Environment and Climate Change Canada
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Air Pollutant Emission Performance for the 2019 Model Year On-Road Vehicle Fleet

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

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Executive summary

The On-Road Vehicle and Engine Emission Regulations (hereinafter referred to as the "Regulations") establish national emission standards to limit smog-forming emissions (non-methane organic gases (NMOG), nitrous oxides (NO_x), particulate matter (PM), cold non-methane hydrocarbons (NMHC), evaporative emissions (EVAP)) from new on-road vehicles and engines. The Tier 3 fleet average standards continue to align with the progressively more stringent standards adopted by the U.S. Environmental Protection Agency (EPA) over the 2017 through 2025 model years (MYs). These Regulations require importers and manufacturers of new vehicles to meet fleet average emission standards for air pollutants and establish annual compliance reporting requirements. The 2017 MY, is the first MY in which companies are required to meet the new Tier 3 standards.

This report summarizes the fleet average air pollutant emission performance of the Canadian 2019 MY fleet of vehicles. A total of 23 companies submitted end of MY reports comprising a total of 1 972 856 vehicles manufactured in Canada or imported into Canada for the purpose of first retail sale. This report includes the fleet average NMOG+NO_x, cold NMHC and EVAP values 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 emission bins and compares the overall NMOG+NO_x performance with that of the pre-Tier 3 MYs.

The average NMOG+NO_x value for the Canadian 2019 MY combined fleet of light-duty vehicles and light-duty trucks 1 is 0.06664580 grams/mile compared to the standards of 0.072 grams/mile. The average NMOG+NO_x value for the Canadian 2019 MY combined fleet of light-duty trucks 2, heavy-light duty trucks and medium-duty passenger vehicles is 0.07528215 grams/mile compared to the standard of 0.083 grams/mile. The average NMOG+NO_x value for the Canadian 2019 MY fleet of Class 2B vehicles is 0.24332 grams/mile compared to the standard of 0.253 grams/mile. The average NMOG+NO_x value for the Canadian 2019 MY fleet of Class 3 vehicles is 0.44316 grams/mile compared to the standard of 0.400 grams/mile.

The overall NMOG+NO_x fleet averages demonstrate continued industry improvements in emission performance since 2004. While the fleet average value for the Class 3 fleet is above the applicable standards for the 2019 MY, companies have three years to offset any deficits incurred, and all currently remain in compliance with the fleet averaging provisions of the Regulations. All companies have complied with the 2019 PM and EVAP phase-in percentages and have met the cold NMHC fleet average standards.

1. Purpose

The purpose of this report is to summarize the fleet average air pollutant emission performance of individual companies and the overall Canadian fleet for the 2019 MY. It is based on data submitted by companies in their end of MY reports and any subsequent revisions received prior to the publication of this report. It also serves to report on the effectiveness of the Canadian fleet average air pollutant emission program in achieving the environmental performance objectives outlined in the Regulations.

2. The Regulations

On January 1, 2004, the On-Road Vehicle and Engine Emission Regulations came into effect under the *Canadian Environmental Protection Act, 1999* (CEPA). These Regulations introduced more stringent national emission standards for on-road vehicles and engines. The Regulations align Canada's emission standards for light-duty vehicles[1] (LDVs), light light-duty trucks[2] (LLDTs) composed of Light-Duty Trucks 1 (LDT1) and Light-Duty Trucks 2 (LDT2), heavy light-duty trucks[3] (HLDTs) composed of Light-Duty Trucks 3 (LDT3) and Light-Duty Trucks 4 (LDT4), medium-duty passenger vehicles[4] (MDPVs), heavy-duty vehicles, heavy-duty engines and on-road motorcycles with those of the U.S. EPA through incorporation by reference to the U.S. CFR.

From MY 2004 through MY 2016, companies were required to meet fleet average NO_x emission standards (Tier 1 and Tier 2 standards). Figure 1 shows the overall Canadian performance during those years.

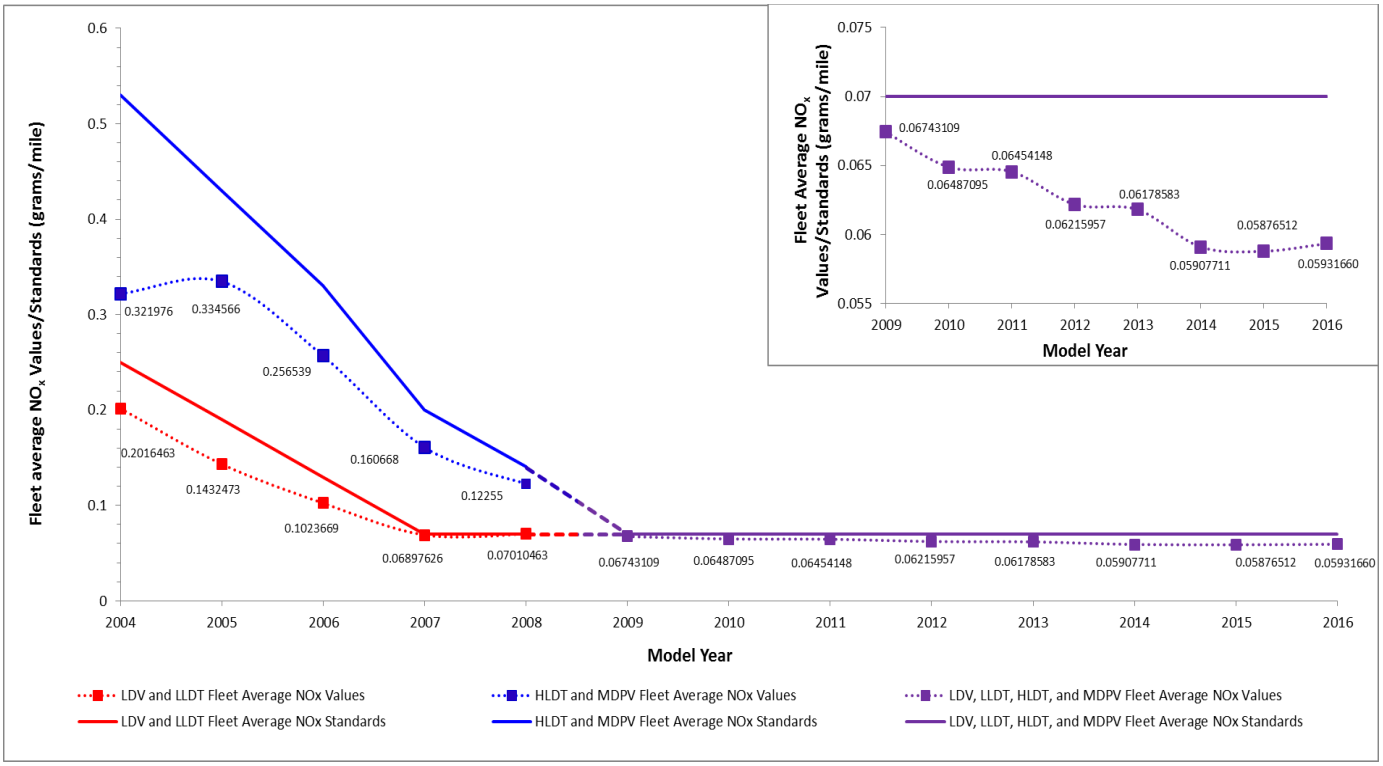
[1] Light-duty vehicles are generally passenger cars.

[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 (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).

Figure 1: NO_x fleet averages and standards for model years 2004 through 2016



The Regulations were subsequently amended in 2015 to set new emission standards (Tier 3) for passenger cars, light-duty trucks and certain heavy-duty vehicles for 2017 and later MYs that are imported or manufactured in Canada. The amendments establish progressively more stringent vehicles and fleet average standards over the MYs 2017 to 2025 for combined emissions of NMOG and NO_x and establish a phase-in schedule for more stringent PM and evaporative emission standards, in alignment with the U.S. EPA standards adopted in 2014.

A company's fleet of light-duty vehicles, light-duty trucks and medium-duty passenger vehicles will have to comply with progressively more stringent exhaust emission standards, reaching a fleet average standard for emission of NMOG+NO_x of 30 milligrams per mile as of MY 2025. Similarly, heavy-duty vehicle weight classes 2B[5] and 3[6] will be required to comply with progressively more stringent fleet average standards for emissions of NMOG+NO_x, reaching fleet average standards of 178 milligrams/mile and 247 milligrams/mile, respectively, as of MY 2022.

Also, as of MY 2017, new PM exhaust emission standards are introduced by means of a phase-in approach through which an increasing percentage of vehicles in a company's fleet for each successive MY will be required to comply with the standards, with full implementation starting with MY 2021. An alternative

[5] Heavy-duty Class 2B vehicles are generally delivery vans and heavy-duty pick-up trucks having a GVWR of more than 3 856 kg (8 500 lb) but less than or equal to 4 536 kg (10 000 lb).

[6] Heavy-duty Class 3 vehicles are generally delivery vans and heavy-duty pick-up trucks have a GVWR of more than 4 536 kg (10 000 lb) but less than or equal to 6 530 kg (14 000 lb).

phase-in compliance approach for these standards allows companies to conform to the standards by demonstrating that an equivalent number of vehicles conform to the new standards, when averaged over more than 1 MY included in the phase-in period. For vehicles with a gross vehicle weight rating (GVWR) up to 6 000 lb, the PM standard is 3 milligrams/mile. For vehicles with a GVWR above 6 000 lb and up to 14 000 lb, this standard is 3 milligrams/mile for the applicable light-duty trucks and MDPVs, and 8 milligrams/mile and 10 milligrams/mile for heavy-duty vehicle weight classes 2B and 3, respectively.

As of MY 2017, new evaporative emission (EVAP) standards are introduced by means of a phase-in approach through which an increasing percentage of a company's fleet of vehicles for each successive MY will be required to comply with the standards, with full implementation starting with MY 2022. An alternative phase-in compliance approach for these standards allows companies to conform to the standards by demonstrating that an equivalent number of vehicles conform to the new standards, when averaged over more than 1 MY included in the phase-in period. For LDV and LDT1 vehicles, this standard is 0.3 grams per test. For LDT2 vehicles, this standard is 0.4 grams per test. For HLDTs, this standard is 0.5 grams per test and for heavy-duty vehicles (Class 2B and 3), this standard is 0.6 grams per test.

The amendments also introduce new fleet average standards in Canada for cold temperature exhaust emissions of NMHCs. For fleets consisting of vehicles with a GVWR up to 6 000 lb, the cold temperature NMHC fleet average standard is fixed at 0.3 grams/mile, starting with the 2017 MY. For fleets consisting of vehicles with a GVWR above 6 000 lb and up to 10 000 lb, the cold temperate NMHC fleet average standard is fixed at 0.5 grams/mile, starting with the 2017 MY.

Flexibilities for vehicles sold concurrently in Canada and the United States are included for compliance with the fleet average emission standards as well as the phase-in emission standards. These flexibilities recognize that the emission performance of a company's fleet of vehicle models that are sold concurrently in the United States is effectively anchored by the U.S. regulatory program.

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

For more information regarding the Regulations, or more specifically, the calculation of fleet average values and emission credits or deficits, please refer to the Regulations, which can be found on the Environment and Climate Change Canada CEPA Environmental Registry.

3. Tier 3 reporting for the 2019 MY

Under the Tier 3 standards, companies certify a vehicle to a combined "NMOG+NO_x" bin. These bins represent the Federal Test Procedure (FTP) standards that vehicles are certified against. For the 2019 MY, a company's fleet average NMOG+NO_x FTP values are calculated over the following fleets:

1) A company's fleet that is composed of all of its light-duty vehicles and light-duty trucks 1 to which the applicable NMOG+NO_x standard applies for a useful life of 120 000 miles;
2) A company's fleet that is composed of all of its light-duty vehicles and light-duty trucks 1 to which the applicable NMOG+NO_x standard applies for a useful life of 150 000 miles;

3) A company's fleet that is composed of all of its light-duty trucks 2, heavy light-duty trucks and medium-duty passenger vehicles;
4) A company's fleet that is composed of all of its Class 2B vehicles; and
5) A company's fleet that is composed of all of its Class 3 vehicles.

Table 1, Table 2 and Table 3 presents the corresponding exhaust emission standards for the Tier 3 FTP bins.

Table 1**:** light-duty vehicle, light light-duty truck, heavy light-duty truck and medium-duty passenger vehicle Tier 3 federal test procedure bin exhaust emission standards (grams/mile)

Bin Number	NMOG+NO_x	CO	Formaldehyde	PM
160	0.160	4.2	0.004	0.003
125	0.125	2.1	0.004	0.003
110[1]	0.110	2.1	0.004	0.003
85[1]	0.085	2.1	0.004	0.003
70	0.070	1.7	0.004	0.003
50	0.050	1.7	0.004	0.003
30	0.030	1.0	0.004	0.003
20	0.020	1.0	0.004	0.003
0	0.000	0.0	0.000	0.000

1 Transitional Bins to which vehicles may be certified to through MY 2019.

Table 2: Class 2B vehicle Tier 3 federal test procedure bin exhaust emission standards (grams/mile)

Bin Number	NMOG+NO_x	CO
395[1]	0.395	6.4
340[1]	0.340	6.4
250	0.250	6.4
200	0.200	4.2
170	0.170	4.2
150	0.150	3.2
0	0.000	0.0

1 Transitional Bins to which vehicles may be certified to through MY 2021.

Table 3: Class 3 vehicle Tier 3 federal test procedure bin exhaust emission standards (grams/mile)

Bin Number	NMOG+NO_x	CO
630[1]	0.630	7.3
570[1]	0.570	7.3
400	0.400	7.3
270	0.270	4.2
230	0.230	4.2
200	0.200	3.7
0	0.000	0.0

1 Transitional Bins to which vehicles may be certified to through MY 2021.

Table 4 presents the companies that submitted an end of MY report which contained vehicles that were certified to Tier 3 standards, including the vehicle makes and the number of Tier 3 certified test groups.

Table 4: scope of company reports (Tier 3)

Company	Makes	Number of test groups
Aston Martin Lagonda Ltd.	Aston Martin	3
BMW Group Canada	BMW, Mini, Rolls-Royce	24
FCA Canada Inc.	Chrysler, Dodge, Jeep, Fiat, Alfa Romeo, RAM	39
Ferrari North America, Inc.	Ferrari	2
Ford Motor Company of Canada, Ltd.	Ford, Lincoln	56
General Motors of Canada Company	Buick, Cadillac, Chevrolet, GMC	47
Honda Canada Inc.	Acura, Honda	29
Hyundai Auto Canada Corp.	Hyundai	31
Jaguar Land Rover Canada, ULC	Jaguar, Land Rover	11
Kia Canada Inc.	Kia	21
Maserati North America, Inc.	Maserati	5
Mazda Canada Inc.	Mazda	10
McLaren Automotive Ltd.	McLaren	2
Mercedes-Benz Canada Inc.	Mercedes, Smart	29
Mitsubishi Motor Sales of Canada	Mitsubishi	7
Nissan Canada Inc.	Infiniti, Nissan	29
Porsche Cars Canada, Ltd.	Porsche	11
Roush Performance	Ford	1
Subaru Canada, Inc.	Subaru	7
Tesla Motors Canada Inc.	Tesla	4
Toyota Canada Inc.	Lexus, Scion, Toyota	37
Volkswagen Group Canada	Audi, Bentley, Bugatti, Lamborghini, Volkswagen	22
Volvo Cars of Canada Corp.	Volvo	4

Table 5 summarizes the distribution of vehicles by the NMOG+NO_x standard for each bin.

Table 5: distribution of Tier 3 vehicles by NMOG+NO_x standard of each bin

Tier and Bin Number	NMOG+NO_x standard (grams/mile)	Total number of vehicles in "bin"	Percentage of vehicles in "bin"
Tier 3 Bin 630	0.630	0	0.00
Tier 3 Bin 570	0.570	21 021	1.07
Tier 3 Bin 400	0.400	10 841	0.55
Tier 3 Bin 395	0.395	1	0.00
Tier 3 Bin 340	0.340	15 067	0.76
Tier 3 Bin 270	0.270	11 074	0.56
Tier 3 Bin 250	0.250	26 871	1.36
Tier 3 Bin 230	0.230	1 318	0.07
Tier 3 Bin 200	0.200	25 413	1.29
Tier 3 Bin 170	0.170	1 724	0.09

Tier 3 Bin 160	0.160	21 347	1.08
Tier 3 Bin 150	0.150	4 386	0.22
Tier 3 Bin 125	0.125	404 441	20.50
Tier 3 Bin 110[1]	0.110	115 323	5.85
Tier 3 Bin 85[1]	0.085	3 455	0.18
Tier 3 Bin 70	0.070	784 492	39.76
Tier 3 Bin 50	0.050	171 108	8.67
Tier 3 Bin 30	0.030	322 432	16.34
Tier 3 Bin 20	0.020	910	0.05
Tier 3 Bin 0	0.000	31 632	1.60
Total number of Tier 3 vehicles in 2019 MY fleet			1 972 856

1 Transitional Bins

3.1. Fleet average NMOG+NO_x emission performance

This section describes the manufacturers NMOG+NO_x fleet average performance.

Table 6 and

Table *7*, both taken from section 86.1811-17 of the CFR, present the declining fleet average Tier 3 FTP and Supplemental Federal Test Procedure (SFTP) emission standards for NMOG+NO_x for light-duty vehicles, light-duty trucks, heavy-light duty trucks and medium-duty passenger vehicles from MY 2017 to MY 2025.

Table 6: declining fleet average Tier 3 federal test procedure emission standards for NMOG+NO_x (grams/mile)

MY	LDV, LDT1 – 150 000 mile useful life [1]	LDV, LDT1 – 120 000 mile useful life [1]	LDT2, HLDT[2]
2017 [3]	0.086	0.073	0.101
2018	0.079	0.067	0.092
2019	0.072	0.061	0.083
2020	0.065	0.055	0.074
2021	0.058	0.049	0.065
2022	0.051	0.043	0.056
2023	0.044	0.037	0.047
2024	0.037	0.031	0.038
2025	0.030	0.026	0.030

1 Vehicles certified to standards based on a useful life of 120 000 miles may comply based on the fleet-average standard specified for 150 000 mile useful life in certain circumstances as specified in paragraph (b)(8)(iii)(A) of this section.

2 MDPVs are subject to all the same emission standards and certification provisions that apply to LDT4.

3 HLDT and MDPV must meet the Tier 3 standards starting with MY 2018.

Table 7: declining fleet average Tier 3 supplemental federal test procedure emission standards for NMOG+NO_x (grams/mile)

MY	NMOG+NO_x (grams/mile)
2017 [1]	0.103
2018	0.097
2019	0.090
2020	0.083
2021	0.077
2022	0.070
2023	0.063
2024	0.057
2025	0.050

1 HLDT and MDPV must meet the Tier 3 standards starting with MY 2018.

Table 8, taken from section 86.1818-18 of the CFR, presents the declining fleet average Tier 3 FTP emission standards for NMOG+NO_x for Class 2B and Class 3 vehicles from MY 2018 to MY 2022.

Table 8: declining fleet average federal test procedure emission standards for NMOG+NO_x (grams/mile)

MY	Class 2B	Class 3
2016 [1]	0.333	0.548
2017 [1]	0.310	0.508
2018	0.278	0.451
2019	0.253	0.400
2020	0.228	0.349
2021	0.203	0.298
2022	0.178	0.247

1 Fleet-average standards are shown for 2016 and 2017 for purposes of voluntary early compliance.

3.1.1. Light-duty vehicles and light-duty trucks 1, 120k

Table 9 presents the summary of the company average NMOG+NO_x FTP values for their LDV/LDT1 120k fleets.

Table 9: summary of company average NMOG+NO_x federal test procedure values for the light-duty vehicle and light-duty truck 1, 120K fleet

Company	Total number of vehicles in fleet	Fleet average NMOG+NO_x value (grams/mile)	Total 2019 MY credits[7]	Credit balance
Aston Martin Lagonda Ltd.	2	0.125	0	0
Jaguar Land Rover Canada, ULC	57	0.125	0	0

[7] Negative totals represent a deficit.

McLaren Automotive Ltd.	195	0.125	0	0

Table 10 presents the summary of the company average NMOG+NO_x SFTP values for their LDV/LDT1 120k fleets.

Table 10: summary of company average NMOG+NO_x supplemental federal test procedure values for the light-duty vehicle and light-duty truck 1, 120K fleet

Company	Total number of vehicles in fleet	Fleet average NMOG+NO_x value (grams/mile)	Total 2019 MY credits	Credit balance
Aston Martin Lagonda Ltd.	2	0.125	0	0
Jaguar Land Rover Canada, ULC	57	0.09	0	0
McLaren Automotive Ltd.	195	0.09	0	0

3.1.2. Light-duty vehicles and light-duty trucks 1, 150k

Table 11 presents the summary of the company average NMOG+NO_x FTP values for their LDV/LDT1 150k fleets.

Table 11: summary of company average NMOG+NO_x federal test procedure values for the light-duty vehicle and light-duty truck 1, 150K fleet

Company	Total number of vehicles in fleet	Fleet average NMOG+NO_x value (grams/mile)	Total 2019 MY credits	Credit balance
Aston Martin Lagonda Ltd.	146	0.125	0	0
BMW Group Canada	23 245	0.055876	375	2 062
FCA Canada Inc.	10 010	0.11258	-406	-1 406
Ferrari North America, Inc.	364	0.125	0	0
Ford Motor Company of Canada, Ltd.	28 635	0.082149	-291	-641
General Motors of Canada Company	66 623	0.065138	457	-1 226
Honda Canada Inc.	173 915	0.0933256	0	0
Hyundai Auto Canada Corp.	115 753	0.0710509	0	0
Jaguar Land Rover Canada, ULC	510	0.0486	12	99

Kia Canada Inc.	64 285	0.071422	37	-291
Maserati North America, Inc.	172	0.160	0	0
Mazda Canada Inc.	36 709	0.080244	-303	1 809
Mercedes-Benz Canada Inc.	17 214	0.065886	105	620
Mitsubishi Motor Sales of Canada	11 460	0.070000	23	137
Nissan Canada Inc.	84 027	0.061281	901	2 096
Porsche Cars Canada, Ltd.	2 130	0.1432	0	0
Roush Performance	20	0.125	0	0
Subaru Canada, Inc.	36 430	0.064422	0	0
Tesla Motors Canada Inc.	13 364	0.00000	962	1 970
Toyota Canada Inc.	86 011	0.082336	-889	2 134
Volkswagen Group Canada	78 118	0.041290	2 399	4 878
Volvo Cars of Canada Corp.	1 762	0.03168	0	0

Table 12 presents the summary of the company average NMOG+NO_x SFTP values for their LDV/LDT1 150k fleets.

Table 12: summary of company average NMOG+NO_x supplemental federal test procedure values for the light-duty vehicle and light-duty truck 1, 150K fleet

Company	Total number of vehicles in fleet	Fleet average NMOG+NO_x value (grams/mile)	Total 2019 MY credits	Credit balance
Aston Martin Lagonda Ltd.	146	0.09	0	0
BMW Group Canada	148	0.090	437	2 300
FCA Canada Inc.	23 245	0.071210	-139	706
Ferrari North America, Inc.	10 010	0.10386	0	0
Ford Motor Company of Canada, Ltd.	364	0.125	28	1 623
General Motors of Canada Company	28 635	0.089027	1 096	1 681
Honda Canada Inc.	66 623	0.073550	0	0
Hyundai Auto Canada Corp.	173 915	0.0871023	0	0

Jaguar Land Rover Canada, ULC	115 753	0.0717048	0	0
Kia Canada Inc.	64 285	0.071935	1 161	1 161
Maserati North America, Inc.	172	0.130	0	0
Mazda Canada Inc.	36 709	0.082311	282	4 248
Mercedes-Benz Canada Inc.	17 214	0.075468	250	1 943
Mitsubishi Motor Sales of Canada	11 460	0.090000	0	88
Nissan Canada Inc.	84 027	0.070797	1 614	3 249
Porsche Cars Canada, Ltd.	2 130	0.08945	0	0
Roush Performance	20	0.110	0	0
Subaru Canada, Inc.	36 430	0.056321	0	0
Tesla Motors Canada Inc.	13 364	0.00000	1 203	2 431
Toyota Canada Inc.	86 011	0.066530	2 019	3 677
Volkswagen Group Canada	78 118	0.049673	3 150	7 502
Volvo Cars of Canada Corp.	1 762	0.08027	0	0

3.1.3. Light-duty trucks 2, heavy light-duty trucks, and medium-duty passenger vehicles

Table 13 presents the summary of the company average NMOG+NO_x FTP values for their LDT2/HLDT/MDPV fleets.

Table 13: summary of company average NMOG+NO_x federal test procedure values for the light duty truck 2, heavy light-duty truck, and medium-duty passenger vehicle, 150K fleet

Company	Total number of vehicles in fleet	Fleet average NMOG+NO_x value (grams/mile)	Total 2019 MY credits	Credit balance
BMW Group Canada	18 585	0.078501	84	-253
FCA Canada Inc.	223 309	0.0899421	-1 550	-5 616
Ford Motor Company of Canada, Ltd.	200 389	0.0808142	438	-1 429
General Motors of Canada Company	180 808	0.0787169	774	-3 852
Honda Canada Inc.	30 399	0.10287	0	0
Jaguar Land Rover Canada, ULC	11 678	0.071880	130	631

Kia Canada Inc.	6 942	0.07376	64	64
Maserati North America, Inc.	291	0.160	0	0
Mazda Canada Inc.	33 683	0.064944	608	1 082
Mercedes-Benz Canada Inc.	19 918	0.082573	9	-83
Mitsubishi Motor Sales of Canada	6 950	0.05798	174	495
Nissan Canada Inc.	57 258	0.0061467	4 400	4 195
Porsche Cars Canada, Ltd.	5 723	0.07573	0	0
Subaru Canada, Inc.	29 723	0.074586	0	0
Toyota Canada Inc.	117 897	0.0671016	1 874	-208
Volkswagen Group Canada	50 314	0.069760	666	674
Volvo Cars of Canada Corp.	10 116	0.042329	0	0

Table 14 presents the summary of the company average NMOG+NO_x SFTP values for their LDT2/HLDT/MDPV fleets.

Table 14: summary of company average NMOG+NO_x supplemental federal test procedure values for the light duty truck 2, heavy light-duty truck, and medium-duty passenger vehicle, 150K fleet

Company	Total number of vehicles in fleet	Fleet average NMOG+NO_x value (grams/mile)	Total 2019 MY credits	Credit Balance
BMW Group Canada	18 585	0.084998	93	649
FCA Canada Inc.	223 309	0.0840609	1 326	318
Ford Motor Company of Canada, Ltd.	200 389	0.0841144	1 179	2 776
General Motors of Canada Company	180 808	0.0873858	473	-943
Honda Canada Inc.	30 399	0.094098	0	0
Jaguar Land Rover Canada, ULC	11 678	0.097049	0	0
Kia Canada Inc.	6 942	0.07410	110	110
Maserati North America, Inc.	291	0.130	0	0
Mazda Canada Inc.	33 683	0.069594	687	2 227
Mercedes-Benz Canada Inc.	19 918	0.062446	549	1 977
Mitsubishi Motor Sales of Canada	6 950	0.09000	0	83
Nissan Canada Inc.	57 258	0.071632	1 052	991

Porsche Cars Canada, Ltd.	5 723	0.08095	0	0
Subaru Canada, Inc.	29 723	0.056031	0	0
Toyota Canada Inc.	117 897	0.0700041	2 357	3 939
Volkswagen Group Canada	50 314	0.070697	971	2 645
Volvo Cars of Canada Corp.	10 116	0.082013	0	0

3.1.4 Class 2B vehicles

Table 15 presents the summary of the company average NMOG+NO_x FTP values for their Class 2B vehicle fleets.

Table 15: summary of company average NMOG+NO_x federal test procedure values for the Class 2B vehicle fleet

Company	Total number of vehicles in fleet	Fleet average NMOG+NO_x value (grams/mile)	Total 2019 MY credits	Credit balance
FCA Canada Inc.	13 891	0.24583	100	1 341
Ford Motor Company of Canada, Ltd.	32 722	0.24637	217	1 066
General Motors of Canada Company	21 595	0.25000	65	-442
Mercedes-Benz Canada Inc.	5 254	0.1902	330	403

3.1.5 Class 3 vehicles

Table 16 presents the summary of the company average NMOG+NO_x FTP values for their Class 3 fleets.

Table 16: summary of company average NMOG+NO_x federal test procedure values for the Class 3 vehicle fleet

Company	Total number of vehicles in fleet	Fleet average NMOG+NO_x value (grams/mile)	Total 2019 MY credits	Credit balance
FCA Canada Inc.	7 326	0.3280	528	774
Ford Motor Company of Canada, Ltd.	24 769	0.50745	-2 662	-2 725
General Motors of Canada Company	10 841	0.40000	0	614
Mercedes-Benz Canada Inc.	1 318	0.2300	224	216

Average NMOG+NO_x values above the applicable NMOG+NO_x standards for a given fleet can be attributed to the following factors:

1. The company elects to exclude from mandatory compliance with the fleet average NMOG+NO_x standard its group of U.S. certified vehicles that are sold in Canada and the U.S. This exclusion is allowed because the objective of the fleet averaging provisions is to achieve an overall Canadian vehicle fleet emission performance comparable to that of the U.S., while minimizing the regulatory burden on companies. An analysis conducted by Environment and Climate Change Canada indicated that, even under extreme scenarios, the variations between the Canadian and U.S. fleet averages are expected to be small.
2. The company made use of an interim provision allowing them to include their LDV/LDT1 120k mile useful life vehicles certified to bins greater than bin 70 in their LDV/LDT1 150k mile useful life fleet. This interim provision may be used through MY 2019. This allows their LDV/LDT1 120k vehicles to meet the less stringent standard of the LDV/LDT1 150k fleet.
3. The average NMOG+NO_x value is above the NMOG+NO_x standard for 1 of its fleets. A company can offset a deficit from 1 fleet with credits from another fleet within the same averaging set.
4. The average NMOG+NO_x value is above the applicable standard. A company can offset a deficit in a subsequent MY.

3.1.6 NMOG+NO_x Averaging Sets

NMOG+NO_x credits may be exchanged only within an averaging set, as follows:

1) LDV and LDT1 certified to standards based on a useful life of 120,000 miles and 10 years
2) LDV and LDT
3) HDV

However, FTP and SFTP credits are not interchangeable.

3.1.7. Early action credits

Early Action credits are earned over the 2015-2016 MYs for a company's fleet of LDV/LDT1 vehicles and over the 2016-2017 MYs for a company's fleet of LDT2/HLDT/MDPV vehicles if the respective NMOG+NO_x fleet averages are below the 0.160 standard.

Early action credits are also earned over the 2016-2017 MYs for a company's fleet of Class 2B vehicles or fleet of Class 3 vehicles if the respective NMOG+NO_x fleet averages are below the applicable standards for the MY in question set out in Table 8.

3.1.8. Overall performance of Canadian fleets

Figure *2* shows the overall Canadian NMOG+NO_x fleet averages from the 2015 to 2019 MY for the LDV/LDT1 and LDT2/HLDT/MDPV fleets.

Figure 2: NMOG+NO_x Fleet averages and standards for the light-duty vehicle and light-duty truck 1 fleet and the light-duty truck 2, heavy light-duty trucks and medium-duty passenger vehicles fleet

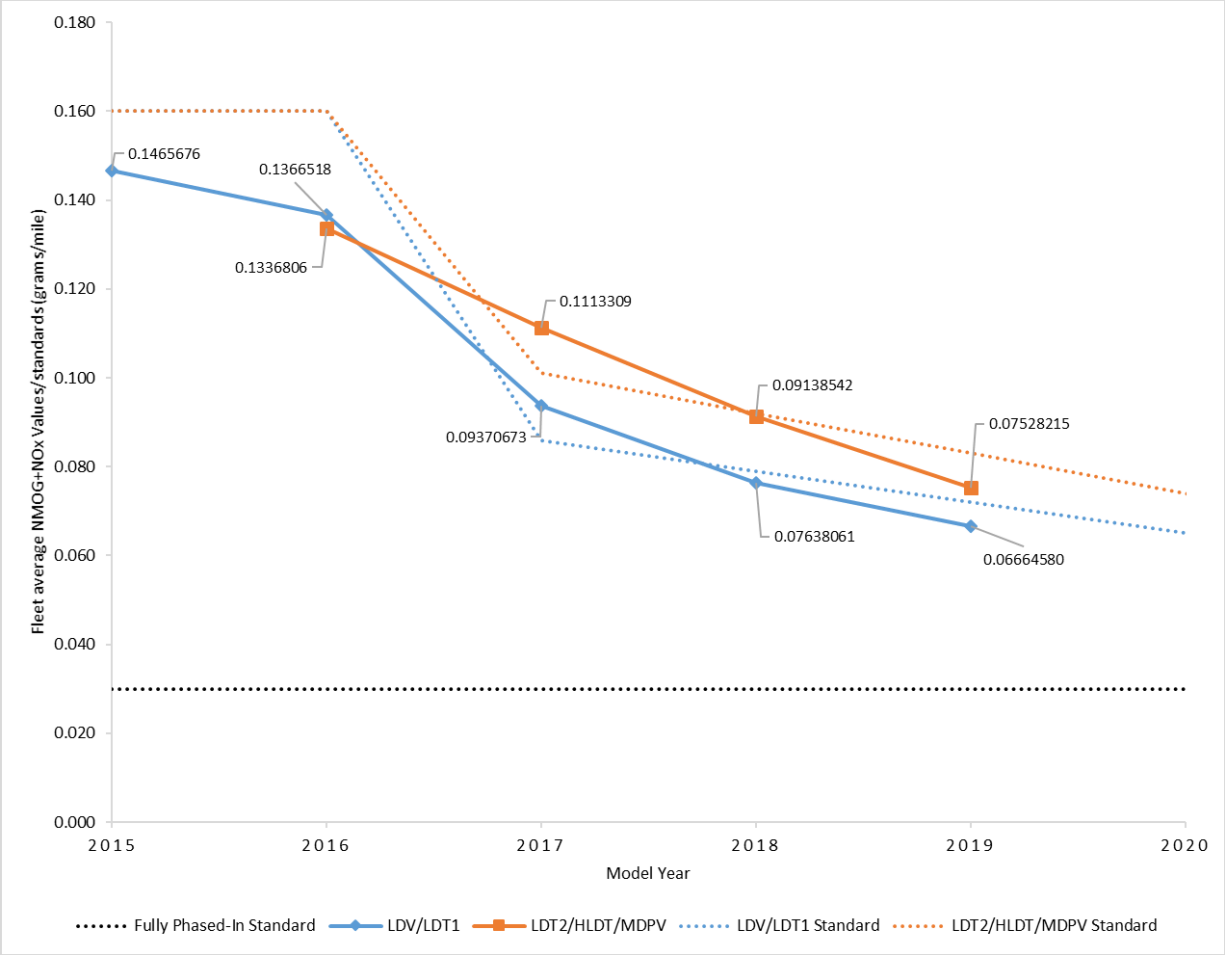
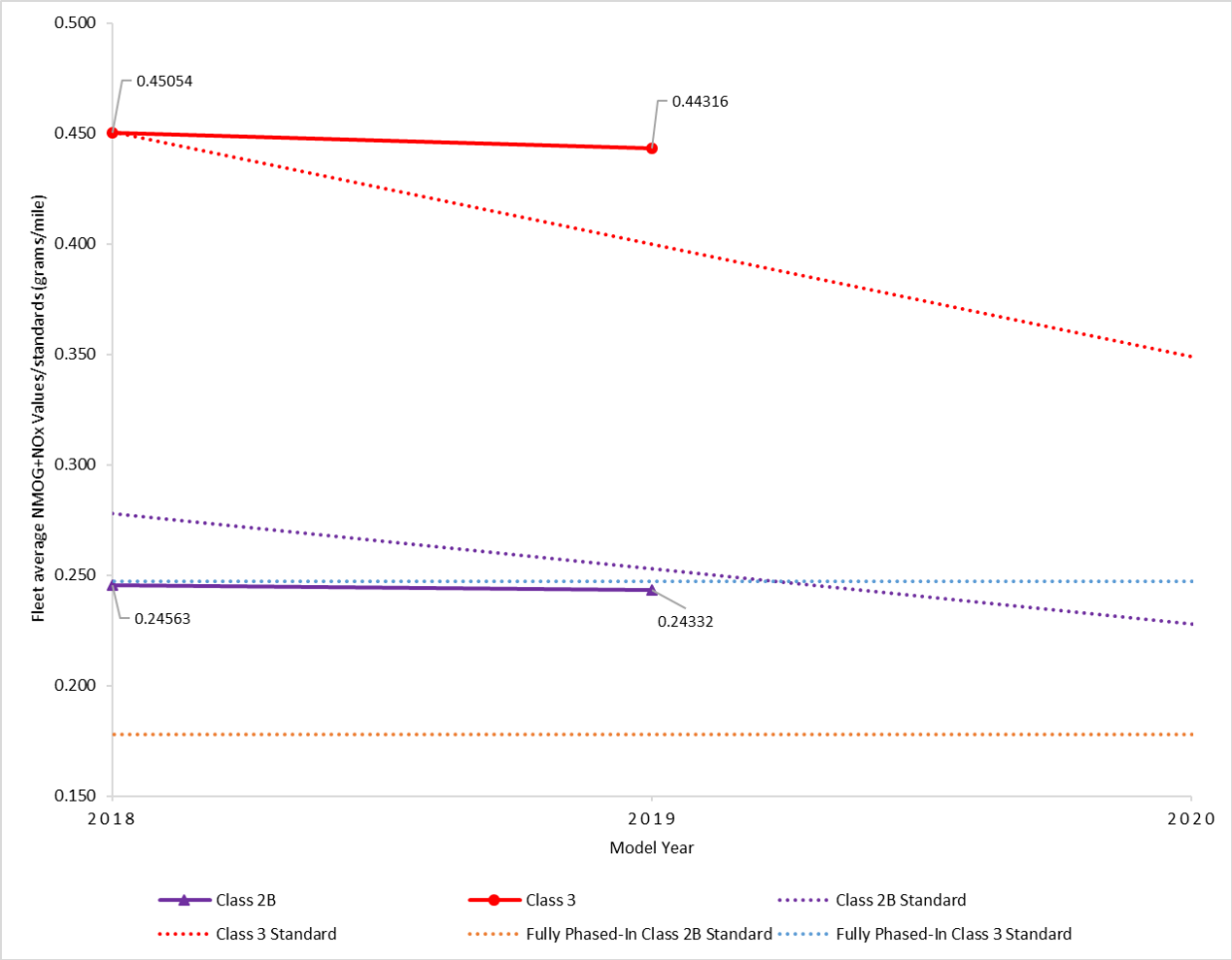


Figure 3 shows the overall Canadian NMOG+NO_x fleet averages from the 2018 to 2019 MY for the Class 2B and Class 3 fleets.

Figure 3: NMOG+NO_x Fleet averages and standards for the Class 2B fleet and the Class 3 fleet



3.2. Fleet average cold NMHC emission performance

This section describes the manufacturer's cold NMHC fleet average performance.

Table 17 presents the fleet average cold temperature NMHC exhaust emission standards.

Table 17: fleet average cold temperature NMHC exhaust emission standards

Vehicle weight category	Cold temperature NMHC sales- weighted fleet average standard (grams/mile)
LDV and LLDT	0.3
HLDT	0.5

3.2.1. Light-duty vehicles and light light-duty trucks

Table 18 presents the summary of company average cold NMHC values for their LDV/LLDT fleets.

Table 18: summary of company average cold NMHC values for the light-duty vehicle and light light-duty truck fleet

Company	Total Number of Vehicles in Fleet	Fleet Average cold NMHC Value (grams/mile)	Total 2019 MY Credits	Credit balance
Aston Martin Lagonda Ltd.	148	0.3	0	0
BMW Group Canada	32 978	0.3	0	0
FCA Canada Inc.	63 590	0.3	0	0
Ferrari North America, Inc.	364	0.3	0	0
Ford Motor Company of Canada, Ltd.	97 253	0.3	0	0
General Motors of Canada Company	115 519	0.3	0	0
Honda Canada Inc.	189 695	0.3	0	0
Hyundai Auto Canada Corp.	111 169	0.3	0	0
Jaguar Land Rover Canada, ULC	5 608	0.3	0	0
Kia Canada Inc.	70 041	0.3	0	0
Maserati North America, Inc.	172	0.3	0	0
Mazda Canada Inc.	70 208	0.2	7 021	15 293
McLaren Automotive Ltd.	195	0.3	0	0
Mercedes-Benz Canada Inc.	31 114	0.3	0	0
Mitsubishi Motor Sales of Canada	18 410	0.3	0	0
Nissan Canada Inc.	133 316	0.3	0	0
Porsche Cars Canada, Ltd.	3744	0.3	0	0
Roush Performance	20	0.5	0	0
Subaru Canada, Inc.	66 153	0.3	0	0
Toyota Canada Inc.	183 208	0.3	0	0
Volkswagen Group Canada	107 989	0.3	0	0
Volvo Cars of Canada Corp.	8 650	0.4	0	0

3.2.2. Heavy light-duty trucks and medium-duty passenger vehicles

Table 19 presents the summary of company average cold NMHC values for their HLDT/MDPV fleets.

Table 19: summary of company average cold NMHC values for the heavy light-duty truck and medium duty passenger vehicle fleet

Company	Total number of vehicles in fleet	Fleet average cold NMHC value (grams/mile)	Total 2019 MY credits	Credit Balance
BMW Group Canada	8 783	0.3	1 757	3 135
FCA Canada Inc.	167 068	0.4	16 707	45 201
Ford Motor Company of Canada, Ltd.	129 858	0.4	12 986	40 544
General Motors of Canada Company	123 811	0.4	12 381	38 846
Honda Canada Inc.	14 619	0.3	0	0
Jaguar Land Rover Canada, ULC	4 209	0.4	421	951
Maserati North America, Inc.	291	0.5	0	0
Mercedes-Benz Canada Inc.	5 877	0.3	1 175	1 175
Nissan Canada Inc.	3 629	0.5	0	0
Porsche Cars Canada, Ltd.	4 109	0.3	0	0
Toyota Canada Inc.	20 504	0.5	0	0
Volkswagen Group Canada	18 501	0.3	3 700	5 263
Volvo Cars of Canada Corp.	3 228	0.3	0	0

3.3. Fleet average EVAP emission performance

This section describes the manufacturers EVAP fleet average performance.

Table 20 presents the fleet average EVAP emission standards.

Table 20: Tier 3 diurnal plus hot soak emission standards in grams per test

Vehicle category	Low-altitude conditions – fleet average
LDV, LDT1	0.3
LDT2	0.4
HLDT	0.5
HDV	0.6

3.3.1. Light-duty vehicles and light-duty trucks 1

Table 21 presents the summary of company average EVAP values for their LDV/LDT1 fleets.

Table 21: summary of company average EVAP values for the light-duty vehicle and light duty truck 1 fleet

Company	Total number of vehicles in fleet	Fleet average EVAP value (grams/mile)	Total 2019 MY credits	Credit Balance
BMW Group Canada	21 489	0.3	0	0
FCA Canada Inc.	879	0.3	0	0
Ford Motor Company of Canada, Ltd.	16 830	0.3	0	0
General Motors of Canada Company	1 702	0.3	0	0
Honda Canada Inc.	135 375	0.3	0	0
Hyundai Auto Canada Corp.	94 570	0.3	0	0
Jaguar Land Rover Canada, ULC	423	0.3	0	0
Kia Canada Inc.	57 835	0.3	0	0
Mazda Canada Inc.	17 294	0.3	0	0
Mercedes-Benz Canada Inc.	14 289	0.3	0	0
Mitsubishi Motor Sales of Canada	11 460	0.3	0	0
Nissan Canada Inc.	69 133	0.3	0	0
Porsche Cars Canada, Ltd.	1 102	0.4	0	0
Subaru Canada, Inc.	31 812	0.3	0	0
Toyota Canada Inc.	50 618	0.3	0	0
Volkswagen Group Canada	70 931	0.3	0	0
Volvo Cars of Canada Corp.	1 762	0.3	0	0

3.3.2. Light-duty trucks 2

Table 22 presents the summary of company average EVAP values for their LDT2 fleets.

Table 22: summary of company average EVAP values for the light-duty truck 2 fleet

Company	Total number of vehicles in fleet	Fleet average EVAP value (grams/mile)	Total 2019 MY credits	Credit Balance
BMW Group Canada	9 802	0.3	980	1 792
FCA Canada Inc.	51 853	0.4	0	0

Ford Motor Company of Canada, Ltd.	64 936	0.4	0	0
General Motors of Canada Company	52 833	0.4	0	0
Honda Canada Inc.	8 970	0.4	0	0
Jaguar Land Rover Canada, ULC	5 051	0.4	0	0
Kia Canada Inc.	6 468	0.4	0	0
Mazda Canada Inc.	21 361	0.3	2 136	6 661
Mercedes-Benz Canada Inc.	1 941	0.3	194	330
Mitsubishi Motor Sales of Canada	6 950	0.3	695	1 876
Nissan Canada Inc.	32 253	0.4	0	0
Porsche Cars Canada, Ltd.	1 614	0.7	0	0
Subaru Canada, Inc.	26 691	0.3	0	0
Toyota Canada Inc.	97 393	0.4	0	0
Volkswagen Group Canada	30 895	0.4	0	0
Volvo Cars of Canada Corp.	6 888	0.3	0	0

3.3.3. Heavy light-duty trucks and medium-duty passenger vehicles

Table *23*Table 23 presents the summary of company average EVAP values for their HLTD/MDPV fleets.

Table 23: summary of company average EVAP values for the heavy light-duty truck and medium-duty passenger vehicle fleet

Company	Total number of vehicles in fleet	Fleet average EVAP value (grams/mile)	Total 2019 MY credits	Credit Balance
BMW Group Canada	8 271	0.5	0	0
FCA Canada Inc.	106 341	0.5	0	0
Ford Motor Company of Canada, Ltd.	122 655	0.5	0	0
General Motors of Canada Company	123 797	0.5	0	0
Honda Canada Inc.	14 619	0.5	0	0
Jaguar Land Rover Canada, ULC	1 808	0.5	0	0
Mercedes-Benz Canada Inc.	5 877	0.5	0	0

Nissan Canada Inc.	1 602	0.5	0	0
Porsche Cars Canada, Ltd.	4 109	0.5	0	0
Toyota Canada Inc.	1 677	0.5	0	0
Volkswagen Group Canada	14 774	0.4	1 477	1 477
Volvo Cars of Canada Corp.	3 228	0.5	0	0

3.3.4. Class 2B and Class 3 vehicles

Table 24 presents the summary of company average EVAP values for their Class 2B and Class 3 fleets.

Table 24: summary of company average EVAP values for the Class 2B and Class 3 vehicle fleet

Company	Total number of vehicles in fleet	Fleet average EVAP value (grams/mile)	Total 2019 MY credits	Credit Balance
General Motors of Canada Company	5 793	0.6	0	0

3.3.5 Evaporative emission averaging sets

The following separate averaging sets apply for evaporative emission standards:

1) LDV and LDT1 together represent a single averaging set.

2) LDT2 represents a single averaging set.

3) HLDT represents a single averaging set.

4) HDV represents a single averaging set.

Credits can be exchanged across averaging sets as follows if additional credits are needed to offset a deficit after the final year of maintaining deficit credits:

1) You may exchange LDV/LDT1 and LDT2 emission credits.

2) You may exchange HLDT and HDV emission credits.

3.4. PM and EVAP phase-in performance

For the 2019 MY, 40% of a company's fleet of light-duty vehicles, light-duty trucks and medium-duty passenger vehicles and 40% of a company's fleet of Class 2b and Class 3 vehicles must meet the Tier 3 PM standards and 60% of a company's overall fleet must meet the Tier 3 EVAP standards. All companies met these requirements.

4. Conclusions

The 2019 MY results represents the third reporting cycle under the new more stringent Tier 3 emission standards. All companies subject to reporting requirements submitted end of MY reports comprising a

total of 1 972 856 vehicles manufactured in Canada or imported into Canada for the purpose of first retail sale.

The average NMOG+NO_x value for the Canadian 2019 MY combined fleet of light-duty vehicles and light-duty trucks 1 is 0.06664580 grams/mile compared to the standards of 0.072 grams/mile. The average NMOG+NO_x value for the Canadian 2019 MY combined fleet of light-duty trucks 2, heavy-light duty trucks and medium-duty passenger vehicles is 0.07528215 grams/mile compared to the standard of 0.083 grams/mile. The average NMOG+NO_x value for the Canadian 2019 MY fleet of Class 2B vehicles is 0.24332 grams/mile compared to the standard of 0.253 grams/mile. The average NMOG+NO_x value for the Canadian 2019 MY fleet of Class 3 vehicles is 0.44316 grams/mile compared to the standard of 0.400 grams/mile.

The overall NMOG+NO_x fleet averages demonstrate industry improvements in emission performance. While the fleet average value for the Class 3 fleet is above the applicable standards for the 2019 MY, companies have 3 years to offset any deficits incurred, and all currently remain in compliance with the fleet averaging provisions of the Regulations.

All companies have complied with the 2019 PM and EVAP phase-in percentages and have met the cold NMHC fleet average standards.