	15.29	3,000
Phantom COUPE	6.7	12	AS8	Z	18.9	10.9	15.3	3,000
Phantom Drophead CP	6.7	12	AS8	Z	18.8	11	15.29	3,000
Wraith	6.6	12	AS8	Z	16.9	10	13.795	1,000
TOYOTA								
Sequoia 4WD	5.7	8	AS6	X	17	11.9	14.705	2,000

Source: Canada Customs and Revenue http://www.cra-arc.gc.ca/E/pub/et/etsl64/list/lst_vh-2015-eng.html

ANNEX 2: DETAILS ON CALCULATIONS OF REVENUE AND GHG IMPACTS

Extended the coverage and increase the rate of the Federal Excise Tax on Fuel Inefficient Vehicles

Revenue Estimate: $200–600 million annually

Caveat: Ideally, revenue estimates would be calculated using a sophisticated econometric model that incorporates projected economic growth, detailed vehicle sales and emissions performance data, and dynamic effects across the economy. The estimate provided should be considered a rough, ballpark figure for illustrative purposes only.

In 2015, there were around 1,939,000 new motor vehicle sales in Canada (including heavy trucks and buses).[27] If we assume similar sales in the future, that roughly 20 - 30% of new vehicle sales would be subject to the tax, and that on average the tax would be $500 - 1000 per vehicle, revenue could be in the range of $200 to 600 million annually. Revenue would also likely decrease over time as manufacturers produce fewer vehicles with poor emissions performance and consumers shift to lower emitting choices.

GES Estimate: 1–2 Mt annualy by 20130

Caveat: Ideally, GHG reduction estimates would be calculated using an integrated energy, emissions and economy model that incorporated the latest projected emissions and dynamic consumer response effects. The estimate provided should be considered a rough, ballpark figure for illustrative purposes only.

Emissions from cars, trucks and motorcycles are projected to be 64Mt in 2030. There is already a trend toward lower emitting vehicles embedded into these projections, as a result of federal regulations requiring improved CO2 performance and fuel efficiency of vehicles as well as other measures.

It is difficult to predict with accuracy what the additional response would be to an increase and extension of the excise tax on fuel inefficient vehicles. However, we can develop a rough, ballpark estimate of the potential.

First, we could assume that 80% of emissions related to this category of vehicles on the roads in 2030 relate to vehicles that have been purchased after the changes to the tax would be implemented (e.g. 2018). In reality, this % may be higher as owners hold onto vehicles for an

[27] Government of Canada (2016), Statistics Canada, New Motor Vehicle Sales, http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/trade12-eng.htm (accessed August 2016).

average of just over 6 years. However, given the higher emissions associated with older vehicles, 80% is not unreasonable. If 80% of the anticipated emissions in 2030 are associated with vehicle purchases that could be influenced before 2030, that would leave 51.2 Mt to work with.

In the Rivers, Schaufele study referenced in section 2 above, they conclude that a $1000 fee reduces market share of the vehicle by 30%. [28] The taxes we propose would be higher than $1000 for certain vehicles, but lower for others. If we assume that one third of new passenger vehicles will be captured by the tax, and that 30% of those will be encouraged to shift to vehicles with emissions on average around 20-40% lower, overall GHG reductions could be in the range of 1-2Mt annually by 2030. Greater consumer responsiveness, extending the tax to heavy-duty vehicles and improvements in low-emitting vehicle options, would result in higher GHG reduction estimates.

[28] Rivers, N. and Schaufele, B. (2014).