



**Fleet Average NO_x Emission
Performance of 2012 Model Year
Light-Duty Vehicles, Light-Duty Trucks
and Medium-Duty Passenger Vehicles**

In relation to the
On-Road Vehicle and Engine Emission Regulations
under the
Canadian Environmental Protection Act, 1999

Transportation Division
Environment and Climate Change Canada

May 2016

Disclaimer

This document provides a summary of data collected pursuant to the *On-Road Vehicle and Engine Emission Regulations*. It does not in any way supersede or modify the requirements of the *Canadian Environmental Protection Act, 1999* or the Regulations made under that Act. In the event of an inconsistency between this document and the Act and/or the Regulations, the Act and the Regulations prevail.

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1 Executive Summary

Under the *On-Road Vehicle and Engine Emission Regulations* (hereafter referred to as the “Regulations”), each new light-duty vehicle, light-duty truck and medium-duty passenger vehicle is required to be certified by its manufacturer to one of the bins corresponding to those of the United States Environmental Protection Agency for which there are specific emission standards for oxides of nitrogen (NO_x) and other pollutants. Manufacturers and importers of these vehicles are required to report on their fleet average NO_x emission performance for each model year.

This ninth annual performance report summarizes the fleet average NO_x emission performance of the Canadian 2012 model year fleet of vehicles. A total of 22 companies submitted end of model year reports comprising a total of 1,522,441 vehicles manufactured in Canada or imported into Canada for the purpose of first retail sale. This report includes the fleet average NO_x value for each company as well as their number of emission credits or deficits. It also provides a comparison of the distribution of vehicles certified to the various emissions bins and compares the overall NO_x performance with that of previous model years.

The average NO_x value for the Canadian 2012 model year combined fleet of light-duty vehicles, light light-duty trucks, heavy light-duty trucks and medium-duty passenger vehicles is 0.06215957 grams/mile compared to the standard of 0.07 grams/mile. Of those companies that submitted, each had a fleet average NO_x value that was at or below the standard and based on their reports, all complied with the fleet averaging provisions of the Regulations.

The average NO_x value continued to decrease for the 2012 model year. This result is consistent with the environmental performance objectives of the Regulations.

2 Purpose

The purpose of this report is to summarize the fleet average NO_x emission performance of individual companies and the overall Canadian fleet for the 2012 model year (MY) and is based on data submitted by companies in their end of model year reports and any subsequent revisions; it is also to report on the effectiveness of the Canadian fleet average NO_x emission program in achieving the environmental performance objectives.

3 Introduction

On January 1, 2004, the *On-Road Vehicle and Engine Emission Regulations* came into effect under the *Canadian Environmental Protection Act, 1999* (CEPA 1999). These Regulations introduced more stringent national emission standards for on-road vehicles and engines. The Regulations align Canada's emission standards for light-duty vehicles¹ (LDVs), light light-duty trucks² (LLDTs), heavy light-duty trucks³ (HLDTs), medium-duty passenger vehicles⁴ (MDPVs), heavy-duty vehicles, heavy-duty engines and on-road motorcycles with those of the U.S. Environmental Protection Agency (EPA) through incorporation by reference to the U.S. Code of Federal Regulations (CFR).

Each new LDV, LLDT, HLDT and MDPV is required to be certified to a bin for which there are specific emission standards for NO_x and other pollutants. A company's choice of bin to which individual vehicle models are certified in a given model year is limited by the obligation to comply with the fleet average NO_x standards associated with that model year. The current NO_x standard is 0.07 grams/mile, which was introduced in the 2009 model year.

A company's fleet average NO_x value is the weighted average based on the number of vehicles certified to each bin. Though the emission bins, fleet average NO_x standards, and methods of calculating fleet average NO_x values are aligned with those of the U.S. EPA, there are differences in the structure of the NO_x averaging program in Canada, which is designed to recognize vehicles that are sold concurrently in Canada and the U.S. The regulatory requirements are structured to deliver fleet average emissions comparable to those of the U.S. while minimizing the regulatory burden on companies and enabling the marketing of vehicles in Canada independently from the U.S.

¹ Light-duty vehicles are generally passenger cars.

² Light light-duty trucks are generally vans, sport utility vehicles and pick-up trucks having GVWR of 2,722 kg (6,000 pounds) or less.

³ Heavy light-duty trucks are generally vans, sport utility vehicles and pick-up trucks having a GVWR of more than 2,722 kg (6,000 pounds) and up to 3,856 kg (8,500 pounds).

⁴ Medium-duty passenger vehicles are generally heavier passenger-type vehicles, such as vans and sport utility vehicles having a gross vehicle weight rating (GVWR) greater than 3,856 kg (8,500 pounds) and less than 4,536 kg (10,000 pounds).

The Regulations require that all companies submit a report to the Minister of the Environment and Climate Change no later than May 1 after the end of each model year. The end of model year report must contain detailed information concerning the company's fleet(s) and/or groups of vehicles.

For more information regarding the calculation of fleet average NO_x values and NO_x emission credits or deficits, please refer to the Regulations, which can be found on the Environment and Climate Change Canada CEPA Registry at www.ec.gc.ca/CEPARegistry/regulations. Reports for the 2004 to the 2011 model years can also be found on the CEPA Registry.

4 Company Fleet Average NO_x Emission Performance for the 2012 Model Year

4.1 Scope of Company Reports

Table 1 presents a list of the companies that submitted an end of model year report for the 2012 model year in accordance with the requirements of the Regulations, including the vehicle makes and a summary of the data received.

Table 1: Summary of Company Reports

Company	Makes	Number of Test Groups ⁵	Total Number of Vehicles	Average NO _x Value (grams/mile) ⁶	Initial Credit Balance ⁷	2012 Balance ⁷
Aston Martin Lagonda Limited	Aston Martin	2	110	0.0700	0	0
BMW Group Canada	BMW, Mini, Rolls-Royce	21	32,059	0.070000	913	913
Chrysler Canada Inc.	Chrysler, Dodge, Jeep, Fiat	22	230,683	0.0561753	47,756	50,945
Ford Motor Company of Canada, Limited	Ford, Lincoln	33	205,987	0.0531194	44,748	48,225
General Motors of Canada Limited	Buick, Cadillac, Chevrolet, GMC	27	201,349	0.0490740	82,007	86,220
Honda Canada Inc.	Acura, Honda	17	171,975	0.0698509	20,180	20,206
Hyundai Auto Canada Corp.	Hyundai	17	116,849	0.0694792	3,206	3,267
Jaguar (Jaguar Land Rover Canada ULC)	Jaguar	1	716	0.0700	126	126
Kia Canada Inc.	Kia	16	64,991	0.068686	4,741	4,826
Land Rover (Jaguar Land Rover Canada ULC)	Land Rover	3	3,904	0.07000	953	953
Lotus Cars Limited	Lotus	1	19	0.070	0	0
Maserati North America, Inc.	Maserati	1	152	0.0700	0	0
Mazda Canada Inc.	Mazda	12	67,967	0.070000	15,090	15,090
Mercedes-Benz Canada Inc.	Maybach, Mercedes, Smart	18	30,671	0.069996	78	78
Mitsubishi Motor Sales of Canada, Inc.	Mitsubishi	8	18,024	0.068524	76	103
Nissan Canada Inc.	Infiniti, Nissan	25	94,649	0.069605	18,864	18,901
Porsche Cars Canada, Ltd.	Porsche	13	2,344	See note ⁸	See note ⁸	See note ⁸
Subaru Canada, Inc.	Subaru	4	20,364	0.067967	2,709	2,750
Suzuki Canada Inc.	Suzuki	4	4,155	0.07000	1,281	1,281
Toyota Canada Inc.	Lexus, Scion, Toyota	40	169,934	0.0655033	27,016	27,780
Volkswagen Group	Audi, Bentley, Lamborghini, Volkswagen	24	78,049	See note ⁸	See note ⁸	See note ⁸
Volvo Cars of Canada Corp.	Volvo	3	7,490	0.07000	3,538	3,538

⁵ A test group is the basic classification unit that comprises LDV, LLDT, HLDT or MDPV having similar exhaust emission performances and that share all of the features described in section 1827, subchapter C, part 86 of the CFR.

⁶ Fleet average NO_x values are rounded to the same number of significant figures that are contained in the total number of vehicles in a company's fleet.

⁷ NO_x emission credits/deficits are rounded to the nearest whole number. A negative sign (-) indicates a deficit.

⁸ The average NO_x value and credit balance for Porsche Cars Canada, Ltd. and Volkswagen Group are not included in this table due to an ongoing investigation regarding certain of their diesel vehicles. However, no adjustments were made to the total number of vehicles, the number of test groups, the distribution of vehicles by the NO_x standard of each bin and the average NO_x value for the Canadian fleet (Table 2).

A total of 22 companies submitted a report for the 2012 model year covering a total of 312 distinct test groups. It should be noted that certain test groups were common between companies that shared vehicle platforms or powertrains.

The company average NO_x values ranged from 0.0490740 grams/mile to 0.0700000 grams/mile for the fleet of LDVs, LLDTs, HLDTs, and MDPVs, and no companies reported a fleet average NO_x value that was above the standard of 0.07 grams/mile.

A total of 11,920 credits were generated by companies for the 2012 model year. No company incurred a deficit with respect to their fleet, and no company reported a deficit at the end of this model year. In addition, there were no credit transfers to or from companies for the 2012 model year.

4.2 Distribution of Bins and Total Canada NO_x Fleet Average Value

Table 2 summarizes the distribution of vehicles by the NO_x standard of each bin. It also provides the calculated fleet average NO_x value of the entire Canadian fleet for the 2012 model year.

Table 2: Distribution of Vehicles by the NO_x Standard of Each Bin

Bin Number	NO_x Standard (grams/mile)	Total Number of Vehicles in "Bin"	Percentage of Vehicles in "Bin"
8	0.20	33,476	2.20
7	0.15	0	0.00
6	0.10	0	0.00
5	0.07	1,012,327	66.49
4	0.04	452,426	29.72
3	0.03	20,178	1.32
2	0.02	3,018	0.20
1	0.00	1,016	0.07
Total Number of Vehicles in 2012MY Fleet			1,522,441
Total Canada NO_x Fleet Average (grams/mile)			0.06215957
Fleet Average NO_x Standard (grams/mile)			0.07

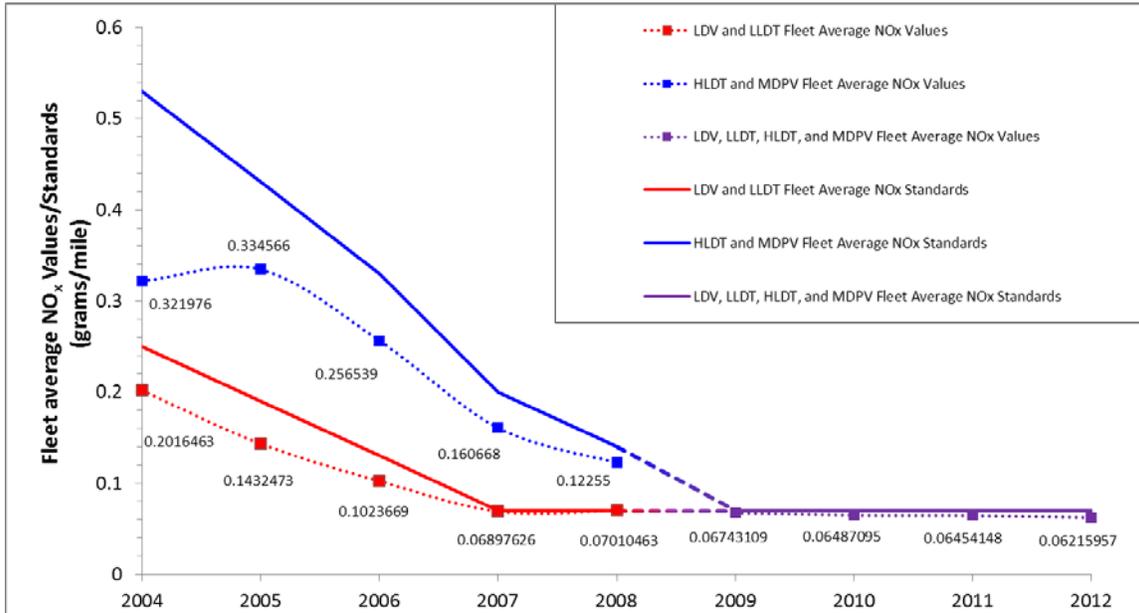
Note: Beginning in the 2009 model year, applicable standards are limited to bins 1 to 8 for all categories.

For the 2012 model year, almost all vehicles (97.8 % of the fleet) were certified to a bin at or below the fleet average NO_x standard of 0.07 grams/mile. The average NO_x value for the Canadian fleet was 0.06215957 grams/mile.

4.3 Fleet Average NO_x Values Trend

Figure 1 presents the average NO_x values trend relative to the applicable standards since 2004 for both the LDV/LLDT and HLDT/MDPV fleets. Beginning in 2009, LDVs, LLDTs, HLDTs, and MDPVs all conform to one NO_x fleet average standard.

Figure 1: Fleet Average NO_x Values and Standards



Overall, the fleet average NO_x value for the combined fleet of LDVs, LLDTs, HLDTs, and MDPVs decreased from 2004 to 2012. More specifically, the fleet average NO_x value for the 2012 model year continues to decrease and is 11.2% below the standard of 0.07 grams/mile.

5 Conclusions

This is the ninth year that companies were subject to the fleet average NO_x requirements under the Regulations. A total of 22 companies submitted reports for a total of 312 distinct test groups comprising 1,522,441 vehicles that were either manufactured in Canada or imported into Canada for the purpose of first retail sale.

The average NO_x value for the Canadian 2012 model year combined fleet of LDVs, LLDTs, HLDTs and MDPVs is 0.06215957 grams/mile compared to the standard of 0.07 grams/mile. Each individual company had a fleet average NO_x value that was at or below the standard, and all companies complied with the fleet averaging provisions of the Regulations based on their reports.

The average NO_x value continued to decrease for the 2012 model year. This result is consistent with the environmental performance objectives of the Regulations.

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