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FUEL EFFICIENCY OF MOTOR VEHICLES IN CANADA

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By ratifying the Kyoto Protocol in December 2002, the Government of Canada made a commitment to reduce national greenhouse gas (GHG) emissions to 6% below 1990 levels, between 2008 and 2012. Since 1990, GHG emissions have risen considerably, particularly in the area of transportation. Some observers believe that Canada must now establish mandatory energy-efficiency standards in order to curb this trend and support the use of more fuel-efficient vehicles that emit fewer GHGs.(1)

FUEL CONSUMPTION AND GREENHOUSE GASES

According to Environment Canada, 18.6% of GHG emissions are attributable to road transportation,(2) which makes it a key sector in terms of Canada's commitment under the Kyoto Protocol. About two-thirds of these emissions come from light-duty vehicles, i.e., passenger automobiles and light-duty trucks. Data from Transport Canada show that fuel consumption and GHG emissions attributable to light-duty vehicles increased by 16% between 1990 and 2001.(3)

The increase is partly due to the higher numbers of light-duty trucks on Canadian roads.(4) GHG emissions from light-duty trucks rose from 22.3 megatonnes (MT) in 1990 to 40 MT in 2001, an increase of 79%. On the other hand, GHG emissions from passenger cars fell by 9%, from 54.3 MT in 1990 to 49.3 MT in 2001.

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(1) According to Environment Canada (*Canada's Greenhouse Gas Inventory 1990-2000*, Ottawa, 2002, Appendix D), gasoline automobiles produce 2.36 kg of carbon dioxide (CO_2), a major GHG, per litre of fuel. A vehicle that consumes 2,000 litres of gasoline annually produces almost 5 tonnes of CO_2.

(2) Environment Canada, *1990-2001 National and Provincial GHG Emissions*, http://www.ec.gc.ca/pdb/ghg/ghg_tables_2001_e.cfm.

(3) Transport Canada, *Straight Ahead – A Vision for Transportation in Canada*, Ottawa, 25 February 2003, http://www.tc.gc.ca/aboutus/straightahead/vision/straightahead.pdf.

(4) Another important variable is distance driven, which, on average, also increased over the past few years because of urban sprawl (*ibid.*).

In the *Climate Change Plan for Canada*,[5] released in November 2002, the Government of Canada announced that it would be negotiating with automobile manufacturers for a voluntary 25% improvement in the fuel efficiency of new vehicles by 2010, in order to reduce annual GHG emissions by 5.2 MT. Details about the form the agreement would take or about progress made in the negotiations have not yet been released. A number of non-governmental organizations, however, are asking the government to ensure the negotiations are transparent and to set mandatory energy-efficiency objectives.[6]

On the other hand, the largest Canadian automobile manufacturers association has rejected the 25% goal, saying that the automobile industry operates on a North American scale and that Canada must continue to harmonize its fuel consumption objectives with those of the United States for the well-being of the industry and of consumers.[7] These remarks imply that automobile manufacturers regard Canada as a secondary market and that they try first and foremost to comply with U.S. requirements.

REGULATIONS AND STANDARDS IN THE UNITED STATES

The 1973-1974 oil crisis led the U.S. Congress to pass the *Energy Policy and Conservation Act* in December 1975. For the first time ever, automobile manufacturers were compelled by legislation to improve the fuel efficiency of their new passenger cars and, since 1979, of their new light-duty trucks sold in the United States. This legislation, enforced by the National Highway Traffic Safety Administration (NHTSA), an agency of the U.S. Department of Transport, obliges automobile manufacturers to comply, or be subject to fines, with fuel consumption standards – the Corporate Average Fuel Economy (CAFE) Standards – for passenger vehicles and light-duty trucks.

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(5) Government of Canada, *Climate Change Plan for Canada*, November 2002, http://www.climatechange.gc.ca/plan_for_canada/plan/pdf/full_version.pdf.

(6) See, for example, the Sierra Club site, http://www.sierraclub.ca/national/programs/atmosphere-energy/climate-change/cafe-information.shtml.

(7) Mark Nantais, President, Canadian Vehicle Manufacturers' Association, appearing before the House of Commons Standing Committee on Industry, Science and Technology, Meeting 11, 2nd session, 37th Parliament, 11 December 2002, 15:55.

To comply with the CAFE standards, every manufacturer must ensure, for each model year, that the *average* fuel consumption of its fleet of new passenger cars meets or exceeds the minimum performance levels prescribed for these cars; and likewise for light-duty trucks.

The regulatory distinction between passenger vehicles and light-duty trucks (originally designed for business and farming activities) was intended to reflect the uses to which vehicles were put in the mid-1970s. The standards allowed light-duty trucks, viewed primarily as work vehicles, to meet less stringent fuel consumption standards than passenger cars.

Today, light-duty trucks such as vans, mini-vans and sport utility vehicles (SUVs) are used more and more frequently as family vehicles.(8) In April 2003, the NHTSA amended the official fuel economy standard for light-duty trucks, which will also affect the fuel consumption of new light-duty trucks sold in Canada. The standard will increase gradually from 20.7 mpg (11.4 L/100 km)(9) for 2004 model year trucks to 22 mpg (10.6 L/100 km) for 2007 trucks, an improvement of 6.2%. The standard for passenger cars remains the same, however – 27.5 mpg (8.6 L/100 km).

More recently, on 22 December 2003, the NHTSA announced that it wished to consult with parties affected by the CAFE standards, with a view to updating the standards.(10) Among other things, the agency is considering updating existing regulatory definitions that distinguish passenger cars from light-duty trucks, to reflect today's significantly different vehicle market. It is also considering setting fuel economy standards for vehicles that, because of their weight, do not currently have to comply with CAFE standards (such as the GMC Hummer and the Ford Expedition). The NHTSA wants to ensure, however, that the new standards do not lead to lower vehicle weight, which, according to NHTSA research, can increase occupant vulnerability.

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(8) SUVs account for half of new vehicle sales in the United States, and approximately 46% of new vehicle sales in Canada (Library of Parliament, with data from Natural Resources Canada and Desrosiers Automotive Consultants Inc.).

(9) In the United States, fuel consumption is measured by the number of miles travelled per U.S. gallon of fuel (mpg); in Canada, it is expressed in litres of fuel consumed per 100 kilometres (L/100km). One U.S. gallon is equivalent to 3.7854 litres.

(10) U.S. Department of Transportation, *DOT Announces Proposal for Reforming Federal Fuel Efficiency Program; Begins National Dialogue on Increasing Vehicle Fuel Economy*, news release, 22 December 2003, http://www.dot.gov/affairs/nhtsa5503.htm.

Any changes made by the NHTSA will, of course, affect Canada, because Canadian targets are based on the U.S. standards. It is, however, much too early to assess the potential impact of the changes. Given the NHTSA's fairly modest changes to the fuel consumption standard for light-duty trucks until 2007, it is unlikely that the agency will be making major changes to its standards in the near future.

CANADIAN TARGETS

In conjunction with the automotive industry, the Government of Canada followed the U.S. example and set company average fuel consumption (CAFC) goals for the new car fleet sold in Canada, starting with the 1980 model year.(11) This target was the equivalent of the U.S. CAFE passenger car standard, but was not mandatory.

In 1981, Parliament passed the *Motor Vehicle Fuel Consumption Standards Act* (MVFCSA), to strengthen the CAFC goal by making it mandatory.(12) It provides that the Governor in Council may, on the recommendation of the Minister of Transport and the Minister of Natural Resources, make regulations prescribing a fuel consumption standard for any prescribed class of motor vehicle.(13)

The MVFCSA was never proclaimed, however, because vehicle manufacturers proposed to the government that they would meet the CAFC targets voluntarily, and the government agreed to their proposal. Later, in 1990, a CAFC goal for the fleet of new light-duty trucks corresponding to the American standards was introduced for the first time. At present, there is no legislation in effect in Canada governing motor vehicle fuel consumption, and the optional CAFC objective is the same as it is in the United States – 8.6 L/100 km for passenger cars (since 1988), and 11.4 L/100 km for light-duty trucks (since 1996).

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(11) According to Transport Canada, "CAFC values are calculated as a weighted harmonic average using unadjusted fuel economy values and production volumes. For each vehicle model, the city and highway fuel economy values are blended (55% city and 45% highway) to calculate a combined fuel economy value. Each model type combined value is volume-weighted to reflect its influence against the total fleet production volume. The sum of all the volume-weighted combined values for all the model types within the vehicle class (passenger car or truck) is then divided into the total production volume for the vehicle class," http://www.tc.gc.ca/securiteroutiere/asfbb/FCpgm/en/cafc/page4_e.htm.

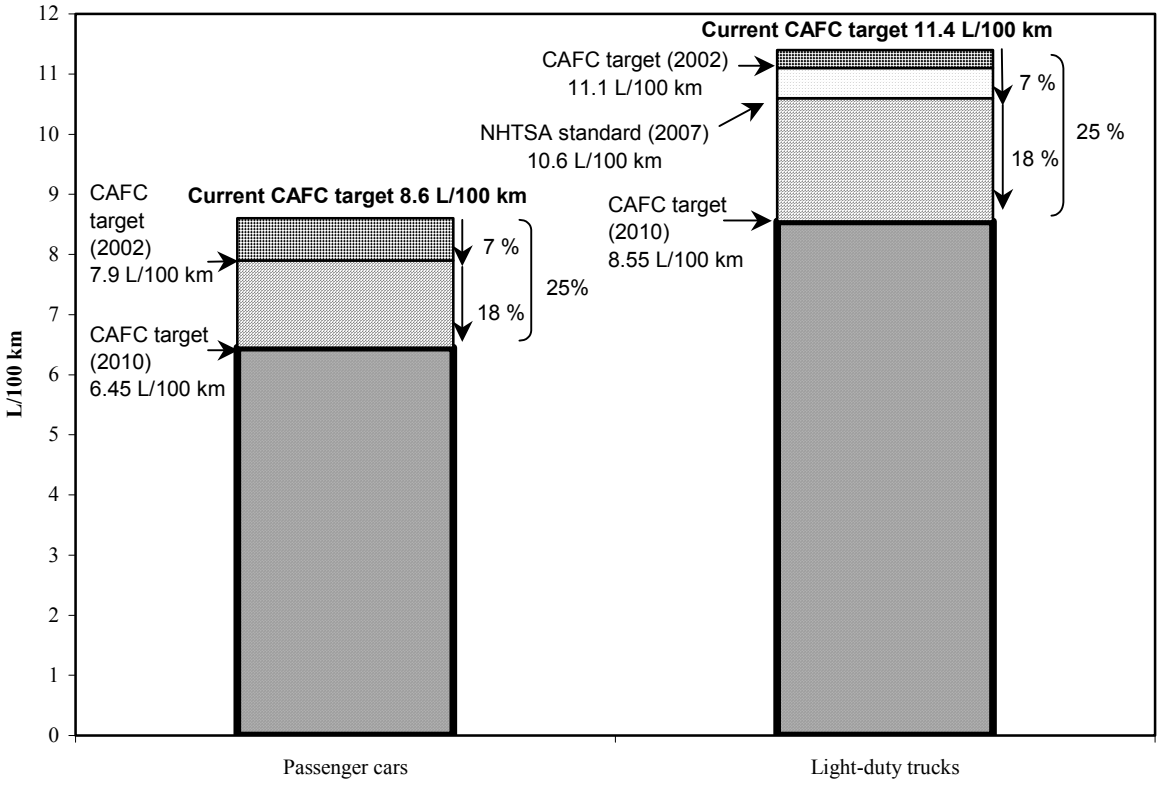
(12) Natural Resources Canada, *Motor Vehicle Fuel Efficiency Initiative*, http://oee.nrcan.gc.ca/english/programs/motorvehicles.cfm?Text=N&PrintView=N.

(13) See the text of the MVFCSA, especially section 3; http://laws.justice.gc.ca/en/M-9/index.html.

Given the present context, it may not be enough for the Government of Canada to rely solely on the standards imposed by the NHTSA to reach the target set out in the *Climate Change Plan for Canada*, i.e., to reduce fuel consumption of new vehicles by an average of 25% by 2010. Some observers are advising the government to proclaim the MVFCSA and, among other things, to use it to make light-duty trucks, particularly SUVs, subject to the same standards as passenger cars.(14)

Figure 1 shows the significant gap between the 2002 CAFC numbers and the 25% target that Canada must achieve. The gap is calculated hypothetically on the basis of the current CAFC *targets*.(15)

Figure 1: Fuel Consumption Targets in Canada



Source: Library of Parliament, with data from Natural Resources Canada.

(14) See, for example, Greg Simmons, *Canadian regulation of air pollution from motor vehicles*, Sierra Club/Greenpeace, January 2002, http://www.sierralegal.org/reports/air_report.pdf, and the David Suzuki Foundation, *Federal data shows action needed now on fuel efficiency standards*, news release, 26 May 2003, https://www.davidsuzuki.org/campaigns_and_programs/climate_change/news_releases/newsclimatechange05260301.asp.

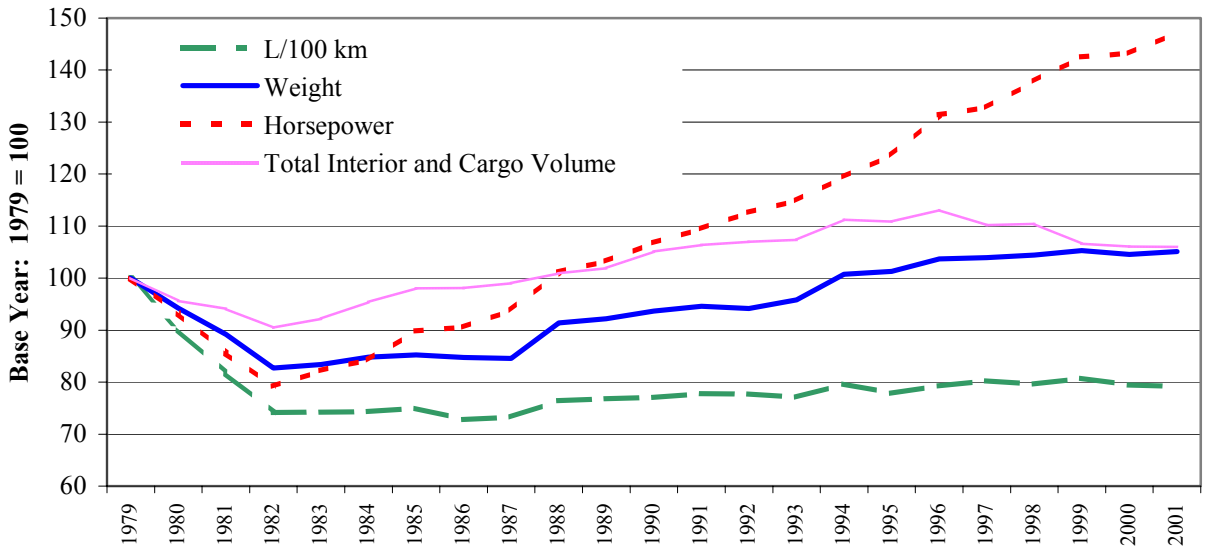
(15) The *Climate Change Plan for Canada* does not specify whether the goal of an average 25% reduction in new car vehicle consumption by 2010 is calculated on the basis of the current targets.

TRENDS – SALES OF VEHICLES AND FUEL CONSUMPTION

Automobile manufacturers are continually incorporating advanced technologies in their vehicles: for example, catalytic converters to reduce emissions of pollutants, continuously variable transmissions (in some models), as well as a variety of safety innovations, such as air bags and side-door beams. In order to reduce fuel consumption, some manufacturers have recently introduced gasoline hybrid vehicles, which consume much less fuel than the normal gasoline-powered vehicle.(16)

Despite these advances, not many of the efforts made by car manufacturers over the past 10 to 15 years have been directed at improving fuel efficiency. Today's new vehicles consume more fuel, on average, than they did in the mid-1980s, a period of peak fuel efficiency. New vehicles sold today are usually larger, roomier and especially more powerful than they were in the 1980s(17) (Figure 2).

Figure 2: Fuel Consumption (L/100 km), Power (horsepower), Weight, and Total Volume (passenger and cargo room) – Averages for All New Vehicles, Canada, 1979-2001



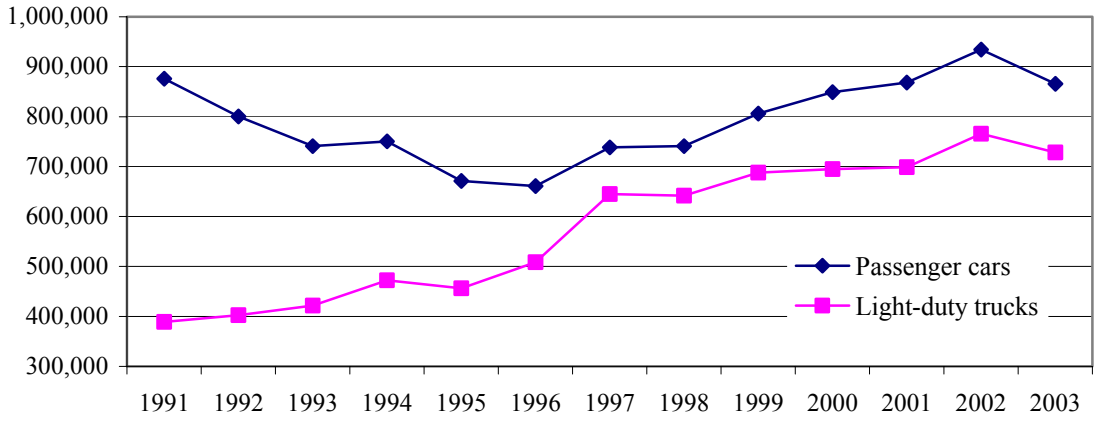
Source: Library of Parliament, with data from Natural Resources Canada.

(16) According to Natural Resources Canada, the Toyota Prius, a mid-size hybrid, consumes 4 L/100 km in the city and 4.2 L/100 km on the highway, while the Toyota Camry, with manual transmission and a four-cylinder engine, also a mid-size car, consumes 9.9 L/100 km in the city and 6.6 L/100 km on the highway. The Prius thus consumes 60% less than the Camry in the city, and 36% less on the highway, http://oee.nrcan.gc.ca/vehicles/compare/compare.cfm?Text=N&PrintView=N.

(17) The trend is the same in the United States: the Environmental Protection Agency calculates that the energy efficiency of the new vehicle fleet peaked in 1987, http://www.epa.gov/otaq/fetrends.htm.

In 2003, sales of new vehicles in Canada exceeded their 1991 level by 26%.[18] However, sales of passenger cars were lower than 12 years earlier. On the other hand, sales of light-duty trucks, such as vans, minivans and SUVs, vehicles that typically consume more fuel, increased by 87% over their 1991 level[19] (Figure 3).

Figure 3: New Car Sales in Canada, 1991-2003



Source: Library of Parliament, with data from Natural Resources Canada.

In 1991, light-duty trucks accounted for 31% of the new vehicle market in Canada. In 2003, this figure was 46%, an increase of 48%. In terms of fuel economy, this is definitely a negative trend.

In a recent report, Transport Canada confirmed that the total fuel consumption of on-road vehicles in Canada is increasing, "because vehicles are becoming larger and are being driven more frequently and for longer distances."[20] GHG emissions from automobiles are also increasing.

(18) More than 1.7 million new vehicles were sold in Canada in 2002, a new record. According to Desrosiers Automotive Consultants Inc., 1,593,000 new vehicles were sold in Canada in 2003, http://www.desrosiers.ca.

(19) Library of Parliament, with data from Natural Resources Canada and Desrosiers Automotive Consultants Inc.

(20) Transport Canada (2003).

CONCLUSION

To date, there are no legal or mandatory standards governing the fuel consumption of vehicles in Canada. Manufacturers agreed to comply with a voluntary program based on the U.S. mandatory standards, with different targets for light-duty trucks and passenger vehicles. On average, light-duty trucks consume more fuel than cars, and they have been increasingly popular since the early 1990s. Consequently, vehicles sold in Canada today are less fuel-efficient and emit more GHGs, on average, than those sold in the mid-1980s.

Concerned about the increase in GHG emissions, the Government of Canada announced in November 2002 that it would negotiate with automobile manufacturers to reach a voluntary agreement aiming at a 25% improvement in fuel efficiency for new vehicles by 2010. If the negotiations fail and if the changes in the standards suggested by the U.S. federal government do not curb the popularity of high-consumption vehicles, it is possible that the government might consider imposing mandatory standards so that Canada can achieve its GHG emissions reduction target.