

**Reply to Comments on the Proposed On-Road Vehicle
and Engine Emission Regulations**

**Transportation Systems Branch
Environment Canada**

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Table of Contents

1) INTRODUCTION	1
2) PARTIES PROVIDING SUBMISSIONS.....	1
3) ISSUES ON REGULATORY TEXT: COMMENTS AND REPLY.....	3
ALIGNMENT WITH U.S. EMISSION STANDARDS	3
INTERPRETATION	5
(a) General Approach.....	5
(b) Definition of “Fleet”	5
(c) Definition of “Defeat Device”	6
(d) Definition of “On-Road Vehicle”	6
(e) Clarification of “Unique Canadian Vehicle” and “Sold Concurrently”	6
PROVISIONS FOR SMALL VOLUME MANUFACTURERS	8
EFFECTIVE DATE	9
NATIONAL EMISSIONS MARK	11
(a) Form of the Mark.....	11
(b) Timing of the Requirement for the Mark	12
(c) Application for Authorization to Apply the Mark.....	12
(d) Application of the Mark to Heavy-Duty Engines.....	13
EMISSION CONTROL SYSTEMS.....	14
APPLICATION OF FORMER EMISSION STANDARDS.....	14
CRANKCASE EMISSIONS FROM HEAVY-DUTY DIESEL ENGINES	15
NOX FLEET AVERAGE STANDARDS FOR LIGHT-DUTY VEHICLES, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY PASSENGER VEHICLES.....	15
(a) Proposed Canadian Option for NOx Averaging.....	15
(b) Impact of Proposed Approach on Fleet Emission Projections.....	21
(c) Measurement Units and General Application.....	23
(d) Heavy Light-Duty Trucks and Medium-Duty Passenger Vehicles.....	24
(e) Calculation of Fleet Average NOx Values.....	25
(f) NOx Emission Credits and Deficits.....	26
(g) Deficit of a Company Out of Business	27
(h) Fleet Average NOx Records.....	27
(i) End of Model Year Reports.....	28
EMISSION-RELATED INFORMATION LABELS.....	28
EVIDENCE OF CONFORMITY	29
MAINTENANCE AND SUBMISSION OF RECORDS.....	30
IMPORTATION REQUIREMENTS	30
RENTAL RATE FOR TEST VEHICLES AND ENGINES.....	30
REPORTING OF EMISSION-RELATED DEFECTS.....	32
CONSEQUENTIAL AMENDMENTS TO MOTOR VEHICLE SAFETY REGULATIONS	32
IN-USE VEHICLE TESTING BY ENVIRONMENT CANADA	33
FUEL QUALITY	36
NOT-TO-EXCEED STANDARDS FOR HEAVY-DUTY ENGINES.....	38
EMISSIONS AVERAGING, BANKING AND TRADING FOR HEAVY-DUTY ENGINES.....	38
PAYMENT OF NON-CONFORMANCE PENALTIES FOR HEAVY-DUTY ENGINES.....	39
4) ISSUES RELATED TO THE REGULATIONS: COMMENTS AND REPLY.....	40
REGULATORY POLICY.....	40
COST OF COMPLIANCE WITH NEW EMISSION STANDARDS.....	42

MARKET REACTION TO NEW HEAVY-DUTY ENGINES.....	43
IMPACT OF NEW STANDARDS ON FUEL EFFICIENCY.....	45
IMPACT OF U.S. CONSENT DECREES ON EMISSION PROJECTIONS	45
5) OTHER TRANSPORTATION-RELATED ISSUES: COMMENTS AND REPLY	47
FUEL EFFICIENCY STANDARDS FOR VEHICLES.....	47
OFF-ROAD DIESEL FUEL AND ENGINES.....	47
PROMOTION OF SUSTAINABLE TRANSPORTATION	48
MODAL EQUITY: TRUCKING AND RAILWAY LOCOMOTIVES	49
APPENDIX 1.....	51

1) INTRODUCTION

On February 17, 2001, the Minister of the Environment published the Federal Agenda on Cleaner Vehicles, Engines and Fuels in the *Canada Gazette* Part I. This agenda outlined the Minister's intent to develop and implement a series of measures over the next decade to reduce emissions from vehicles, engines and fuels.

One of the major elements of the federal agenda is the development of new regulations under the authority of Part 7, Division 5 of CEPA 1999, to continue aligning Canada's emission standards for on-road vehicles and engines with those of the United States Environmental Protection Agency (EPA).

In November, 2001 Environment Canada held public consultations on a Discussion Draft of new federal emission standards. The comments of interested parties were taken into account in the development of the proposed "*On-Road Vehicle and Engine Emission Regulations*". The Regulations were published in the *Canada Gazette* Part I on March 30, 2002, for a formal 60-day public consultation. Environment Canada has considered all the comments received during this consultation in developing final regulations.

The major issues raised by commenters in regards to the proposed Regulations are addressed in the Regulatory Impact Analysis Statement (RIAS) that accompanies the publication of the final Regulations in the *Canada Gazette* Part II. This document provides a more detailed summary of the comments received from stakeholders and provides Environment Canada's responses to these comments.

2) PARTIES PROVIDING SUBMISSIONS

Submissions on the proposed Regulations were received from the following parties:

Governments

Alberta Environment
B.C. Ministry of Water, Land and Air Protection (B.C. MWLAP)
City of Toronto
Greater Vancouver Regional District (GVRD)
Ontario Ministry of the Environment and Energy (OMOEE)

Vehicle and Engine Manufacturing Industry

Association of International Automobile Manufacturers of Canada (AIAMC)¹
Canadian Vehicle Manufacturers' Association (CVMA)¹
DaimlerChrysler Inc.²
Engine Manufacturers Association (EMA)
Ford Motor Company of Canada Limited³
Motorcycle and Moped Industry Council (MMIC)
Volkswagen of America Inc.⁴

Notes:

1. The comments of the CVMA and the AIAMC were provided as a joint submission.
2. DaimlerChrysler stated that it *"supports the comments submitted by the Canadian Vehicle Manufacturers' Association (CVMA) and the Association of International Automobile Manufacturers of Canada(AIAMC)"*.
3. Ford comments were submitted on its behalf and on behalf of its affiliated brands sold in Canada, including Land Rover, Mazda, Jaguar, Volvo, and Aston Martin. Ford also stated that: *"We have also expressed our views through Canadian Vehicle Manufacturers' Association (CVMA) and the Association of International Automobile Manufacturers of Canada(AIAMC)"*.
4. Volkswagen's comments were submitted on behalf of Volkswagen AG, Audi AG, Bentley Motor Cars and Automobili LAMBORGHINI S.p.A. Volkswagen also stated that: *"Volkswagen strongly endorses the comments submitted on May 30, 2002, to Environment Canada by the Canadian Vehicle Manufacturers' Association (CVMA) and the Association of International Automobile Manufacturers of Canada(AIAMC)"*.

Oil Industry

Canadian Petroleum Products Institute (CPPI)
Shell Canada

Others Groups or Associations

Canadian Trucking Alliance (CTA)
David Suzuki Foundation
West Coast Environmental Law

Individuals

Five private individuals

3) ISSUES ON REGULATORY TEXT: COMMENTS AND REPLY

ALIGNMENT WITH U.S. EMISSION STANDARDS

- *“Alberta Environment supports Canada’s intention to align Canada’s vehicle emission control programs with those of the United States. A harmonized approach on emission standards is preferred and will result in fewer transition and implementation problems.”*
- *B.C. MWLAP stated: “In January 2000, the province and other partners, including Environment Canada, completed a “Clean Transportation Analysis Project” to assess options for post-2004 tailpipe standards for British Columbia. The review concluded that the United States (US) federal Tier 2 standards were the most effective, both environmentally and in terms of cost-effectiveness. ...Given the above context, we welcome the stated federal commitment to harmonizing emission regulations with US Tier 2 standards, since it will level the playing field within Canada, and with the United States.”*
- *The City of Toronto stated: “I commend the federal government for moving ahead on a strategy that will improve air quality and contribute to Canada’s compliance with the Ozone Annex of the 1991 Canada-US Air Quality Agreement.”*
- *The GVRD stated: “Let me start by saying that we fully support efforts to improve emissions of air contaminants from the motor vehicle sector. The Government of Canada’s Clean Vehicles and Fuels Agenda, and the harmonization of emission standards with those of the U.S. Environmental Protection Agency (EPA), will be a significant factor in efforts to achieve and maintain healthy air quality in this region.”*
- *“The Ontario Ministry of the Environment and Energy (MOEE) supports Environment Canada’s approach to align Canadian federal emission standards and test procedures for on-road vehicles and engines with those of the U.S. Environmental Protection Agency (U.S. EPA).”*

The CVMA and AIAMC stated:

- *“The CVMA and AIAMC member companies are committed to providing Tier 2 program emission control equipped vehicles in Canada at the same time as those sold in the U.S. The CVMA and AIAMC support the continued alignment of emissions hardware and timing with the U.S. EPA vehicle emissions programs.”*

- *“The continued harmonization of products across North America provides Canadians with new vehicles equipped with state-of-the-art emission control technologies in the most cost-effective way.”*
- *“The rationale for harmonized product is even more valid today and should be employed with respect to the current proposed emission regulation. A continuation of the principle of accepting, through self-certification, vehicles covered by a U.S. EPA certificate of conformity without any other burdensome, non-value added requirements is essential.”*
- *“EMA supports Environment Canada’s efforts to improve air quality by aligning Canada’s emission standards for on-road vehicles and engines with those of the EPA. EMA agrees that harmonization is the preferred approach as it provides Canada with the benefits of the most effective available emission control technology, in the most cost-effective manner with those of the EPA.”*
- *“Ford supports the idea of a Canadian Tier 2 regulation, the need for alignment of Canadian and U.S. Federal emission standards and product harmonization as a basis for Canadian regulatory policy.”*
- *The MMIC stated: “We remain supportive of your approach to regulation and are interested in maintaining the productive relationship we have with Environment Canada.”*
- *“Volkswagen fully supports the coordinated introduction of vehicles equipped with advanced emission control system hardware in Canada and the United States. Similar to other manufacturers, Volkswagen generally rationalizes its product offerings on a North American basis. As such the Canadian consumer has the benefit of being offered some of the cleanest vehicles in the world.”*
- *“CPPI fully supports the alignment of Canadian vehicle and engine emission standards with those of the USA, in parallel with policies of alignment on the enabling fuel standards.”*
- *“Shell supports the regulatory alignment of Canadian vehicle emission standards and fuel quality requirements with those of the USA.”*
- *“The Canadian Trucking Alliance (CTA) supports the harmonization of Canadian heavy-duty diesel engine regulations with those of the United States Environmental Protection Agency(EPA). The proposed regulations appear to meet this harmonization criterion.”*

- West Coast Environmental Law stated: *“Since 1995, West Coast Environmental Law has called for the federal government to harmonize Canadian emission standards with standards in either the US or California.”*

Reply:

As stated in section 2 of the Regulations, one of the primary purposes of the Regulations is align Canadian emission standards with those of the U.S. EPA. The Regulations are designed to achieve the desired alignment. Comments on specific aspects of the Regulations are addressed in other sections of this document.

INTERPRETATION

(a) General Approach

CVMA and AIAMC stated:

- *“Where possible, definitions need to be identical with those in the U.S. If the Canadian unique definitions are needed, then clarification is necessary as to why they need to be different.”*
- *“The definitions need to be consistent with those in the CFR. This will allow for consistent application and allow for any future changes to the U.S. regulations.”*

Reply:

Environment Canada recognizes that in aligning with U.S. federal emission standards, definitions must be consistent between both countries. The terms that are used directly in the Regulations are defined and to the extent possible, definitions have been reproduced exactly as written in the U.S. Code of Federal Regulations (CFR).

(b) Definition of “Fleet”

- CVMA and AIAMC stated: *“The “fleet” definition – references “all vehicles”. The problem is that it is not clear how fleet will be used in the regulation. This same issue also applies to Section 28.”*

Reply:

In the Regulations, the term “fleet” applies only in respect of the fleet averaging requirements for light-duty vehicles, light-duty trucks and medium-duty passenger vehicles. For greater clarity, the definition has been moved to section 20, which is a general introduction to the fleet averaging provisions contained in sections 21 to 32. The interpretation has been slightly modified to specify that “fleet” refers to the vehicles that a company manufactures in Canada, or imports into Canada, for the purpose of sale of those vehicles to the first retail purchaser. In sections 21 to 32, the term “fleet” is further defined to specify subgroups of vehicles for which various provisions apply. For example, the provisions of section 21 apply to a company’s fleet that is composed of all of its light-duty vehicles and light light-duty trucks.

(c) Definition of “Defeat Device”

- CVMA and AIAMC stated: *““defeat device” definition – It is unclear why the definition has been deleted from the proposed regulation when it was part of the discussion draft. Clarification is requested on this matter.”*

Reply:

Rather than having a definition of “defeat device” in section 1 of the Regulations, the Department believed it was more appropriate to incorporate all aspects affecting the interpretation of “defeat device” in the section prescribing various requirements for emission control systems (i.e. section 11 of the final Regulations).

(d) Definition of “On-Road Vehicle”

- CVMA and AIAMC stated: *““on-road vehicle” – What is meant by “temporarily affixed apparatus”? Clarification is needed why this is part of the definition and its meaning.”*

Reply:

The reference to a permanent or temporarily attached apparatus is intended to include vehicles that transport any apparatus, whether it is permanently or temporarily attached to the vehicle. This approach is consistent with the corresponding definition of motor vehicle in section 216 (2) of the U.S. Clean Air Act, and the clarifying criteria set out in section 85.1703 of the U.S. Code of Federal Regulations.

(e) Clarification of “Unique Canadian Vehicle” and “Sold Concurrently”

CVMA and AIAMC stated:

- *“CVMA and AIAMC believe that the proposed regulations are intended to allow Canada to accept Canadian model of vehicles equipped with emission systems (exhaust and evaporative control) approved by the U.S. EPA and granted a certificate of conformity. However, further clarification is required regarding the intended interpretation of ‘sold concurrently’.*
- *“The issue at hand is that manufacturers may provide some models for the Canadian market that are equipped with emissions systems covered in the U.S. by the same certificate of conformity but are vehicles with amenities specifically for the Canadian marketplace. For example, brand name difference, body variation or lower line (lower retail cost) vehicles may be made available in Canada and not in the U.S. It is important to note that the above mentioned vehicles are equipped with the same emission control systems covered by and conforming to the EPA certificate of conformity and sold concurrently in the U.S.”*
- *“Clarification of this provision is required to recognize these vehicles as EPA certified, and covered by the same certificate of conformity to ensure that they are not unintentionally captured as Canada unique. In all cases, environmental performance should be the distinguishing factor used when determining the ‘Canada unique’ status of a vehicle.”*
- *“Section 16 – We accept Section 16 with the caveat that the term “sold concurrently” is clarified as outlined in our cover letter and section 28 in our detailed comments. This also applies to Sections 32.”*
- *“It is overly burdensome to require vehicles certified to EPA requirements and conforming to the EPA standards to also follow the requirements of section 9 to 14, for vehicles not “sold concurrently”. The U.S. certificate of conformity alone is sufficient to substantiate conformity to requirements in lieu of the requirements of sections 9 to 14.”*
- *Section 32 - “ ‘Sold concurrently’ is extremely problematic, we recommend this section be reworded to be consistent with our recommendations in Section 16 and 28. EPA certification is sufficient evidence of conformity regardless of whether the vehicle is sold concurrently.”*
- *Ford stated: “It is also important that when Environment Canada is considering the issue of “vehicles or engines sold concurrently” (as highlighted in section 16, 28 and 32) the distinguishing or commonizing factors must be environmental, not cosmetic or of “brands”. If a vehicle shares engine family*

and the powertrain is covered by an EPA certificate of conformity then that vehicle, regardless of nomenclature or marketing features, should be considered “common” to both the U.S. and Canada and treated as such.”

Volkswagen stated:

- *“All vehicles that are covered by a particular EPA Certificate of Conformity share common exhaust and evaporative emission control system hardware and demonstrate the same emission characteristics. These vehicles are grouped and certified in exhaust emission test group/evaporative-refuelling family combinations. When testing for compliance with the emission standards, the manufacturer must select vehicles that are expected to represent the worst-case within the test group and evaporative-refuelling family. Therefore, the emission results demonstrate that all vehicles covered by a particular EPA certificate comply with the applicable standards for their full useful life.”*
- *“While vehicles may be sold in Canada that differ from comparable U.S.-version vehicles in levels of equipment or décor, or other attributes that are not considered criteria in the determination of the exhaust emission test group/evaporative-refuelling family, these vehicles should not be considered “Canada unique” in the context of the emission regulations. The fact that the same EPA certificate covers these vehicles should be sufficient evidence of conformity and concurrent sales in Canada and the United States.”*

Reply:

There are instances of vehicles being marketed in Canada which are substantially the same as corresponding U.S. vehicles, but with some minor differences in features such as name plates, equipment variation, etc. Consistent with the intent of the proposal, provisions have been added to the Regulations to clarify that a Canadian vehicle or engine is deemed to be covered by a U.S. EPA certificate of conformity if it shares all of the features used by the EPA to classify vehicles or engines into test groups and evaporative and refuelling families and has no features that would result in higher emissions than the vehicles or engines tested for the issuance of the certificate of conformity. Such vehicles are required to conform to the standards referred to in the associated certificate of conformity.

PROVISIONS FOR SMALL VOLUME MANUFACTURERS

- CVMA and AIAMC stated: *“Section 1.(2)(b) - This proposed subsection indicates that the provisions for small volume manufacturers incorporated in*

the U.S. EPA CFRs are not included. We request that for Canadian vehicles and/or engines, the small volume provisions as set out in Subpart S of the CFR be included but with an appropriately modified Small Volume manufacturer and Small Volume test group definition. Alternatively, a statement or section that provides a venue for addressing Small Volume manufacturer and Small Volume test group issues should be added.”

- Volkswagen stated: *“Volkswagen requests the small volume provisions as set out in Subpart S of the CFR be included in the final Canadian regulations, but with an appropriately modified Small Volume Manufacturer and Small Volume Test Group definition. The modification would reflect the sales volumes for Small Volume Manufacturers and Small Volume Test Groups appropriate for the Canadian market. Alternatively, a statement or section that provides a site for addressing Small Volume Manufacturer and Small Volume Test Group issues should be added.”*

Reply:

Specific “small volume manufacturer” provisions are generally included in the U.S. rules to allow flexibility for such manufacturers to: (1) use optional procedures to demonstrate compliance with standards such as using alternate, less resource-intensive procedures to demonstrate the durability of emission control systems; and (2) to exempt these manufacturers from short-term phase-in requirements.

The Regulations are structured in such a manner that U.S. EPA provisions for small volume manufacturers are addressed through the acceptance of an EPA certificate of conformity as evidence of conformity with standards and the overall approach to the phase-in of emission standards. In the case of vehicles that are not U.S. certified, the Regulations allow small volume manufacturers, like any other company, to produce evidence of conformity in a form and manner that is satisfactory to the Minister.

In view of the above, the Department believes that the Regulations will not disadvantage small volume manufacturers. Should a situation arise where a company with specified low volumes of vehicles believes that compliance with a prescribed standard would create substantial financial hardship, the company may request that the Governor in Council grant an exemption from conformity with that standard pursuant to the provisions of section 156 of CEPA 1999.

EFFECTIVE DATE

CVMA and AIAMC stated:

- *“The date applicability of these regulations should distinguish between when vehicle emission averaging could begin and when the NEM is required. For instance, the requirement for the NEM could commence on August 31, 2003 while emission averaging could commence on January 2, 2003.”*
- *“Also, EC must consider that some of our companies will begin producing MY 2004 vehicles in January 2003 and these companies do not want to make a running change with regard to labels. Environment Canada (EC), along with Transport Canada (TC) and Industry Canada (IC) must coordinate an implementation date for the use of the three proposed labels.”*
- *“Moreover, although Section 20.(6) allows manufacturers to include 2004 model year vehicles produced before September 1, 2003 in the fleet average NOx calculation for the 2004 model year, the proposed regulation at Section 1.(3) do not recognize, and may preclude compliance with Tier 2 emission standards for such vehicles. The proposed regulation should include a provision to allow manufacturers to elect to comply with the Tier 2 regulation for any 2004 model year vehicle or engine.”*

Volkswagen stated:

- *“Although Section 20.(6) allows manufacturers to include 2004 model year vehicles produced before September 1, 2003 in the fleet average NOx calculation for the 2004 model year, the proposed regulation at Sections 1.(3) and 4.(3) do not recognize, and may preclude compliance with new Canadian emission standards (including the application of the National Emission Mark) for such vehicles.”*
- *“Volkswagen intends to begin production of 2004 model year vehicles in advance of the September 1, 2003 effective date. As such, we would prefer to have the opportunity to certify these vehicles to the new emission standards and not to split the model year such that vehicles produced before September 1, 2003 are precluded from the regulations that take effect after that date.”*
- *“The proposed regulation should include a provision that would allow manufacturers to elect to comply with the new On-Road Vehicle and Engine Emission Regulations for any 2004 model year vehicle or engine, regardless of the production date.”*

Reply:

The effective date for most parts of the Regulations has been changed from September 1, 2003 to January 1, 2004, in order to provide adequate lead-time for industry and government to prepare for administrative requirements of the Regulations. The Regulations include provisions to enable a company to apply the national emissions mark to vehicles or engines that comply with requirements applicable to the 2004 model year and that are manufactured before January 1, 2004. The Regulations also allow companies to include all 2004 model year vehicles in the calculation of their applicable fleet average NOx values for that model year.

To allow that administrative steps be taken to authorize the use of the national emissions mark in an expeditious manner, sections 7 to 9 of the Regulations come into force on the date of their registration.

NATIONAL EMISSIONS MARK

(a) Form of the Mark

CVMA and AIAMC stated:

- *“Section 5 – This section needs to be updated to reflect the ongoing discussions that have taken place on the National Emissions Mark. CVMA and AIAMC request that the actual text be shared and confirmed with us before the Part II is published.”*
- *“Schedule 1 – National Emissions Mark – This section needs to be updated to reflect the discussions which have taken place as already stated above.”*

Reply:

In the Canada Gazette Part 1 publication (March 30, 2002), the Department indicated that it was working with Transport Canada to examine the feasibility of having a combined national mark for safety and emissions or an alternative national emissions mark that meets the legislative requirements of CEPA '99 in a manner that is more practical for the industry. This was in response to previous concerns expressed by the industry. An alternative mark was developed through consultations between the industry and the affected Government departments. The Regulations have been modified to include those changes and to establish a new national emissions mark symbol. The new form of the national emissions mark is described in section 8 and shown in Schedule 1 of the Regulations.

(b) Timing of the Requirement for the Mark

CVMA and AIAMC stated:

- *“We also seek clarification of the use of the marks before the effective date of the proposed regulation and request the three departments to consider the need to coordinate the timing requirements for all three labels. Confirmation is required on all of the NEM issues before the proposed regulation is put in place. We assume that immediately after Part II is issued, an expedited process will be in place to apply for and use the Environment Canada authorization number and label.”*
- *“It is assumed that Environment Canada will address the challenges with making a running change in mid-model year production...”*

Reply:

Sections 7 to 9 of the Regulations come into force on the date of their registration to allow adequate time for administrative steps be taken to authorize the use of the national emissions mark. The Regulations include provisions to enable a company to apply the national emissions mark to vehicles or engines that comply with requirements applicable the 2004 model year and that are manufactured before January 1, 2004.

The Regulations have also been modified to only require the application of the national emissions mark on vehicles and engines that are manufactured in Canada as a means of ensuring that such vehicles conform with the requirements of the Regulations (imported vehicles and engines are required to comply as a condition of their importation). This approach will facilitate the administration of, and compliance with, the Regulations and is consistent with the requirements for a national safety mark under the *Motor Vehicle Safety Regulations*. The changes made to the Regulations will greatly reduce the scope of vehicles and engines of the 2004 model year that may need to have the national emissions mark incorporated as a mid-model year production change.

(c) Application for Authorization to Apply the Mark

CVMA and AIAMC stated:

- *“Section 6.(2)(e) re: information to show that a company is capable of verifying compliance – This provision should be eliminated and is too broad as currently written.”*

- *“If Environment Canada feels that this is necessary, then sub-section 6(3) should be created to address any issues relating to a totally new company. This new section would indicate that “if a company new to the Canadian market that has not previously applied for an NSM, NEM or previously certified in Canada, then information would be need to be shown to the Minister that the company is capable of verifying compliance with the standards set out in these Regulations”. Also, we request that companies that have been using the safety mark for vehicle emission compliance, be allowed to continue to apply the new mark without having to file an application. Alternatively, a letter from an established company stating that it is capable of verifying compliance with the emission standards should be sufficient for Environment Canada.”*

Reply:

The Regulations require that any company applying for authorization to use the national emissions provide information to show that it is capable of verifying compliance with the standards. A company’s experience in certifying vehicles and engines to Canadian and/or U.S. emission standards will be taken into account in determining the level of technical information required to support its application.

(d) Application of the Mark to Heavy-Duty Engines

- CVMA and AIAMC stated: *“The issue surrounding the need to have a NEM on HD engines that are transported across provincial borders requires further discussion and clarification with regard to the proposed regulation. An exemption needs to be added in the regulatory text for service engines that are to be used in vehicles that already have a NEM.”*

Reply:

The Regulations have been modified to only require the application of the national emissions mark on vehicles and engines that are manufactured in Canada as a means of ensuring conformance with the requirements of the Regulations (imported vehicles and engines are required to comply as a condition of their importation). Further, new provisions (i.e., paragraph 6(4)(c)) have been added to allow a replacement engine for a heavy-duty vehicle, which already has a national emissions mark applied to it, to be transported within Canada without a national emissions mark, provided the replacement engine is of the same model year as the original engine and is identical to the original engine in all respects pertaining to emissions.

EMISSION CONTROL SYSTEMS

- CVMA and AIAMC stated: *“Section 7-- With respect to defeat devices and unsafe conditions, vehicles and engines certified to U.S. EPA requirements will conform to those requirements, as included in the CFR; no additional and/or non-harmonized Canadian requirements are needed. For unique Canadian vehicles and engines, the appropriate CFR sections for defeat devices and unsafe conditions should be included by reference in Sections 9 to 14.”*
- EMA stated: *‘EMA is concerned with the language of section 7 of the proposed regulations. As proposed, the strict interpretation of this provision could prevent the use of emission control systems expected to be used to meet 2004 and later emission standards. We do not believe this to be Environment Canada’s intention and ask that Environment Canada clarify this issue.’*

Reply:

Environment Canada believes it is important that the Regulations include an explicit prohibition on the use of defeat devices on any prescribed vehicle or engine, regardless of whether or not it is covered by a U.S. certificate of conformity. It is not Environment Canada’s intention to prevent the use of emission control systems that are expected to be used to meet the standards in the U.S. The Regulations are designed to align with those of the U.S. EPA and provide for the use of a U.S. certificate of conformity as evidence of conformity with the prescribed standards.

APPLICATION OF FORMER EMISSION STANDARDS

Ford stated: *“Section 8 is unnecessary and should be deleted. The intent of the proposed Regulations is to align with U.S. national standards beginning with the 2004 model year. The regulation should not regulate pre-2004 model year vehicles.”*

Reply:

The intent of section 10 (i.e., section 8 of the proposal) is to specify standards for older vehicles and engines that may be imported into Canada after the effective date of these Regulations. This is necessary since the emission regulations set out in Schedule V to the Motor Vehicle Safety Regulations, are repealed on the effective date of these Regulations. There is a new section title and a new reference to section 154 of the Act to clarify that this section specifies the standards for older vehicles and engines that may be imported into Canada.

CRANKCASE EMISSIONS FROM HEAVY-DUTY DIESEL ENGINES

- EMA stated: *“Clarification is also required with respect to the reference to the exception which allows emissions from turbo-charged heavy-duty diesel engines. The existing exception is characterized as being “effectively removed” beginning in the 2007 model year. In fact, EPA’s regulation permit crankcase emissions, but these emissions will be included in the total exhaust emissions.”*

Reply:

The Regulations continue to directly reference the U.S requirements. However, the RIAS has been modified to reflect that there is an allowance that crankcase emissions from turbocharged heavy-duty diesel engines may continue to be discharged to the atmosphere, but only if the combined total of the crankcase emissions and the other exhaust emissions is below the applicable exhaust emission standards.

NOX FLEET AVERAGE STANDARDS FOR LIGHT-DUTY VEHICLES, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY PASSENGER VEHICLES

(a) Proposed Canadian Option for NOx Averaging

Comments:

- Alberta Environment stated: *“It is indicated that when the final standards have been implemented in 2009, the maximum Canadian fleet average NOx emission will be 0.062 g/km (0.10 g/mile). This standard is less stringent than the corresponding United States NOx emission standard of 0.04 g/km (0.07 g/mile). This difference in the NOx emission standard appears to contradict Environment Canada’s expressed intention to harmonize Canada’s vehicle emission standards with the United States. Accordingly, the basis for justifying less stringent NOx standards is not clear, and additional explanation is therefore required.”*
- B.C. MWLAP stated: *“The British Columbia Government is also committed to flexibility in achieving outcomes. We are therefore extremely interested in confirming that option 2 in the part I gazette notice ‘provides sufficient flexibility to provide for legitimate market differences without compromising the overall emission performance of the Canadian fleet’. ...We also suggest that if option 2 is anticipated to have an outcome similar to full harmonization with US Tier 2*

standards, a fleet average emission rate could reasonably be established much closer to the 0.04 g/km than the 0.062 g/km which is currently proposed.”

GVRD stated:

- *“We also strongly agree with your statement in the draft regulation that there must be a fleet average nitrogen oxide (NOx) requirement - otherwise the least stringent emission standard of the vehicle mix becomes the de-facto regulation. However, it does appear that the draft regulation does not represent true harmonization with EPA’s Tier 2 motor vehicle emission regulations. Option 2 for fleet NOx average emission requirements does not exist in EPA’s Tier II regulations, and allows an increase in fleet average NOx emissions from 0.07 g/mile to 0.10 g/mile - an increase of almost 43%.”*
- *“While the draft regulation speaks in general terms of ‘legitimate market differences’ between the U.S and Canada, there is no supporting evidence to that effect in the document. In fact, since less trucks relative to cars are sold in Canada than in the U.S., one could argue that the Tier 2 standard should be easier to meet in Canada than in the U.S.”*
- *“At this point, we see no documented reason why Canada should have a lesser standard than U.S. for NOx emissions”.*
- *“We therefore request that you remove Option 2 from the Canadian regulation, so that Canada will have true harmonization with the U.S.. Failing that, if it can be conclusively demonstrated that some form of additional NOx flexibility is required for the Canadian market, that should be done prior to the Gazette II publication to the satisfaction of stakeholders, If such a case is demonstrated, it would seem that a percentage increase a lot less than 43% would be more appropriate.”*

CVMA and AIAMC stated:

- *“The industry is very concerned that the proposed regulations are not consistent with current harmonized vehicle technology policy of the government, as has been the case since the 1988 model year. This will force companies to conduct business in a manner which is inconsistent with the current practice to provide equivalent emissions systems as the U.S. and may result in the need for restricted sales volumes of specific vehicles, which would reduce model availability to Canadian consumers.”*

- *“The Department is pursuing a direction without clearly demonstrating the environmental or policy rationale or the supporting cost/benefit analysis, requiring a Canadian emission average for vehicles equipped with equivalent emission systems in both Canada and the U.S. The industry requests that Environment Canada reconsider its approach and respectfully requests that Environment Canada re-evaluate the benefits of continuing to accept EPA certified vehicles instead of the Gazette proposal which includes the additional average emission requirement.”*
- *“For all EPA certified vehicles in a company’s fleet and ‘sold concurrently’, the need to meet a fleet average NOx standard must be eliminated for all years.”*
- *“The industry requests that the proposed regulation be modified to enable those vehicles certified to EPA requirements to be separated from Canada unique vehicles. For example, a manufacturer with one Canada unique vehicle would have to only meet a fleet average NOx standard just for this vehicle. The rest of the fleet covered by EPA certificates of conformity and ‘sold concurrently’ would continue to not be required to meet the fleet average NOx standard. This would simply be a continuation of the provision that is available during the phase-in period. A manufacturer could, however, at their discretion, still have the option of combining Canada unique vehicles with the EPA-certified vehicles to meet the fleet average NOx requirements.”*
- *“The proposed Regulations require that companies submit an End of Model Year Report for their fleet of all vehicles sold in Canada, including vehicles covered by EPA certificate. Company fleet averages could be reviewed each year by the Department, therefore the Department can monitor the environmental performance of the Canadian fleet. Environment Canada maintains the right to amend the regulation in the future, or enter into an MOU if needed. However, in the absence of an environmental need, the industry proposal would not impose administrative costs on companies or taxpayers.”*
- *“DaimlerChrysler fully supports the CVMA and AIAMC comments, including the proposal to extend the option of not requiring a fleet average NOx standard for vehicles with emission systems covered by EPA certificates of conformity that are offered for sale concurrently in the U.S.”*

Ford stated:

- *“Fleet Average NOx emission standards as a whole are not necessary in Canada. The automotive industry has repeatedly stated its commitment to product harmonization with U.S. federal requirements and the RIAS confirms that this approach is in everyone’s best interest.”*
- *“Based on the size of the Canadian fleet, the market structure in Canada and the fleet profile, the size of the market attributable to any one company, and the sensitivity of the Canadian market to changes in consumer preferences, NOx averaging is unnecessary and restrictive. Before proceeding further with this initiative, a cost-benefit analysis must be developed along with stakeholders.”*
- *“We also raise the issue of proportional effect on vehicle manufacturing in Canada. The costs of Tier 2 technology will be higher on larger vehicles than on smaller ones; this is a natural outcome of the bin system. Manufacturing in Canada is more heavily weighted toward large vehicles and there will be a disadvantage on the majority of Canadian manufacturing operations.”*
- Volkswagen stated: *“Volkswagen supports the industry proposal in the CVMA/AIAMC response to the proposed On-Road Vehicle and Engine Emission Regulations.”*
- The David Suzuki Foundation stated: *“We were told in private and in public that Canada would copy the US in adopting new, updated standards. However, that is not happening. Under section 27 of the new regulation, manufacturers can opt out of the US standards and choose an alternative that allows 50% more NOx pollutants and, we must assume, increases in other pollutants as well. This is unacceptable and we urge elimination of the section 27 opt out provision.”*

West Coast Environmental Law stated:

- *“We are therefore very disappointed to see that section 27 of the proposed On-Road Vehicle and Engine Emission Regulations allows manufacturers to opt out of the US fleet average standard, emitting over 50% more than allowed under the US standards (based on NOx fleet averages).”*
- *“Section 27 represents a significant backtracking from the federal government commitment to harmonize standards with the US. It will reduce air quality in Canada. Because of the correlation between emissions and*

fuel efficiency, it will also encourage the sale in Canada of larger, less fuel efficient vehicles that emit more greenhouse gases.”

- *“The justification for section 27 is that Canada has a separate and slightly different market relative to the US. Based on my experience with the auto industry this justification is deeply flawed. First, manufacturers have the ability to shape the market through pricing and dealer incentives. They can use these mechanisms to encourage the sale of either cleaner vehicles or dirtier vehicles. Second, it is my understanding from previous research that manufacturers sometimes certify vehicles that are virtually the same from a consumer perspective to two different emission standards. Manufacturers can reduce their costs by simply giving Canada the dirtier version.”*
- *“We urge the federal government to pass the draft regulation without allowing manufacturers to choose a lower standard.”*

Five individual commenters submitted similar comments which effectively stated:

- *“I am very disappointed to hear that section 27 of the proposed On-Road Vehicle and Engine Emission Regulations allows manufacturers to opt out of the US fleet average standard, emitting over 50% more than allowed under the US standards (based on NOx fleet averages).”*
- *“I urge the federal government to pass the draft regulation without allowing manufacturers to choose a standard that allows higher emissions in Canada than in the US.”*

Reply:

The proposed Regulations as published in the Canada Gazette Part I on March 30, 2002, included an option for companies to meet a Canadian fleet average NOx emission standard set at bin 6, rather than the U.S. bin 5 but without any banking or trading of emission credits and without the opportunity to carry forward an emissions deficit. When the final standards are in effect in 2009 this would have resulted in a regulated maximum Canadian fleet average NOx emission standard of 0.10 g/mile compared with the U.S. standard of 0.07 g/mile. All other emission standards (CO, NMOG, PM and formaldehyde) are the same in bins 5 and 6. Environment Canada believes that this option would have provided flexibility to provide for legitimate market differences without compromising the overall emission performance of the Canadian fleet.

In light of the numerous comments received during the public consultation period expressing various concerns with the proposed unique Canadian fleet averaging

option, the Regulations implement a modified approach to achieving the objective of ensuring that the environmental performance of the Canadian fleet will be comparable with that of the United States.

The Regulations establish fleet average NOx standards aligned with those of the U.S. with corresponding provisions for credits, banking and trading beginning in the 2004 model year, as in the proposed Regulations. For the 2009 and later model years, the fleet average NOx standard for a company's fleet of light-duty vehicles, light-duty trucks and medium-duty passenger vehicles is 0.07 g/mile. Instead of establishing a higher unique Canadian fleet average NOx standard of 0.10 g/mile to account for legitimate market differences as was proposed in the Canada Gazette Part I, the Regulations specifically recognize U.S. certified vehicles that are sold concurrently in both countries. The Regulations allow companies to exclude these vehicles from the mandatory fleet average standard.

The vast majority of vehicles sold in Canada are vehicles designed for and marketed in the U.S. The Department believes that a U.S. fleet designed to meet the U.S. fleet average standard (i.e., 0.07 g/mile in 2009) will, when sold concurrently in Canada, yield a similar but not identical result in Canada. An analysis conducted by Environment Canada¹ indicates that, even under extreme scenarios, the variations between the Canadian and U.S. fleet averages are expected to be small. The Canadian overall fleet average may be marginally better than the U.S. because Canadians tend to prefer smaller vehicles, most of which are sold in high-volume and expected to be certified with lower emissions.

The Regulations contain provisions that act as safeguards towards ensuring a Canadian fleet emission performance that will be comparable to the U.S. For example, any vehicle that is sold in Canada and the U.S. must meet the same emission standards (i.e., certified to the same bin) in Canada as in the U.S. The Regulations also provide that a company cannot include vehicles in the group that is not subject to a fleet average standard if the total number of vehicles sold in Canada covered by the same certificate of conformity exceeds the total number of such vehicles sold in the U.S. This ensures that a company cannot exclude vehicles that are certified to higher bins from being subject to a fleet average NOx standard in Canada by a selling an insignificant number of such vehicles in the U.S.

The Regulations provide that a company may only generate emission credits in a model year if the average NOx value for its entire Canadian fleet is lower than the applicable fleet average emission standard. In any model year that a company elects to not subject its group of U.S.-certified vehicles that are sold concurrently in Canada and the U.S. to the fleet average standards, the company forfeits any emission credits that it may have obtained in previous model years. This prevents

¹ Scenario Analysis: Fleet Average NOx Emissions in Canada, Transportation Systems Branch, Environment Canada, November, 2002 (Appended to this report).

companies from selectively benefiting from the emission credit program on a model year by model year basis.

There are reasons for a company to market vehicles uniquely in Canada and from time to time there are vehicle models sold in Canada but not in the U.S. The Regulations ensure that such vehicles do not adversely affect the environmental performance of a company's fleet relative to the fleet average standards.

Taking into account the integrated nature of the North American vehicle manufacturing industry and the expected composition of the future Canadian fleet, the Department believes that the fleet averaging provisions are structured in a manner that will deliver comparable fleet average emissions to the U.S. while minimizing the possible regulatory burden on companies and allowing companies to market vehicles in Canada independently from the U.S.

In all cases, the Regulations require companies to report their fleet averages and any emission credits or deficits at the end of each model year. Environment Canada intends to make a report available to the public concerning this information.

(b) Impact of Proposed Approach on Fleet Emission Projections

OMOEE stated:

- *"It is our understanding that the estimated reduction benefits for oxides of nitrogen (NOx), volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM10) from on-road vehicles, as stated in the Regulatory Impact Analysis Statement, were projected based on the fleet average NOx emission standard of 0.04 g/km (0.07 g/mile) rather than the maximum Canadian fleet average standard of 0.062 g/km (0.10 g/mile)."*
- *"We would recommend that, prior to finalizing the proposed regulation, Environment Canada assess the emission reduction benefits based on the Canadian fleet average NOx emission standard to ensure that the emission reduction benefits resulting from this option are equivalent to that of option 1 which reflects the U.S. fleet average NOx emission standard of 0.04 g/km (0.07 g/mile)."*

CPPI stated:

- *"In particular, we are concerned that certain variances between requirements in the USA and these proposed regulations deviate from the principle of alignment. The significance of these variances, in terms of the actual emissions performance of the new vehicle fleet in 2004 and*

subsequent model years, has not been quantified in the RIAS. These variances put into question the assumptions used in the models to predict the emissions performance of the fleet. This may have the effect of causing the projected emissions decreases to be discredited. This in turn may well impact on other emissions reduction programs and policies, and lead to less cost-effective measures to compensate for the increased NOx resulting from the less stringent aspects of these proposed regulations.”

- *“In particular we are concerned that option 2 for the light-duty fleet average NOx emission standard, which is unique to Canada, would allow NOx emissions in Canada to be significantly higher than in the USA (0.062 versus 0.04 gm/km, a 55% increase). If this option were to be used in the emissions modelling, annual NOx emissions would be significantly higher than those presented in the RIAS. We understand, however, that Environment Canada’s expectation is that the Canadian and USA fleets will have the same levels of performance. This expectation, which has not been demonstrated in the RIAS, needs to be addressed so that modelers and policy makers will not misinterpret the reality of the regulation.”*

Shell stated:

- *“Shell understands that the modelling results reported in the Regulatory Impact Analysis Statement (RIAS) were conducted as if the Canadian regulatory limits were identical with those of the USA. These modelling results seem to be inconsistent with the proposed limits in this regulation. If the actual emission levels were at the level of the proposed standards, it would lead to problems in achieving all the regulation’s air quality improvement objectives.”*
- *“We understand that Environment Canada expects that the models of vehicles actually sold in Canada will be similar to what is sold in the USA and that emission results will match, even though the vehicle emission standards are not identical. In fact, due to the higher market share of light duty vehicles in Canada, our average vehicle fleet emissions could well be less. However, there has been a period of time between 1981 and 1988 where different regulatory requirements led to poorer emission performance in Canada. We ask that EC confirm their expectation that there will not be significant divergence of emission performance in the vehicle fleets in the two countries.”*

Reply:

The emission reductions presented in the RIAS are modelled based on the assumption that a 0.07 g/mi fleet average NOx emission rate would occur in Canada. The analysis of the Canadian fleet average NOx emission rate that is attached in Appendix A shows that based on the structure of the Regulations and the composition of the Canadian fleet, the U.S. fleet average NOx standard anchors the Canadian fleet average NOx emission rate very close to 0.07 g/mi.

(c) Measurement Units and General Application

CVMA and AIAMC stated:

- *“Section 17 - The values should be in g/mile and if a g/km value is necessary, then a conversion factor should be included to ensure equity in the program. For example, the proposed final metric average is 8% more stringent than the U.S. value of 0.07 g/mile. This situation must be corrected.”*
- *We also request that the words “combined fleet” be added to this section to clarify that the NOx average is for the combined fleet of light duty vehicles and light light-duty trucks. The suggested wording would be as follows:*

*the average NOx value for a company’s **combined** fleet
of light-duty vehicles and light light -duty trucks...*

- *“We would also like EC to consider the merits of changing the words ‘shall not exceed’ to ‘must comply with’ as stated in the CFR. There may be a year when there will be an exceedance that will be made up through provisions of section 22.”*
- *Ford stated: “ Sections 17, 18 and 27 contain tables that should show grams/mile as the primary measurement. This follows the statement made in the second paragraph under Technical Emission Standards in the RIAS. If grams/kilometre are required then an official conversion factor capable of sufficient accuracy should be included. We suggest the miles: kilometres conversion factors used by Transport Canada.”*
- *EMA stated: “Clearly, Environment Canada has attempted to harmonize with EPA regulations and EMA appreciates the efforts that have been made to reference EPA regulations directly, to avoid confusion. Further to that goal, EMA suggests that Environment Canada reference EPA standards as they*

appear in EPA's regulations, in g/bhp-hr and g/mile as the primary units. Metric conversions of the standards, which can be problematic, should be shown as secondary units, in brackets."

Reply:

In order to avoid confusion and the possible inaccuracy of using two different units, the Regulations have been modified so that standards are expressed in units consistent with the U.S. regulations. A factor for converting g/mi to g/km is provided in the RIAS.

Where applicable, changes have been made to the Regulations to clarify that fleet average standards apply to a fleet containing more than one class of vehicles and not separately to each class of vehicles in the fleet.

Environment Canada considered replacing "shall not exceed" with "must comply with" in recognition that a company's fleet average NOx value may "exceed" the fleet average NOx standard and incur a deficit that must be offset within three model years. Instead, sections 21 to 23 of the Regulations contain the phrase "subject to sections 24 to 31". Sections 24 to 31 contain provisions for the calculation of the fleet average NOx values, emission credits and deficits and thereby account for the allowance to exceed the fleet average NOx standard under prescribed conditions.

(d) Heavy Light-Duty Trucks and Medium-Duty Passenger Vehicles

CVMA and AIAMC stated:

- *"Section 18 - The table in this section does not represent the U.S. rule. Environment Canada has changed the rules and seems to be imposing a much more stringent standard than the U.S."*
- *"Under the CFR, medium duty passenger vehicles (MDPVs) can be considered a separate vehicle class and are not required to be combined for the CFR. While EC appears to be trying to summarize the CFR requirements, it inadvertently does not cover all the issues related to HLDT/MDPVs. AIAMC and CVMA recommend that it would be more appropriate to reference the appropriate CFR provisions for the unique Canadian vehicles. This entire section needs to be modified to reflect this suggested change."*
- *"For example, AIAMC and CVMA note that under the U.S. Tier 2 rules, there is only a requirement to meet a 0.2 g/mile NOx average for the phased in Interim Non-Tier 2 HLDT/MDPVs (25% in 2004, 100% in 2007)."*

In the early years, this may be accomplished with only HLDTs. There is no requirement to meet a fleet average for the remaining HLDT/MDPVs not used to meet the 0.2 g/mile average. The remaining HLDT/MDPVs not used to meet the fleet average must only be certified to one of the bins in Table S04-1 in 40 CFR 86.1811-04. In 2008, 50% of the HLDT/MDPVs must meet the Tier 2 average of 0.07 g/mile and the remaining 50% must average 0.2 g/mile.”

Reply:

The fleet average NOx standards for heavy light-duty trucks (HLDTs) and medium-duty passenger vehicles (MDPVs) in the Regulations are a mathematical simplification of the U.S. phase-in requirements for Interim Non-Tier 2 standards and Tier 2 standards that apply to HLDTs and MDPVs. The calculation of the Canadian fleet average NOx standards take into account the U.S. phase-in provisions, the U.S. fleet average NOx standards of 0.20 g/mi and 0.07g/mi and the temporary cap of 0.9 g/mi applicable to MDPVs during the early phase-in period. For the purposes of the calculation, it is conservatively estimated that MDPVs would account for 10% of a company’s combined fleet HLDTs and MDPVs and that such vehicles would be the last to comply with the final Tier 2 standards. This approach provides a simpler but equivalent phase-in relative to the U.S. standards.

(e) Calculation of Fleet Average NOx Values

CVMA and AIAMC stated:

- *” Section 20 - We request that the provision for an HEV credit be incorporated in this section or that provision be provided for calculating a credit according to CFR 86.1860-04.”*
- *“Section 20 (2) - With respect to the denominator in subsection (1) being to at least three decimal places, this should be changed to ‘but to at least four’. This is consistent with existing government procedures and the Federal register states ‘ the denominator of the equation used to compute the fleet average NOx emissions, but to no less than one more decimal place than that of the applicable fleet average standard’. The rounding should be as in ASTM rounding procedure (ASTM-E29-93A), which is used in the CFR as well.”*

Reply:

A provision has been incorporated to enable companies to make the same adjustments for hybrid electric vehicles in the calculation of their fleet average NOx values as is allowed in the U.S.

The fleet average standards in the Regulations have two decimal places. Since the CFR specifies that fleet average NOx values be rounded “to no less than one more decimal place than that of the applicable fleet average standard”, it is appropriate that section 24(2) of the Regulations (i.e., 20 (2) of the proposed Regulations) state “but to at least three decimal places.”

(f) NOx Emission Credits and Deficits

- CVMA and AIAMC stated: *“Section 22(1) - Manufacturers may make available early introductions of LDVs and LDTs. Environment Canada needs to be consistent with U.S. Reference EPA Guidance Letter CCD-01-19. A provision must be provided to bank credits generated prior to 2004. This requires clarification.”*

DaimlerChrysler stated:

- *“The U.S. EPA has allowed the certification of Tier 2 program vehicles prior to the 2004 model year (guidance letter CCD-01-19) because of the potential air quality benefits and the wider range of certification options that is expected to result in cost savings for the manufacturers. Daimler Chrysler has received EPA certification to the Tier 2 program for some 2002 models.”*
- *“The proposed regulations accommodate Tier 2 program vehicles before Sept. 1, 2003, but, only for the 2004 model year. We request that vehicles covered by EPA certificates of conformity for model years prior to 2004 meeting Tier 2 program requirements be recognized, and that manufacturers have the option of establishing NOx emission credits for these vehicles.”*

Reply:

The fleet averaging provisions of the Regulations come into effect on January 1, 2004. The Regulations contain provisions to allow a company to include all of its 2004 model year vehicles in the calculation of its 2004 model year fleet average NOx value, including those manufactured before January 1, 2004. This permits companies to benefit from introducing Tier 2 vehicles early in the 2004 model year by generating NOx emission credits. There are no provisions for banking or trading

of emission credits prior to the 2004 model year. The Department believes that, given the flexibility of the fleet average provisions, companies will not be disadvantaged from not being able to generate emission credits during the 2002 and 2003 model years.

(g) Deficit of a Company Out of Business

- CVMA and AIAMC stated: *“Section 26(2) - How is this possible? How will this be managed? This provision is unreasonable and would be extremely difficult to enforce. This provision should be deleted from the proposed regulation.”*
- Ford stated: *“Section 26(2) is completely unenforceable and should be deleted.”*

Reply:

The provisions of 30(2) of the Regulations (i.e., section 26(2) of the proposal) require that a company that ceases to manufacture, import or sell vehicles be responsible for offsetting any NOx emission deficit within a prescribed time. This is consistent with similar provisions of the CFR and provides the Department with as broad as possible means of enforcing the Regulations.

(h) Fleet Average NOx Records

- CVMA and AIMC stated: *“Section 34(2), Fleet Average NOx standards - We believe that this entire section is too prescriptive and that a large amount of new record keeping is being proposed. CVMA and AIAMC believe that these provisions be deleted.”*

Reply:

The Regulations continue to require that companies maintain specific vehicle information related to NOx fleet averaging standards. The information is consistent with that required to be retained by companies under the U.S. EPA's requirements. Such records are fundamental to enable the Department to monitor compliance with applicable standards.

(i) End of Model Year Reports

CVMA and AIAMC stated:

- *“Section 36 - This section should be amended to be consistent with the industry proposal for NOx averaging.”*
- *“Section 36(4)(c) - In this provision, the terms ‘model of’ should be removed and should be re-written to read as follows:*

*a statement that every vehicle in its fleet **that** is covered by an EPA certificate of conformity and...”*

Reply:

The Regulations require companies to submit an end of model year annual report indicating the fleet average NOx values for all fleets of vehicles sold in Canada. The “End of Model Year Reports for Fleet Average NOx Emissions” section has been modified to reflect the changes to the fleet average NOx standard provisions. The Department will review company fleet averages each year to verify that the desired environmental performance is being achieved.

EMISSION-RELATED INFORMATION LABELS

CVMA and AIAMC stated:

- *“Section 30 – re: use low-sulphur diesel only. The AIAMC and CVMA request that the sections related to labelling for low sulphur diesel be deleted as they are redundant since the Minister has indicated that low sulphur diesel will be available at 100% of retail locations.”*
- *“To address the possibility that the Canada Gazette Part II concerning the use of 15 ppm sulphur in diesel fuel does not precede these regulations, a clause needs to be added indicating that this provision will be amended when the Sulphur in Diesel Fuel Regulation comes into force. Having this requirement will only serve to confuse the public and will not prevent misfuelling. Manufacturers provide information to their customers regarding recommended fuel usage in the operations of their vehicles.”*
- *DaimlerChrysler stated: “We support the government announcement, Gazette Part I, December 2001, of proposed regulations for 15 ppm on-road diesel commencing 2006. With the national availability of 15 ppm diesel the fuel filler*

inlet labelling proposed becomes redundant. We request that the labelling requirement be removed.”

Reply:

The provisions related to the mandatory marking of vehicles with a “low sulphur diesel only” label have been removed from the Regulations. *The Sulphur in Diesel Fuel Regulations* (Canada Gazette Part II July 31, 2002) limit the sulphur content of on-road diesel fuel to 15 ppm beginning on September 1, 2006. This is in time for the 2007 model-year when it is expected that new technology requiring low sulphur content for effective operation will be widely used to meet these Regulations.

EVIDENCE OF CONFORMITY

CVMA and AIAMC stated:

- *“Section 32, – We request that the words "of a model of a model year" be deleted. The provision would read as:*

In the case of a vehicle or engine that is covered by an EPA certificate of conformity to”

- *“Section 32.(b) – This section is problematic. Clarification is needed as to why this is necessary. We would suggest that 32.(b) be changed to require a document “stating” that the vehicles are sold in the U.S., only if the vehicle is not required to meet fleet NOx average, as identified in section 28. If not, the provision should be deleted.”*
- *“Section 32.(d) - The provision should be simplified by deleting provisions d(i) to d(iv) and adding the following words at the end of (d): “... in the form and location set out in the CFR.” This request is being made because the certification for certain vehicles can be obtained under a different section (e.g. Part 88 of the CFR).”*

Reply:

The Regulations have been modified to state “In the case of a vehicle or engine that is covered by an EPA certificate and that is sold concurrently in Canada and the United States, evidence of conformity...”.

If requested to do so, a company must provide evidence in the form of a document “demonstrating” that vehicles or engines covered by an EPA certificate of conformity are sold concurrently in the U.S. and Canada”, such as invoices showing the that vehicle was sold in both countries.

Part 86 of U.S. Code of Federal Regulations (CFR) specifies the form and location for the emission control label and engine information label. Part 88 also specifies the form and location of the label and that some vehicles may be certified under the provisions of that Part. An additional subsection is therefore added to address alternative emission labelling pursuant to other sections of the CFR.

MAINTENANCE AND SUBMISSION OF RECORDS

- CVMA and AIAMC stated: *"Section 35.(2)(a) and 35.(2)(b) – It is our understanding that the days relate to "calendar days" and not "business days"."*

Reply:

The days referred to in section 38 of the Regulations (i.e. section 35 of the proposal) are calendar days.

IMPORTATION REQUIREMENTS

- DaimlerChrysler stated: *"The importation process... should continue to parallel those required for vehicle safety. This will maintain the efficiencies of the Canadian system that have been developed over the last three decades."*

Reply:

Transport Canada has established a registrar of imported vehicles to operate a national program related to the importation of vehicles originally sold in the United States. Since Canada's emission standards are aligned with U.S. rules, all vehicles originally sold in the U.S. are designed to meet our standards. The Department does not see a need to establish a unique registrar system for vehicles originally sold at the retail level in the U.S. and has aimed to harmonize its importation requirements with those put in place by Transport Canada.

RENTAL RATE FOR TEST VEHICLES AND ENGINES

CVMA and AIAMC stated:

- *"CVMA and AIAMC continue to be concerned about providing vehicles to Environment Canada for emissions testing. It is the members' view that Environment Canada should purchase or lease vehicles directly from authorized retailers without any participation from the Canadian distributors to maintain that it's testing program is independent, impartial and unbiased."*

It is important for auto manufacturers and Environment Canada that the Department should maintain an arms length relationship with the companies in conducting its testing. We recommend that alternative mechanisms to obtain vehicles in the market be explored by Environment Canada.”

- *“Should the government continue to use direct vehicle leasing, we believe that the lease rate needs to be revised to be more reflective of current vehicle market situation. AIAMC and CVMA member companies request that a minimum rate of 21% per year would be paid. This rate is more representative of current depreciation rates of new vehicles. It is also consistent with rates recognized by the federal government through the Canada Customs and Revenue Agency. This Agency recognizes 2% per month as a required “standby” charge for vehicles. Based on this rate, our request of 21% per annum is fair and reasonable. It is industry’s position that Environment Canada should purchase or lease the vehicles directly from authorized retail sources and should be obtained in a random manner.”*

Ford stated:

- *“Vehicles rented to Environment Canada are sold at auction after they are returned. The value they draw at auction is dependent on accumulated mileage, model year, condition, new vehicle incentives that may exist at the time of disposal and other factors. The use to which they were put when new will have little, if any, bearing on their disposal value.”*
- *“We recommend that Environment Canada acquire vehicles in the marketplace. This would avoid possibly tainting perceptions with the public when we provide test vehicles directly and it would help reduce our costs of compliance.”*
- *“Realising that provisions in the Act need regulations to cover them we ask that the rental rate be increased to a minimum of 21% to be paid throughout the term of the rental. The Government of Canada (Canada Customs and Revenue Agency) charges individuals 2% per month (24% per annum) in Standby Charges, so we believe that the government should pay a parallel rate when the situation is reversed.”*

Reply:

CEPA 1999 contains specific provisions to enable the Minister to obtain test vehicles or engines from companies to verify the accuracy of their emission

certification information. The Department plans to obtain vehicles pursuant to these provisions as well as through other independent mechanisms as part of its compliance monitoring program.

The Regulations have been modified to indicate that the rental rate is 21% per year, prorated on a daily basis, to more accurately reflect first year depreciation rates of new vehicles.

REPORTING OF EMISSION-RELATED DEFECTS

CVMA and AIAMC stated:

- *“Section 42.(3) – It is our understanding that CEPA states that reporting is for 2 years. We seek confirmation on this matter.”*
- *“Also, the wording should be clarified so that a company can submit its reports at the end of each quarter. As currently worded, the company has to report every 3 months after the initial report. The current wording seems to prevent a company from accumulating reports and filing all of them simultaneously at the end of each quarter.”*
- *DaimlerChrysler stated: “...reporting of emission defects should continue to parallel those required for vehicle safety. This will maintain the efficiencies of the Canadian system that have been developed over the last three decades.”*
- *Ford stated: “Section 42(3) is unclear as to how long such quarterly reports must continue to be submitted.”*

Reply:

The Regulations have been amended to allow companies to submit quarterly reports for all of their defects at the same time rather than individually on staggered dates, consistent with common practice under the MVSA. Pursuant to section 157 (8) of CEPA, 1999, quarterly reports must be submitted in respect of a defect for a period of two years from the initial notice, unless directed otherwise by the Minister.

CONSEQUENTIAL AMENDMENTS TO MOTOR VEHICLE SAFETY REGULATIONS

- CVMA and AIAMC stated: *“The section indicates that Schedule V of the Motor Vehicle Safety Regulations will be repealed effective September 1, 2003 with*

the introduction of these proposed standards for the 2004 model year vehicles. The repeal should be delayed until December 31, 2003 in order for manufacturers to complete production for any 2003 model year vehicles.”

Reply:

The effective date of the Regulations has been changed to January 1, 2004, including the repeal date of Schedule V of the *Motor Vehicle Safety Regulations*. In view of this change, any potential timing problem is eliminated.

IN-USE VEHICLE TESTING BY ENVIRONMENT CANADA

CVMA and AIAMC stated:

- *“Purpose, Section 2.(c) – The test procedures in the CFR define the fuel to be used for “in-use” testing and “mileage accumulation” in the U.S. The statement in section 2.(c) does not specify the fuel to be used for the mileage accumulation phase in Canada. The mileage accumulation fuel must be representative of those commercially and widely available in the U.S.”*
- *“In the design of Tier 2 vehicle emission technologies, our members must consider the engine and fuel as a system because the emissions performance of new vehicles is required for the full useful life of the vehicle, which is, at a minimum, 192,000 km or 10 years. To meet this requirement, for U.S. EPA certified Tier 2 vehicles, the full useful life performance of the vehicle emission control system is based on Tier 2 requirements for service accumulation with U.S. widely and commercially available fuel.”*
- *“We acknowledge that many refineries are moving to meet the low sulphur gasoline regulation, but our industry remains concerned about overall fuel quality in Canada. Current fuel attributes in Canada will affect companies’ ability to meet the in-use requirements. We therefore strongly recommend that the decisions on the applicability of “in-use” in Section 15 be deleted until such time that Canada regulates fuel nationally that is appropriate for Tier 2 technology as specified in Category 3 or 4 fuels of the World Wide Fuel Charter, April 2000.”*
- *“Section 15.(1) – “in-use” reference - Our view is that the words “in-use” must be deleted completely. Our member’s vehicles are designed as an integrated vehicle/fuel system and cannot be expected to perform as designed on fuels that have properties that fall outside the design fuel*

specification. This issue is addressed in more detail in the cover letter attached. This is because “unique Canadian fuel attributes may affect an emission systems ability to comply with the in-use requirements.”

- *“We have previously commented on this subject. Paragraph 15.(1) must also include the CFR reference to the test fuels used to demonstrate compliance to these standards. We strongly believe that the following provision should be added to 15.(1) because there is no reference to the test fuels that are required to demonstrate compliance.”*

15.(1)(a) Fuels having the specifications described in the CFR shall be used for determination of conformance to sections 9 to 14.

- *“We again recommend that this should be included in the proposed regulation.”*
- *“If Subsection 15(1) of the regulation is retained, which proposes to apply the EPA in-use standards to vehicles and heavy-duty engines, it is important to understand that meeting the requirements of the standards referenced specifically implies that these standards are met using only fuels as specified by the U.S. Code of Federal Regulations. Consequently, in meeting subsection 15(1) it should be understood that the mileage accumulation fuels used to accumulate vehicle mileage should be representative of those commercially and widely available in the U.S.”*
- *“Also as in Section 15, Paragraph 16 must also include the CFR reference to the test fuels used to demonstrate compliance to these standards. The following clause must be added:*

16.(c) Fuels having the specifications described in the CFR shall be used for determination of conformance to sections 16(a).”

- *“The industry sees no added value for the Department to undertake in-use testing on vehicles with an EPA certificate since these tests are already conducted in the U.S. However, if Environment Canada wishes to perform testing on in-use vehicles, it is essential that these vehicles use fuels and procedures that are substantially the same as those used in the U.S. when these vehicles are accumulating mileage in Canada. It is important to note that use of any other fuel that is not representative of those commercially and widely available in the U.S. can only be considered to be a test of the impact of the fuel, not a test of the capability of the emission control system. Therefore, it is the industry’s position that in-use testing with the unique attributes of current Canadian fuel is not valid.”*

- DaimlerChrysler stated: *“We feel that there is no need for Environment Canada to conduct comprehensive emission testing on a vehicle covered by an EPA certificate of conformance, as those emission systems will be subject to scrutiny in the U.S. for the market and fuel that they were designed for.”*

Volkswagen stated:

- *“Beginning with the 2001 model year, manufacturers are required to certify vehicles in the U.S. under the Compliance Assurance Program referred to as CAP 2000. This program has placed greater emphasis on long-term, in-use emission compliance and requires comprehensive testing under the In-Use Verification Program (IUV) provisions in the regulations. CAP 2000 requires that the manufacturer test a representative sample of customer vehicles from each EPA-certified test group and evaporative-refuelling family at approximately one-year and four years after production. The purpose of the testing is to ensure compliance with the applicable emission standards and verification of the manufacturer’s emission certification durability program.”*
- *“In view of the extensive in-use testing performed on these vehicles, Volkswagen suggests that additional in-use testing is redundant and adds no value to the emission compliance program. Further, Volkswagen endorses the CVMA/AIAMC position that a meaningful representation of in-use emission performance can only be achieved when the vehicles are operated on fuels that are appropriate for advanced technology (i.e., Tier 2) vehicles.”*

Reply:

The Department believes it is important that the in-use emission standards be part of the Regulations. They are an integral part of notice of defect provisions of section 157 of the Act which address defects in the design, construction or functioning of a vehicle or engine that affect or are likely to affect compliance with a prescribed standard. The Department recognizes the complexity of emissions certification and intends the requirements of the Canadian program to be harmonized with those of the U.S. EPA. Differences in fuel specifications can affect emissions and sufficient engineering analysis must be performed during investigation of any vehicle’s exceedance of in-use emission standards to determine when the issuance of a notice of defect is warranted under section 157 of the Act. The above considerations will be taken into account in the process leading towards such determinations.

In order to address the concerns expressed by the CVMA and AIAMC, a reference to “fuels” is added to section 15(1) of the Regulations to explicitly recognize that fuels are an important element of the emission certification procedures. In addition, new provisions have been added under section 19 to provide a clear link to subsection 153(3) of the Act to accept U.S. certification to corresponding standards, as applied by the EPA.

FUEL QUALITY

CVMA and AIAMC stated:

- *“The CVMA and AIAMC commend Environment Canada for recognizing that the development of effective policies and programs to reduce vehicle emissions must consider the vehicle/engine and fuel as an integrated system. However, in reviewing the proposed Regulations, we do not see any recognition that the vehicle/engine and fuel are being considered as an integrated system.”*
- *“The member companies support the regulatory action by Environment Canada in reducing the sulphur level in gasoline and its announcement to further limit the level of sulphur in diesel fuel. However, for Tier 2 vehicles to perform optimally on the road and meet emission requirements, specific fuel qualities that includes deposit control performance, distillation properties, ash forming tendency, and other properties must be in-place. Automakers as well as progressive oil companies around the world have indicated support for the fuels specified in the World Wide Fuel Charter. The World Wide Fuel Charter addresses fuel quality properties that the Department must embrace to maximize vehicle emissions performance with the same timing as vehicle technologies.”*
- *“Improved fuel quality requirements are essential to support the introduction of Tier 2 technology and to maintain its optimum performance capability throughout its lifetime. The Tier 2 technology has the potential to make significant reductions in on-road emissions if fuels with compatible quality are fully available. The Gazette Notice does not address the impact of fuel quality on the expected environmental improvements.”*
- DaimlerChrysler stated: *“DaimlerChrysler wishes to continue work with government and industry to develop national fuel requirements consistent with the introduction of advanced emission controls. This will enable new, and existing, vehicles to provide the designed real world emission performance. We support the industry World Wide Fuel Charter, Category 4 fuel*

specifications, as the basis for the development of these requirements in Canada. We remained concerned that commercially available fuel quality will continue to be below that required for designed emission performance.”

- *EMA stated: “Improved diesel fuel standards will enable manufacturers to provide advanced aftertreatment and engine systems to the Canadian market and will ensure the smooth operation of cross-border heavy-duty vehicles between Canada and the U.S. The harmonization of emission standards requires that the fuel that is commercially available in Canada must be the same as, or better than, the fuel available in the U.S.”*

Volkswagen stated:

- *“Volkswagen recognizes the efforts of Environment Canada with respect to the regulation of diesel fuels, benzene in gasoline and sulphur in gasoline. Volkswagen encourages Environment Canada to continue to pursue nationwide regulation of additional fuel properties, including additives to control deposit formation, ash-forming additives, distillation characteristics, and other fuel specifications. The control of fuels to precise specifications will act as an enabler for future vehicle emission control technology with the added benefit of improvement in the emissions performance new vehicles and those vehicles already in use.”*
- *“Volkswagen recommends that Environment Canada use the World-Wide Fuel Charter as a guide for this endeavour. Specifically, regulation of gasoline and diesel fuels to Category 3, and ultimately Category 4 will provide Canadians with the emission reductions that their new vehicles were designed to achieve.”*

Reply:

The Government recognizes that vehicles and fuels must be treated as an integrated system to effectively reduce emissions. Since 1997, the federal government has put in place several regulations to improve the environmental performance of fuels and complement tighter vehicle emission standards, including: *Diesel Fuel Regulations (1997), Benzene in Gasoline Regulations (1997), Sulphur in Gasoline Regulations (1999) and the Gasoline and Gasoline Bend Dispensing Flow Rate Regulations (2000) and the recent Sulphur in Diesel Fuel Regulations (2002).*

Environment Canada has set out its planned agenda respecting the quality of fuels in the Notice of Intent published in the *Canada Gazette Part I* on February 17, 2001.

NOT-TO-EXCEED STANDARDS FOR HEAVY-DUTY ENGINES

- *EMA stated: “There are also unresolved issues between EMA and EPA which Environment Canada should be aware of. Currently, EMA is challenging the legality of the not-to-exceed (NTE) provisions. To the extent that the NTE requirements are affected by this challenge, Environment Canada should harmonize with the final requirements.”*

Reply:

Canadian emission standards are aligned with and incorporate by reference the U.S. federal emission standards. If U.S. requirements change, Environment Canada will review the changes to determine whether any amendments are necessary to maintain alignment.

EMISSIONS AVERAGING, BANKING AND TRADING FOR HEAVY-DUTY ENGINES

EMA stated: “As a result of the integrated nature of the North American market, averaging, banking and trading programs unique to Canada would be of little, if any benefit, but would be difficult, if not impossible, for manufacturers to comply with. Environment Canada should reference existing EPA regulations and accept engines which are compliant under EPA’s averaging, banking and trading program. This approach, proposed by Environment Canada for heavy duty engines, and supported by EMA, reduces complexity and minimizes burden for manufacturers, while maximizing benefits and reducing costs to Canadians.”

Reply:

The vast majority of heavy-duty engines sold in Canada are manufactured in the U.S. and certified to U.S. EPA emission standards, where an averaging, banking and trading programs are in place. The U.S. regulations apply to a limited number of engine manufacturers, whereas in Canada, the vast majority of engines are imported by a much larger number of companies (i.e., truck/bus manufacturers and vehicle fleet operators) that have no affiliation to the engine manufacturer. Accordingly, developing and administering an averaging, banking and trading program for heavy-duty engines in Canada would be very complex and there is no evidence that it would result in additional environmental benefits .

PAYMENT OF NON-CONFORMANCE PENALTIES FOR HEAVY-DUTY ENGINES

EMA stated:

- *“EMA has requested clarification of EPA’s regulatory provisions concerning the labeling, sale and payment of penalties for non-conforming engines delivered to customers outside the U.S. As currently written, the regulations are unclear with regard to payment of non-conformance penalties (NCP’s) and labeling of engines destined for countries that accept engines bearing a U.S. certification label as evidence of compliance with those countries’ regulatory requirements. If interpreted broadly, the regulations could create a loophole for manufacturers that label and sell NCP engines into countries such as Canada, potentially allowing them to deliver engines labeled as NCP-certified when no NCPs have been paid for such engines.”*
- *“EMA has asked EPA to clarify the language of the NCP payment and labeling provisions in order to assure that the intent of the NCP provisions are upheld and to avoid competitive and environmental harm. A copy of EMA’s comments to EPA are included for your reference.”*

Reply:

The U.S. EPA addressed this concern in a recent rulemaking and stated the following²:

“When labelling an engine as specified in 40 CFR 86.095-35 (a) and (h), a manufacturer clearly states that the engine conforms to U.S. EPA regulations and that the nonconformance penalty will be paid for any engine on which the NCP label is applied. Labelling an engine as such without payment of the penalty would be inappropriate and would misrepresent the status of that vehicle or engine. The NCP payment is the basis for allowing the higher than applicable emission standard for specific engine/vehicle. Without the NCP payment, the emission standard for such an engine is the stated applicable emissions standard and not the compliance level that would be applicable to an engine/vehicle under the NCP provisions.”

“In regard to the question of whether the phrase “distributed into commerce” is intended to mean only U.S. directed production or whether it includes other engines that receive the NCP certification label, such as products delivered to

² U.S. EPA, “Non-conformance Penalties for 2004 and Later Model Year Emission Standards for Heavy-Duty Diesel Engines and Heavy-Duty Diesel Vehicles: Response to Comments”, EPA420-R-02-020, August 2002.

Canada and Mexico, it is clear that any engine which bears the U.S. EPA certification label is available for introduction into commerce. It will assumed to be distributed into commerce and should pay the appropriate penalty to the U.S. Environmental Protection Agency in accordance with the NCP requirements. For those engines that do not meet U.S. EPA emission requirements or that are intended solely for export, the engine manufacturer must label the engines as such in accordance with the requirements for an export exemption as stated in 40 FR 85.1709. The export label on these engines/vehicles would not state that the engine conforms to U.S. EPA regulations and also would not state that a penalty had been paid in order to allow its introduction into commerce. Provided engines/vehicles are properly labelled, there will be little or no potential for operators to circumvent U.S. requirements by purchasing their vehicle in Canada or Mexico. Vehicles purchased in Canada or Mexico for use in the U.S. are subject to EPA regulations on imported vehicles.”

In view of the above, the structure of the Regulations provides no incentive for U.S. engine manufacturers to export NCP engines to Canada.

4) ISSUES RELATED TO THE REGULATIONS: COMMENTS AND REPLY

REGULATORY POLICY

CVMA and AIAMC stated:

- *“CVMA and AIAMC member companies for several years have worked in partnership with the Federal Government and supported alignment with U.S. Federal vehicle emission standards and harmonization of emission systems as a basis for Canadian Policy. This does not mean government adoption of complete regulatory structures without demonstrated need or positive cost-benefit relationship. Utilizing U.S. Tier 2 cost and gasoline sulphur information as a basis to move forward in the Canadian context is in the industry’s opinion, inappropriate. Canada’s regulatory process and policy guidelines set out very specific steps to be followed regarding the development of regulation.”*
- *“We are concerned that the development of the subject regulations fails to fully meet the requirements of the guidelines, as follows:*

1) *Environment Canada must clearly demonstrate that a problem or risk exists, that requires federal government intervention and that regulation is the best alternative.*

2) *Environment Canada must ensure that benefits outweigh the costs to Canadians, their governments, and businesses.*

3) *Environment Canada must ensure that any adverse impacts on the capacity to generate growth and employment are minimized and no unnecessary regulatory burden is imposed.*

4) *Environment Canada must ensure that parties proposing equivalent means to conform with the regulatory requirements are given positive consideration.”*

Ford stated:

- *“It is our view that prior to adopting any regulatory requirements the government must demonstrate the need for such regulations and a positive cost-benefit relationship supporting such regulations”.*
- *“Environment Canada does not appear to have followed government Regulatory Policy and Policy Compliance Guidelines which requires that specific steps be taken when examining a regulatory change or a new regulation prior to making a decision to regulate. Under this Regulatory Policy, senior management in government is required to:*
 - *Find evidence of a problem. Describe and analyse the problem and justify government intervention*
 - *Identify and review alternative solutions, consider equivalent proposals*
 - *Analyse benefits, costs and regulatory burden*
 - *Make a decision to regulate or not*
 - *Identify opportunities for inter-governmental co-ordination*
 - *Implement the best alternative*
 - *Communicate effectively*
 - *Prepare a regulatory impact analysis statement*
- *We do not believe that the first three steps were adequately followed - the decision to regulate appears to have been made without due process.”*

Reply:

The Regulations have been developed through extensive consultations with stakeholders. Regulatory policy recognizes that the complexity of cost and benefit analyses can vary and should be proportional to the significance and impact of the Regulations. In view of the highly integrated nature of the North American vehicle manufacturing industry and the fact that the Regulations continue to be aligned with those of the U.S., the Department believes that the RIAS appropriately justifies and supports the Regulations.

COST OF COMPLIANCE WITH NEW EMISSION STANDARDS

- CVMA and AIAMC stated: *“The regulations are expensive; the costs will not be “very low”. This is an incorrect conclusion in the RIAS. The incremental costs are substantial and are actually underestimated. No mention is made of the potential costs of any artificial product availability manipulation that may be necessary. Extrapolation of U.S. data which is non-comparative is a major problem.”*

CTA stated:

- *“The financial cost of adopting Phase 1 and Phase 2 standards for heavy-duty engines will be substantially higher than claimed in the Gazette. CTA is concerned that if this is not corrected, shippers may not appreciate the extent to which carrier costs will have to rise, and resist efforts by carriers to charge rates sufficient to cover these additional cost outlays.”*
- *“CTA is therefore requesting that Environment Canada revisit the cost estimates contained in the Gazette, as the EPA has done in the United States. In January 2002 the EPA produced a draft report, Non-conformance Penalties for 2004 Highway Heavy Duty Diesel Engines, which includes compliance cost estimates based on data provided by engine manufacturers, independent cost analyses, and the EPA’s technical judgement. They are considerably higher than the EPA’s first published figures as they include not only the manufacturer’s cost but the operating cost of the new engines.”*

Reply:

The Department recognizes that the Regulations will result in some incremental administrative costs for industry, notably in label design to accommodate the national emissions mark and in reporting related to the fleet average NOx emissions standards. However, the CVMA or AIAMC did not provide any quantification of these costs to substantiate that they will be considerable.

In August 2002, the U.S. EPA published the final rule regarding non-conformance penalties (NCPs) for 2004 and later model year heavy-duty diesel engines³. In the final rule, the U.S. EPA estimates for the average lifetime incremental cost of compliance for 2004 model year heavy-duty diesel engines were considerably higher than those presented in the original standard-setting rulemaking. However, it is important to note that the two estimates of costs are not directly comparable for a number of reasons. The most important difference is the emission characteristics of the baseline engine used in the two analyses. The second major reason is that NCPs are intended to protect complying manufacturers and thus it is important in associated analyses to avoid underestimating reasonably projected costs. Accordingly, the U.S. EPA's cost analysis for the NCPs focuses solely on the compliance costs associated with the first year of production. On the other hand, cost analyses for regulatory actions to establish new emission standards are carried out with a longer term view and take into account factors that tend to reduce compliance costs over time, resulting in lower average costs. These issues are described in greater detail in the U.S. EPA's final rule.

In view of the above, the Department has not changed the cost estimates that were used to support the proposed Regulations. The cost estimates continue to be based on those used by the EPA in support of corresponding rules.

MARKET REACTION TO NEW HEAVY-DUTY ENGINES

CTA stated:

- *“The announcement of the financial and fuel cost implications of the October 2002 truck engine standards has caused a pre-buying phenomenon in the new truck market.”*
- *“CTA would expect this preorder experience to be duplicated, if not intensified in 2006 as the 2007 truck is expected be substantially more expensive.”*
- *“CTA was encouraged by Environment Canada's position in the December 2001 Gazette notice pertaining to the use of economic instruments for the faster introduction of ultra low sulphur diesel fuel. CTA would ask that Environment Canada consider taking a similar position regarding the use of economic instruments for the faster introduction of 2004 and 2007 into the marketplace.”*

³ U.S. EPA, Final Rule, Non-conformance Penalties for 2004 and Later Model Year Emission Standards for Heavy Duty Diesel Engines and Heavy-Duty Diesel Vehicles, Federal Register, August 8, 2002.

- *“One way to encourage the faster introduction of these engines into the marketplace, and to prevent a 2006 preorder situation, is to change the definition of renewable energy and energy efficiency equipment under Class 43.1 of the Income Tax Regulations. Originally Class 43.1 was designed to encourage taxpayers who either generate and sell electricity or use energy in other industrial sectors to make efficient use of fossil fuels and increase their use of both alternate and renewable energies. The Department of Finance is now seeking views on possible ways to accommodate emerging technologies that are not currently part of Class 43.1 but that are in keeping with the broad criteria for this CCA class. Technologies meeting the definition requirements of 43.1 receive a capital cost allowance (CCA) rate of 30 per cent. This 30 per cent CCA rate would be a significant improvement to current rates available to the trucking sector --- 20%, 32%, 19.2%, and 11.5% for years one to four respectively... CTA will be responding to the public consultation the Department of Finance has initiated. We would strongly urge Environment Canada to do likewise.”*

Reply:

The Cleaner Transportation Working Group (CTWG) under the National Round Table on the Environment and the Economy explored opportunities to apply fiscal instruments to encourage the purchase of cleaner heavy-duty engines in advance of, or in greater numbers than, regulated phase-in requirements. While such programs may offer some potential, the CTWG noted that implementing such tools would require substantial administrative investment for a relatively short program duration and uncertain program success. Furthermore, it was suggested that such programs would require substantial additional research, including investigation of whether future cleaner heavy-duty engines can logistically/technologically be supplied earlier than mandated deadlines.

One of the key considerations identified by the CTWG was that unless there is ability to supply market ready engines early, no fiscal instrument would work. Sufficient time is required for manufacturers to develop and test new technologies prior to their road application and the availability of heavy-duty engines with advanced the emission control technology meeting the Phase II emission standards prior to 2007 remains unclear.

The Department believes that the Regulations represent an appropriate instrument to ensure that heavy-duty engines marketed in Canada comply with the same stringent emission standards as in the U.S.

IMPACT OF NEW STANDARDS ON FUEL EFFICIENCY

CTA stated:

- *“The regulation will have a dramatic impact regarding the reduction of NOx emissions from heavy-duty diesel trucks. Unfortunately, as suggested above the technology to reduce NOx emissions from trucks will have negative impact on fuel efficiency.”*
- *“Poorer fuel consumption is expected to be a significant cost component of the cost of compliance towards October 2002 HDDT engines. The principle technology used by the majority of engine manufacturers to achieve the October 2002 NOx emission levels is Cooled Exhaust Gas Recirculation (EGR).”*
- *“The EPA estimates that fuel consumption will increase 2.5 per cent because of EGR introduction. Some engine manufacturers are warning of a possible 4.5 per cent increase in fuel usage.”*

Reply:

Under the Regulations, heavy-duty diesel vehicles and engines will be required to meet increasingly more stringent emission standards in two steps, beginning in the 2004 and 2007 model years. In order to meet the future emission standards heavy-duty vehicle and engine manufacturers will use new advanced emission control technologies. While some vehicles may experience small increases in fuel consumption in the short term, it is expected that engine manufacturers will be able to fully optimize new technologies and engine systems to provide large reductions in smog-forming emissions without compromising fuel efficiency.

For the 2004 model year standards, the U.S. EPA has suggested that for large heavy-duty engines of the type used in line-haul trucks some engine manufacturers are predicting no change in fuel consumption while others are predicting fuel consumption increases ranging from 2% to 5%, which are expected to be short term.. In the case of the 2007 model year emission standards, the U.S.EPA has estimated that there will be no fuel consumption increase associated with compliance.

IMPACT OF U.S. CONSENT DECREES ON EMISSION PROJECTIONS

- CPPI stated: *“We believe that the emission reduction forecasts in the RIAS include the assumption that the consent decree requirements are being implemented but there is no requirement for engine makers to do this in*

Canada. We urge Environment Canada to pursue an agreement with the engine makers to ensure that Canada benefits from the same corrective measures as the USA. A statement to this effect in the RIAS would be helpful. Again, this would provide useful direction to emission modelers to ensure that future forecasts of vehicle fleet emissions are based on full and accurate information.”

- Shell stated: *“Shell also noted that the emission modelling results presented in the RIAS reflected the implementation of the USA Consent Decree related to the so-called “defeat device”. The proposed Canadian Regulations do not reflect an advancement of the 2004 HDV standards to 2002 and there is no indication that the heavy-duty vehicles will be retro-fitted with a kit supplied by the engine manufacturers to correct the higher NOx emissions when the engines are rebuilt. We understand that these USA requirements are not entrenched in USA regulations, but are in fact a result of a court settlement. Shell asks Environment Canada to clarify how similar NOx reduction requirements related to the Consent Decree for HDV will eventually be implemented in Canada.”*

Reply:

Engine manufacturers have indicated that they will provide Phase I engines to Canada in the same time frame as committed to in the U.S. under the Consent Decrees. Also, low NOx rebuild kits will be made available in Canada at the same time as the U.S. Accordingly, for the purpose of conducting an emissions forecast from on-road vehicles, it is appropriate to assume that cleaner new heavy-duty engines will be introduced into Canada on the same schedule as in the U.S. However, the extent to which a NOx rebuild program will be carried out in Canada is uncertain at this time and, to be conservative, it is believed that the effects of such a program should not be included in the Canadian emission forecasts.

The effects of the NOx rebuild program were, however, inadvertently included in the Canadian emission forecasts conducted by SENES Consultants Ltd. At Environment Canada’s request, SENES recalculated the forecasts and provided an erratum to their report. The effect of having included a NOx rebuild program resulted in a relatively minor underestimation of NOx emissions from on-road vehicles, which in the year 2020 resulted in a 1% difference. Emissions other than NOx from heavy-duty vehicles were not affected. The emission forecasts used in the final RIAS are based on the revised NOx emission forecasts provided by SENES.

5) OTHER TRANSPORTATION-RELATED ISSUES: COMMENTS AND REPLY

FUEL EFFICIENCY STANDARDS FOR VEHICLES

- The City of Toronto stated: *“One of the proposal’s achievements will be to reduce the disproportionate impact that large vehicles are having on air quality. The regulations will require sport utility vehicles (SUVs) and large vans to meet the emission standards set for light-utility vehicles, effectively ending the pollution control holiday that these large vehicles have enjoyed. The federal government could build on this progress by requiring SUVs to meet high fuel efficiency standards or by creating new incentives to promote more sustainable means of transportation.”*

Reply:

The primary purpose of the Regulations is to establish stringent new standards to reduce emissions from on-road vehicles that contribute to the formation of smog and other pollutants including some, such as benzene, that are listed as “toxic” under CEPA 1999.

While the Regulations do not address greenhouse gases from vehicles (i.e., carbon dioxide), this action represents only one element of the Government’s overall strategy for cleaner vehicles. It should be looked at in conjunction with the support and encouragement being given by the Government to new technologies and alternative fuels, such as fuel cells and ethanol, to improve the fuel efficiency of vehicles. As a component of the Government’s Climate Change Plan for Canada, the Minister of Natural Resources will be initiating negotiations with the auto industry towards new fuel efficiency targets for 2010 applicable to all light vehicles, including SUVs, pick-up trucks and cars.

OFF-ROAD DIESEL FUEL AND ENGINES

- The City of Toronto stated: *“ I urge you to accelerate progress on reducing off-road emissions, through both engine and fuel improvements, and I look forward to a detailed announcement. As I noted in my letter dated February 18, 2002, I recommend limiting the sulphur level in off-road diesel fuel to fifteen parts per million, that of on-road diesel fuel. This progress would allow the adoption of advanced emission-reduction technology and provide substantial health benefits.”*

Reply:

The Minister's Federal Agenda on Cleaner Vehicles, Engines and Fuels addresses off-road diesel fuel. It states:

“Environment Canada plans to recommend a regulatory limit for sulphur in off-road diesel. The limit would be established in the same time frame that the EPA plans for developing limits for sulphur in U.S. off-road diesel (expected to be in 2001). In preparation for this, Environment Canada will gather information on where off-road diesel is used, the effects of sulphur reduction on emissions, and the costs of reducing sulphur in diesel for use in all off-road engines and vehicles, including rail and marine applications.”

It is anticipated that the U.S. will move forward with proposing a sulphur limit for off-road diesel in early 2003. Environment Canada will continue to monitor U.S. activities in this regard.

Environment Canada is also developing proposed emission standards for engines used in a variety of off-road applications, consistent with the Federal Agenda.

PROMOTION OF SUSTAINABLE TRANSPORTATION

- The City of Toronto stated: *“Air quality improvements stemming from the proposed regulations will accumulate very slowly because the regulations apply to new vehicles. At the same time, vehicle use is expected to increase. Non-regulatory incentives to promote sustainable transportation and only the cleanest fuels could substantially accelerate air quality improvements, and I encourage you to further explore these options.”*

Reply:

Environment Canada encourages sustainable means of transportation in a number of ways. Environment Canada is currently leading the development of a Code of Practice for On-Road Heavy-Duty Vehicle Emission Inspection and Maintenance Programs. In 1994, through the Canadian Council of Ministers of the Environment, the Department led the development of a Code of Practice for Light-Duty Vehicle Emission Inspection and Maintenance Programs, which was updated in 1998 to reflect changes in testing equipment and procedures. Such programs provide for periodic testing of vehicle emissions.

Public education is an important component of the government's Clean Air Strategy. Accordingly, Environment Canada regularly conducts voluntary vehicle emission inspection clinics across the country, to raise public awareness of proper vehicle

maintenance and its effect on emissions. As well, the Department supports programs that encourage owners to scrap older, higher-polluting vehicles in favour of newer and cleaner vehicles or alternatives such as public transit, bicycling and walking.

Additionally, Environment Canada is investigating advanced, cleaner and more efficient vehicle and engine technologies as potential replacements for conventional gasoline and diesel engines. Examples of these technologies include fuel cells, hybrid electric vehicles and battery electric systems. We are also continuing to support the development and use of alternatives to conventional fuels, such as renewable fuels like ethanol and biodiesel.

Finally, the Department recognizes that if the environmental impacts of transportation are to be fully addressed, all vehicle users must play a role. Accordingly, Environment Canada supports sustainable transportation policies, and encourages the use of car and van pooling, telecommuting, bicycling and other measures to reduce emissions. These types of initiatives, when combined with environmentally sound urban planning and public education, will significantly improve air quality.

MODAL EQUITY: TRUCKING AND RAILWAY LOCOMOTIVES

The CTA stated:

- *“CTA wishes to remind Environment Canada that no similar regulation of engine and fuel emissions exists in Canada with regard to railway locomotives, creating a competitive imbalance in the freight transportation marketplace and a significant health-emissions gap.”*
- *“A 2001 study for the North American Commission for Environmental Cooperation on the impact of increased trade on emissions concludes: “in all corridors, because of the decline in truck emissions, rail will contribute a much larger share of trade-related NOx and PM10 emissions.”*
- *“The Government of Canada must begin to make the railway industry reduce their health-related emissions.”*

Reply:

The authority for regulating railway locomotive emissions lies with Transport Canada under the *Railway Safety Act*. Environment Canada monitors locomotive emissions through information provided under the Memorandum of Understanding (MOU) regarding locomotive emissions, signed by Environment Canada and the Railway Association of Canada in 1995. The MOU sets a cap on annual NOx

emissions from railway locomotives operating in Canada of 115,000 tonnes per annum. Going forward, Environment Canada will be working with Transport Canada to develop a strategy to address locomotive exhaust emissions. Among the measures being considered is regulatory action to align with U.S. emission standards for railway locomotives.

The Federal Agenda on Cleaner Vehicles, Engines and Fuels, published in February 2001 includes plans “to recommend a regulatory limit for sulphur in off-road diesel... in the same time frame that the EPA plans...” The Notice indicates that information gathering in support of a regulation would include an examination of rail applications.

APPENDIX 1

**Scenario Analysis:
Fleet Average NOx Emissions in Canada**

**Transportation Systems Branch
Environment Canada**

November 2002

Table of Contents

1) Introduction 1
2) Recent Canadian Sales Mix vs. U.S. Sales Mix..... 1
3) Projection of Future Canadian Sales Mix by Vehicle Class 3
4) Estimation of Future Vehicle Emission Certification Bin Distribution..... 5
5) Estimation of Future Fleet Average NOx Emission Rates..... 6
6) Fleet Average NOx Emission Rates - Per Company Basis 8
7) Conclusions 8

APPENDIX A..... 10

1) Introduction

The *On-Road Vehicle and Engine Emission Regulations* are designed to incorporate the U.S. fleet averaging NOx standards. They include the associated provision for banking and trading of NOx emission credits and appropriate flexibility to address market differences between Canada and the U.S. Some comments on the March 30, 2002 proposed Regulations suggested that the exact U.S. fleet averaging program needs to be applied in Canada to ensure that the emission performance of the Canadian fleet is comparable to that of the U.S. fleet. This report describes an analysis that supports the position that the Regulations can achieve the desired overall emission performance of the Canadian fleet while providing sufficient flexibility to accommodate legitimate market differences.

2) Recent Canadian Sales Mix vs. U.S. Sales Mix

The Canadian sales mix of passenger vehicles is different from that of the U.S. Data indicate that, in recent years, Canadians tend to purchase more passenger cars and fewer light-duty trucks¹ than Americans. The percentage difference varies depending the data source used, but typically ranges with Canadians buying 2 to 8% more passenger cars than Americans. Automotive News^{2,3} forecasts that this trend will continue and the percentage of passenger cars sold in Canada will level off at 53%, which is approximately 5% greater than their forecast for the percentage of passenger cars sold in the U.S.

There are also notable differences in the sales mixes of subcategories of passenger cars and light-duty trucks. The following graph shows the percentage of vehicles sold in each subcategory in Canada and in the U.S., according to Industry Canada data⁴. The data presented are derived by averaging annual sales over the years 1995-1999.

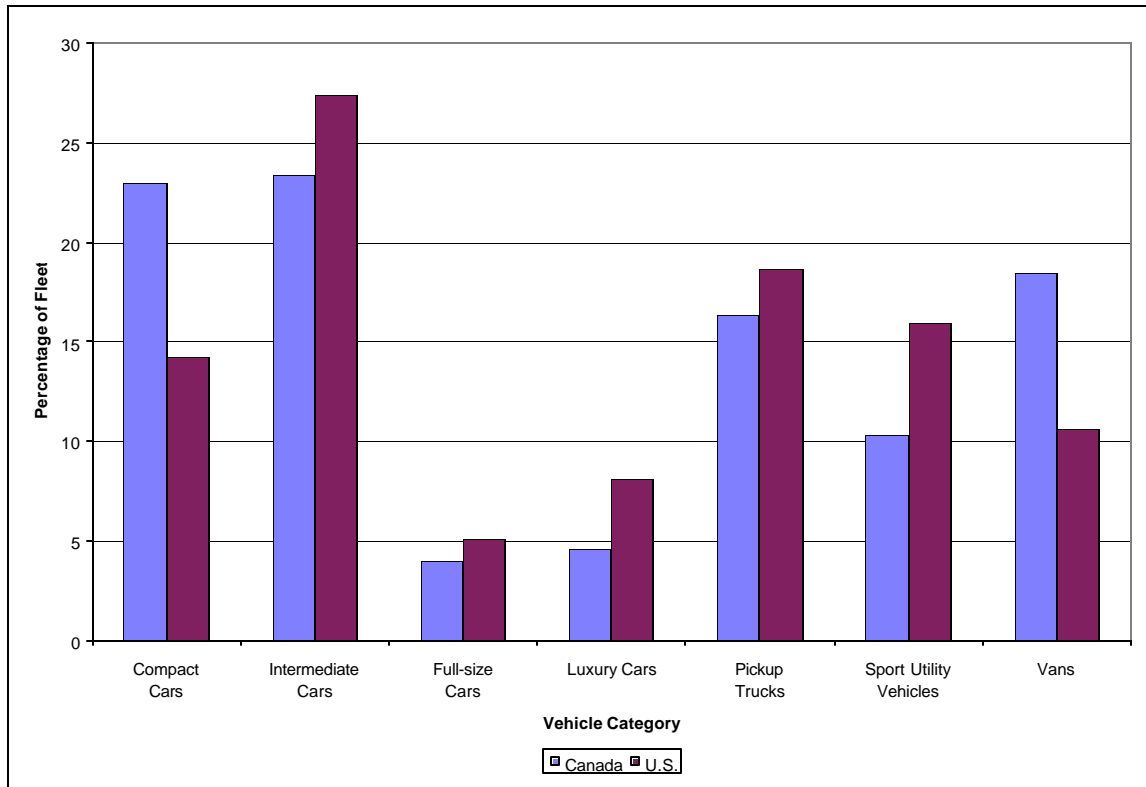
¹ Light-duty trucks include vans, pickup trucks and sport utility vehicles (SUVs).

² Automotive News, 2002 Market Data Book, May 27, 2002.

³ Automotive News, 2001 Market Data Book, May, 2001.

⁴ Industry Canada, "Statistical Review of the Canadian Automotive Industry: 2000 Edition."

Figure 1: Average Sales Mix by Vehicle Category, 1995-1999



The graph shows Canadians generally buy more compact cars (23% vs. 14%) and more vans (18% vs. 11%) (particularly mini-vans) and fewer of the vehicles in all of the other categories (i.e., intermediate cars, full-size cars, luxury cars, pickup trucks and SUVs).

For the purposes of emission certification, all passenger cars are considered as a homogeneous class, whereas light-duty trucks are classified into four separate categories based on weight-related features. These features include: the “gross vehicle weight rating” (GVWR), which is the rating specified by a manufacturer as the maximum design loaded weight of a vehicle; the “loaded vehicle weight” which is the vehicle’s curb weight plus 136.1 kg (300 lb.); and the “adjusted loaded vehicle weight” which is the average of the vehicle curb weight and the GVWR. The following table summarizes the four classifications of light-duty trucks based on these features.

Table 1: Categories of Light-Duty Trucks

Light-Duty Truck Class	GVWR kg (lb.)	Loaded Vehicle Weight kg (lb.)	Adjusted Loaded Vehicle Weight kg (lb.)
LDT1	0 - 2722 (0 - 6000)	0 -1701 (0 - 3750)	N/A
LDT2	0 - 2722 (0 - 6000)	1702 - 2608 (3751 - 5750)	N/A
LDT3	2723 - 3856 (6001 - 8500)	N/A	1702 - 2608 (3751 - 5750)
LDT4	2723 - 3856 (6001 - 8500)	N/A	2608 (5750)

Note: LDT1 and LDT2 are considered to be light light-duty trucks. LDT3 and LDT4 are considered to be heavy light-duty trucks.

To evaluate the effect of differing vehicle preference in Canada on the Canadian fleet average emission rate, the sales mix must be disaggregated into the light-duty vehicle (LDV) (i.e., passenger car) and light-duty truck 1 through 4 (LDT1-4) classes. This was accomplished by using 2000 model year Canadian registration data together with U.S. EPA 2000 certification data to allocate vehicle class (i.e., LDV and LDT1-4) to each vehicle model listed in the registration data.⁵ The allocation of vehicle models to LDV and LDT classes is presented in Appendix A. The number and percentage of vehicles by class is presented in Table 2.

Table 2: Number and Percentage of Vehicles by Class in Canada, 2000 Model Year

	LDV	LDT1	LDT2	LDT3	LDT4	Total
Number	824,000	48,000	346,000	102,000	59,000	1,379,000
Percentage	59.7	3.5	25.1	7.4	4.3	100

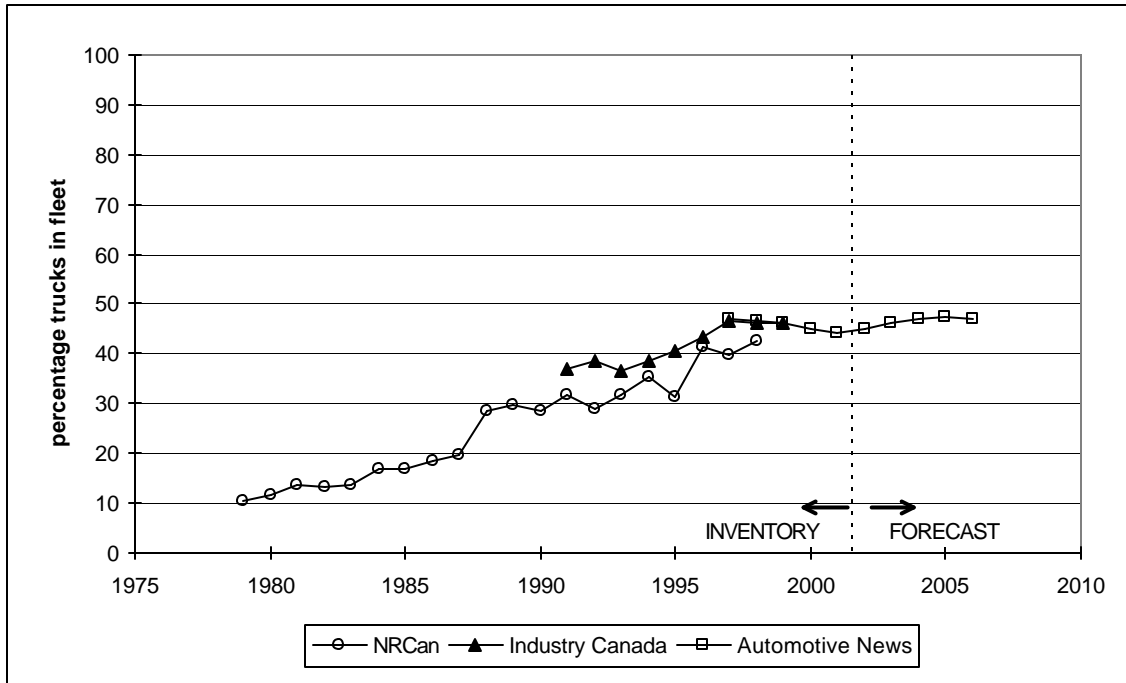
3) Projection of Future Canadian Sales Mix by Vehicle Class

Figure 2 presents an inventory and forecast of the percentage of light-duty trucks sales in the combined Canadian car and light-duty truck fleet, for the years 1979 to 2006, based on the data from three sources: Natural Resources Canada (NRCan)⁶, Industry Canada⁴ and Automotive News^{2,3}.

⁵ Data from the Canadian Vehicle Manufacturers' Association (CVMA) and the Association of International Vehicle Manufacturers of Canada (AIAMC) were used to verify and, in some cases, correct vehicle model allocation to appropriate classes.

⁶ Schingh, Marie, Erik Brunet, Patrick Gosselin, "Canadian New Light Duty Vehicles: Trends in Fuel Consumption and Characteristics (1988-1998)," Natural Resources Canada, July 6, 2000.

Figure 2: Inventory and Forecast of the Percentage of Light-duty Truck Sales in the Canadian Fleet



As indicated in Table 2, the percentage of 2000 model year light-duty trucks in the Canadian combined car and light-duty truck fleet is estimated to be about 40% (2000 registration data). In addition, the following three percentages of light-duty trucks, derived from data in Figure 2, are used to form the basis of scenarios for estimating potential Canadian fleet average NOx emission rates:

- The Automotive News forecast suggests that the percentage of light-duty truck sales in the Canadian fleet will level off at approximately 47%. Based on the apparent trend from 1997 to 2006, it is assumed that the Canadian percentage of light-duty truck sales in 2009 can be estimated at approximately 47%;
- The Automotive News forecast also suggests that the percentage of light-duty truck sales in Canada will remain consistently about 5% lower than that in the U.S. This apparent trend can be used in conjunction with a U.S. EPA assumption that the percentage of light-duty truck sales in the U.S. will increase to 60% and then level off⁷ (see section 5). Based on these two assumptions, a 55% truck scenario is examined; and
- Past sales data from Natural Resources Canada and Industry Canada show an increase in the percentage of light-duty truck sales over time. If the current rate

⁷ U.S. EPA, "Accounting for the Tier 2 and Heavy-Duty 2005/2007 Requirements in MOBILE6", EPA420-R-01-057, November 2001.

of incline shown in this data is assumed to continue, the percentage of light-duty truck sales in the fleet could be as high as 60% in the year 2009.

In the subsequent analysis to determine potential Canadian NOx fleet average emission rates, the percentage distribution between the LDT 1-4 classes is held constant at the 2000 levels described in the previous section while the overall percentage of light-duty truck sales in the combined Canadian fleet is varied within a range of 40 to 60%.

4) Estimation of Future Vehicle Emission Certification Bin Distribution

The final U.S. Tier 2 standards are based on a system where manufacturers have the option of certifying any particular vehicle to one of eight emission categories or "bins", each having specified standards of differing stringency for a variety of air pollutants, provided that the manufacturer meets an annual sales-weighted corporate fleet average NOx standard of 0.07 g/mi. Manufacturers will select which bin to certify their various vehicle models based on the characteristics of the U.S. vehicles sales market while ensuring the 0.07 g/mi NOx fleet average is achieved in the U.S. The Canadian Regulations continue the current approach of requiring vehicles to meet the same emission standards to which they are certified to in the U.S.

The U.S. EPA, in their report⁷ entitled "Accounting for the Tier 2 and Heavy-Duty 2005/2007 Requirements in MOBILE6", developed a default fleet-wide distribution depicting how manufacturers might comply with the Tier 2 requirements (i.e., the percentages of vehicles within each vehicle class certified to a bin with the objective of meeting the fleet average NOx standard). The MOBLIE6 model is used to estimate emissions from on-road vehicles in the U.S. The default bin distribution in the MOBILE6 model represents one possible distribution and is based on the premise that manufacturers will take full advantage of the opportunity to trade off higher emissions on heavier light-duty trucks with lower emissions on cars and lighter trucks.

Table 3 presents a summary of the bin distribution assumed by the U.S. EPA for the 2009 model year, which is the year when the Tier 2 standards become fully phased-in. Since the vast majority of vehicle models offered for sale in Canada will be sold concurrently in the U.S. and will be certified to the same emission standard bin as in the U.S., the same projected bin distribution can be used to calculate the Canadian fleet average NOx emission rate.

Table 3: MOBILE6 Vehicle/Bin Distribution for the 2009 Model Year

Bin #	8	7	6	5	4	3	2	1
NOx Std	0.2	0.15	0.1	0.07	0.04	0.03	0.02	0.00
LDV	-	-	-	0.1	0.1	0.55	0.25	-
LDT1	-	-	-	0.1	0.1	0.55	0.25	-
LDT2	-	0.3	0.3	0.2	0.2	-	-	-
LDT3	0.26	-	-	0.74	-	-	-	-
LDT4	1	-	-	-	-	-	-	-

The Canadian Vehicle Manufacturers' Association (CVMA) and the Association of International Vehicle Manufacturers of Canada (AIAMC) have stated "it is very likely that many manufacturers will certify the majority of their products to the Tier 2 average (bin 5) level of emissions. This approach allows manufactures to ensure compliance to the Tier 2 standards while allowing flexibility to respond to any changes in customer preferences."⁸ A second distribution reflecting this scenario is presented in Table 4, with the majority of LDVs, LDT1s, LDT2s and LDT3s certified to bin 5. Heavier light-duty trucks and diesel-fuelled vehicles may be more difficult to certify to bin 5 and may likely be certified to one of the higher bins (e.g., bin 8 with a NOx emission standard of 0.2 g/mi). To offset the impact on the NOx fleet average emission rate of certifying those vehicles to higher bins, manufacturers would likely certify some of the lighter vehicles to bins with lower NOx emission standards.

Table 4: Alternative Vehicle/Bin Distribution with Majority of LDV and LDT1-3 Certified to Bin 5

Bin #	8	7	6	5	4	3	2	1
NOx Std	0.2	0.15	0.1	0.07	0.04	0.03	0.02	0.00
LDV	-	-	-	0.75	0.1	0.1	0.05	-
LDT1	-	-	-	0.75	0.1	0.1	0.05	-
LDT2	-	-	-	1	-	-	-	-
LDT3	-	-	-	1	-	-	-	-
LDT4	0.7	0.1	0.1	0.1	-	-	-	-

5) Estimation of Future Fleet Average NOx Emission Rates

The Canadian sales mix data and vehicle/bin distributions described previously can be used to estimate fleet average NOx emission rates for the 2009 model year, when the Tier 2 program will be fully implemented.

⁸ CVMA & AIAMC, "Cleaner Vehicles, Engines and Fuels: A Policy Analysis and Recommendations on Environment Canada's Notice of Intent and Support Document – February 17th, 2001," September, 2001.

Scenario Analysis: Fleet Average NOx Emissions in Canada

For the U.S. sales mix, the EPA⁷ assumed that the sales of light-duty trucks will increase to 60% of the light vehicle market in 2008 and then level off, but the distribution of sales across the four light-duty truck categories (i.e., LDT1 at 18%, LDT2 at 57%, LDT3 at 17% and LDT4 at 8%) is assumed to remain constant at 1999 levels. For the purposes of comparison, the Canadian distribution of sales across the four light-duty truck categories is also held constant at the Canadian 2000 levels (i.e., LDT1 at 8.7%, LDT2 at 62.3%, LDT3 at 18.3% and LDT4 at 10.7%)⁹. The overall percentage of light-duty trucks in the Canadian combined car and light-duty truck fleet, however, is varied according to the data presented previously. Table 5 presents the fleet average NOx emission rates calculated using the two vehicle/bin distributions and percentage of light-duty trucks in Canada at 40, 47, 55 and 60%.

Table 5: Estimated Fleet Average NOx Emission Rates

	U.S. Fleet Average	Canadian Fleet Average			
	EPA MOBILE6 Assumptions	2000 Canadian Registration & EPA Certification Data	Automotive News Forecast	Automotive News - Observed Trend	Extreme Case
	60% trucks	40 % trucks (2000MY)	47% trucks	55% trucks	60% trucks
LDV	0.400	0.597	0.531	0.450	0.400
LDT1	0.108	0.035	0.041	0.048	0.052
LDT2	0.342	0.251	0.292	0.343	0.374
LDT3	0.102	0.074	0.086	0.101	0.110
LDT4	0.048	0.043	0.050	0.059	0.064
MOBILE6 Vehicle/Bin Distribution Overall Fleet Average:	0.070	0.061	0.066	0.072	0.075
Alternative Distribution Overall Fleet Average:	0.070	0.068	0.070	0.071	0.072

Using the vehicle/bin distribution assumed in the MOBILE6 model and the current percentage of light-duty trucks in the Canadian fleet (40%, derived from the 2000 Canadian registration and EPA certification data), the Canadian fleet average would be 0.061 g/mi, which is lower than the corresponding U.S. fleet average. Using Automotive News forecast, which predicts 47% trucks, the fleet average would be 0.066 g/mi. The trend observed in the Automotive News data (i.e., 5% less trucks in Canadian fleet compared to the U.S. fleet) yields 55% trucks in the Canadian fleet and the resultant fleet average would be 0.072 g/mi. In the extreme

⁹ Trends show that when Canadian consumers replace their traditional passenger cars with light-duty trucks, they tend to purchase lighter trucks (i.e., LDT1 or LDT2). Holding the 2000 model year percentages of LDT1-4 categories constant while varying the overall percentage of truck sales may not reflect this trend. It does, however, provide a conservative method to estimate the fleet average NOx emission rate and is consistent with the approach used in the U.S. EPA reference.

Scenario Analysis: Fleet Average NOx Emissions in Canada

case that the Canadian light-duty truck population increases to 60%, the Canadian overall fleet average would be slightly higher than the U.S. at 0.075 g/mi.

Using the alternative distribution with the majority of vehicles certified to bin 5, all scenarios indicate a fleet average in Canada between 0.068 and 0.072 g/mi.

The population of MDPVs is not included in the calculations for the Canadian or U.S. fleet averages since defining this class of vehicle separately will be new for the 2004 and later model years and there are no data currently available to quantify the MDPV population. MDPVs, while low in population, would likely be certified to a bin with high emission standards. The bin distribution selected by manufacturers would be adjusted accordingly to achieve a NOx emission rate of 0.07 g/mi in the U.S.

6) Fleet Average NOx Emission Rates - Per Company Basis

The previous analysis shows that, on a fleet-wide basis, the Canadian fleet emission performance would likely be very close to that of the United States. It is recognized, however, that the vehicle emissions certification bin distribution for any individual company could be quite different from those presented in the fleet-wide analysis depending on the range of products offered for sale by the company. Accordingly, similar analyses were performed for several individual companies, but with company-specific data for the 2000 model year. In all cases, the Canadian fleet average NOx emission rate for any company meeting the fleet average NOx emission standard in the U.S. was very close to 0.07 g/mi.

7) Conclusions

The objectives of the Regulations are to continue to align Canadian emission standards with those of the U.S. and to achieve Canadian vehicle emission performance comparable with that of the U.S., which has the strictest national emission standards in the world.

The vast majority of vehicles sold in Canada will be designed to meet the 0.07 g/mi fleet average NOx standard in the U.S. The preceding analysis shows that, when these vehicles are sold concurrently in the U.S. and Canada, a similar but not identical fleet average will occur in Canada, both fleet-wide and on a per company basis. The U.S. program serves as an anchor for the Canadian fleet average provided that there are safeguards in place to prevent any systematic manipulation of the fleet of U.S. certified vehicles sold in Canada.

Taking into account the integrated nature of the North American automobile manufacturing industry and the expected composition of the future Canadian fleet, the analysis shows that the Canadian fleet averaging program can achieve a

Scenario Analysis: Fleet Average NOx Emissions in Canada

Canadian fleet emission performance that will be very close to that of the U. S. while providing the flexibility to accommodate legitimate differences between the two markets.

Scenario Analysis: Fleet Average NOx Emissions in Canada

APPENDIX A

2000 model year Canadian vehicle distribution by vehicle class.

Type	Make	Model	LDV	LDT1	LDT2	LDT3	LDT4
car	ACURA	EL	x				
car	ACURA	INTEGRA	x				
car	ACURA	NSX	x				
car	ACURA	RL	x				
car	ACURA	TL	x				
car	ASTON MARTIN	DB7	x				
car	AUDI	A4	x				
car	AUDI	A6	x				
car	AUDI	A8	x				
car	AUDI	S4	x				
car	AUDI	TT	x				
car	AUDI	UNKNOWN	x				
car	BENTLEY	ARNAGE	x				
car	BENTLEY	AZURE	x				
car	BMW	323	x				
car	BMW	328	x				
car	BMW	528	x				
car	BMW	540	x				
car	BMW	740	x				
car	BMW	750	x				
car	BMW	M	x				
car	BMW	M5	x				
truck	BMW	X5			x		
truck	BMW	X5				x	
car	BMW	Z3	x				
car	BMW	Z8	x				
car	BUICK	CENTURY	x				
car	BUICK	LESABRE	x				
car	BUICK	PARK AVENUE	x				
car	BUICK	REGAL	x				
car	CADILLAC	CATERA	x				
car	CADILLAC	DEVILLE	x				
car	CADILLAC	ELDORADO	x				
truck	CADILLAC	ESCALADE					x
car	CADILLAC	PRO CHASSIS	x				
car	CADILLAC	SEVILLE	x				
truck	CHEVROLET	ASTRO			x		
truck	CHEVROLET	ASTRO				x	
truck	CHEVROLET	BLAZER			x		
truck	CHEVROLET	C1500				x	
truck	CHEVROLET	C1500 SUBURBAN					x
truck	CHEVROLET	C1500 TAHOE					x
truck	CHEVROLET	C2500				x	x
truck	CHEVROLET	C2500 SUBURBAN					x
truck	CHEVROLET	C3500					
car	CHEVROLET	CAMARO	x				
car	CHEVROLET	CAVALIER	x				
car	CHEVROLET	CORVETTE	x				
truck	CHEVROLET	G10				x	

Scenario Analysis: Fleet Average NOx Emissions in Canada

Type	Make	Model	LDV	LDT1	LDT2	LDT3	LDT4
truck	CHEVROLET	G20					x
truck	CHEVROLET	G30					
car	CHEVROLET	IMPALA	x				
truck	CHEVROLET	K1500				x	
truck	CHEVROLET	K1500 SUBURBAN					x
truck	CHEVROLET	K1500 TAHOE					x
truck	CHEVROLET	K2500					
truck	CHEVROLET	K2500 SUBURBAN					x
truck	CHEVROLET	K3500					
car	CHEVROLET	LUMINA	x				
car	CHEVROLET	MALIBU	x				
car	CHEVROLET	METRO	x				
car	CHEVROLET	MONTE CARLO	x				
car	CHEVROLET	PRIZM	x				
truck	CHEVROLET	S10		x	x		
truck	CHEVROLET	TRACKER		x			
truck	CHEVROLET	VENTURE			x		
car	CHRYSLER	300M	x				
car	CHRYSLER	CIRRUS	x				
car	CHRYSLER	CONCORDE	x				
truck	CHRYSLER	GRAND VOYAGER			x		
car	CHRYSLER	INTREPID	x				
car	CHRYSLER	LHS	x				
car	CHRYSLER	NEON	x				
car	CHRYSLER	SEBRING	x				
truck	CHRYSLER	TOWN AND COUNTRY			x		
truck	CHRYSLER	VOYAGER			x		
car	DAEWOO	LANOS	x				
car	DAEWOO	LEGANZA	x				
car	DAEWOO	NUBIRA	x				
car	DODGE	AVENGER	x				
truck	DODGE	B1500				x	x
truck	DODGE	B2500					x
truck	DODGE	B3500					
truck	DODGE	CARAVAN			x		
truck	DODGE	DAKOTA			x		
truck	DODGE	DAKOTA				x	
truck	DODGE	DURANGO				x	
truck	DODGE	GRAND CARAVAN			x		
car	DODGE	INTREPID	x				
car	DODGE	NEON	x				
truck	DODGE	RAM 1500 SERIES				x	x
truck	DODGE	RAM 2500 SERIES					
car	DODGE	STRATUS	x				
car	DODGE	VIPER	x				
car	FERRARI	360	x				
car	FERRARI	456	x				
car	FERRARI	550	x				
car	FORD	CONTOUR	x				
car	FORD	CROWN VICTORIA	x				
truck	FORD	E-150				x	
truck	FORD	E-250					x
truck	FORD	E-350					
car	FORD	ESCORT	x				
truck	FORD	EXCURSION					
truck	FORD	EXPEDITION					x

Scenario Analysis: Fleet Average NOx Emissions in Canada

Type	Make	Model	LDV	LDT1	LDT2	LDT3	LDT4
truck	FORD	EXPLORER			x		
truck	FORD	F-150			x	x	
truck	FORD	F-150					x
truck	FORD	F-250					
truck	FORD	F-350					
car	FORD	FOCUS	x				
car	FORD	MUSTANG	x				
truck	FORD	RANGER		x	x		
car	FORD	TAURUS	x				
truck	FORD	WINDSTAR			x		
truck	GMC	C1500				x	
truck	GMC	C1500 YUKON XL					x
truck	GMC	C2500				x	x
truck	GMC	C2500 YUKON XL					x
truck	GMC	C3500					
truck	GMC	DENALI				x	
truck	GMC	G1500				x	x
truck	GMC	G2500					x
truck	GMC	G3500					
truck	GMC	K1500				x	
truck	GMC	K1500 YUKON XL					x
truck	GMC	K2500					
truck	GMC	K2500 YUKON XL					x
truck	GMC	K3500					
truck	GMC	S15 JIMMY			x		
truck	GMC	SAFARI			x		
truck	GMC	SAFARI				x	
truck	GMC	SONOMA		x	x		
truck	GMC	YUKON					x
car	HONDA	ACCORD	x				
car	HONDA	CIVIC	x				
truck	HONDA	CR-V		x			
car	HONDA	INSIGHT	x				
truck	HONDA	ODYSSEY			x		
truck	HONDA	PASSPORT			x		
car	HONDA	PRELUDE	x				
car	HONDA	S2000	x				
car	HYUNDAI	ACCENT	x				
car	HYUNDAI	ELANTRA	x				
car	HYUNDAI	SONATA	x				
car	HYUNDAI	TIBURON	x				
car	INFINITI	G20	x				
car	INFINITI	I30	x				
car	INFINITI	Q45	x				
truck	INFINITI	QX4			x		
truck	ISUZU	HOMBRE		x	x		
truck	ISUZU	RODEO			x		
truck	ISUZU	TROOPER				x	
truck	ISUZU	VEHICROSS			x		
car	JAGUAR	S-TYPE	x				
car	JAGUAR	VDP	x				
car	JAGUAR	XJ8	x				
car	JAGUAR	XJR	x				
car	JAGUAR	XK8	x				
car	JAGUAR	XKR	x				
truck	JEEP	CHEROKEE		x	x		

Scenario Analysis: Fleet Average NOx Emissions in Canada

Type	Make	Model	LDV	LDT1	LDT2	LDT3	LDT4
truck	JEEP	GRAND CHEROKEE			x		
truck	JEEP	WRANGLER		x	x		
car	KIA	SEPHIA	x				
truck	KIA	SPORTAGE		x			
truck	LAND ROVER	DISCOVERY				x	
truck	LAND ROVER	RANGE ROVER				x	
car	LEXUS	ES300	x				
car	LEXUS	GS300	x				
car	LEXUS	GS400	x				
car	LEXUS	LS400	x				
truck	LEXUS	LX470					x
truck	LEXUS	RX300	x				
car	LINCOLN	CONTINENTAL	x				
car	LINCOLN	LS	x				
truck	LINCOLN	NAVIGATOR					x
car	LINCOLN	TOWN CAR	x				
car	MAZDA	626	x				
truck	MAZDA	B3000		x	x		
truck	MAZDA	B4000		x	x		
car	MAZDA	MIATA	x				
car	MAZDA	MILLENNIA	x				
truck	MAZDA	MPV				x	
car	MAZDA	PROTÉGÉ	x				
car	MERCEDES BENZ	C	x				
car	MERCEDES BENZ	CL	x				
car	MERCEDES BENZ	CLK	x				
car	MERCEDES BENZ	E	x				
truck	MERCEDES BENZ	ML				x	
car	MERCEDES BENZ	S	x				
car	MERCEDES BENZ	SL	x				
car	MERCEDES BENZ	SLK	x				
car	MERCURY	COUGAR	x				
car	MERCURY	GRAND MARQUIS	x				
truck	MERCURY	MOUNTAINEER			x		
car	MERCURY	MYSTIQUE	x				
car	MERCURY	SABLE	x				
truck	MERCURY	VILLAGER			x		
car	MINI	ECLIPSE	x				
truck	MITSUBISHI	MONTERO SPORT			x		
car	NISSAN	ALTIMA	x				
truck	NISSAN	FRONTIER		x	x		
car	NISSAN	MAXIMA	x				
truck	NISSAN	PATHFINDER			x		
truck	NISSAN	QUEST			x		
car	NISSAN	SENTRA	x				
truck	NISSAN	XTERRA			x		
car	OLDSMOBILE	ALERO	x				
truck	OLDSMOBILE	BRAVADA			x		
car	OLDSMOBILE	INTRIGUE	x				
truck	OLDSMOBILE	SILHOUETTE			x		
truck	OTHER	M				x	
truck	OTHER	P30				x	
car	PLYMOUTH	BREEZE	x				
truck	PLYMOUTH	GRAND VOYAGER			x		
car	PLYMOUTH	NEON	x				
car	PLYMOUTH	PROWLER	x				

Scenario Analysis: Fleet Average NOx Emissions in Canada

Type	Make	Model	LDV	LDT1	LDT2	LDT3	LDT4
truck	PLYMOUTH	VOYAGER			x		
car	PONTIAC	BONNEVILLE	x				
car	PONTIAC	FIREBIRD	x				
car	PONTIAC	FIREFLY	x				
car	PONTIAC	GRAND AM	x				
car	PONTIAC	GRAND PRIX	x				
truck	PONTIAC	MONTANA			x		
car	PONTIAC	SUNFIRE	x				
car	PONTIAC	UNKNOWN	x				
car	PORSCHE	911	x				
car	PORSCHE	BOXSTER	x				
car	ROLLS ROYCE	CORNICHE	x				
car	ROLLS ROYCE	SILVER SERAPH	x				
car	SAAB	93	x				
car	SAAB	95	x				
car	SATURN	LS	x				
car	SATURN	LS1	x				
car	SATURN	LS2	x				
car	SATURN	LW1	x				
car	SATURN	LW2	x				
car	SATURN	SC1	x				
car	SATURN	SC2	x				
car	SATURN	SL	x				
car	SATURN	SL1	x				
car	SATURN	SL2	x				
car	SATURN	SW2	x				
truck	SUBARU	FORESTER	x				
car	SUBARU	IMPREZA	x				
car	SUBARU	LEGACY	x				
car	SUZUKI	ESTEEM	x				
truck	SUZUKI	GRAND VITARA		x			
car	SUZUKI	SWIFT	x				
truck	SUZUKI	VITARA		x			
truck	TOYOTA	4 RUNNER			x		
car	TOYOTA	AVALON	x				
car	TOYOTA	CAMRY	x				
car	TOYOTA	CELICA	x				
car	TOYOTA	COROLLA	x				
car	TOYOTA	ECHO	x				
truck	TOYOTA	LAND CRUISER					x
truck	TOYOTA	RAV4		x			
truck	TOYOTA	SIENNA			x		
truck	TOYOTA	TACOMA		x	x		
truck	TOYOTA	TUNDRA			x		
truck	TOYOTA	TUNDRA				x	
car	VOLKSWAGEN	CABRIO	x				
truck	VOLKSWAGEN	EUROVAN			x		
car	VOLKSWAGEN	GOLF	x				
car	VOLKSWAGEN	GTI	x				
car	VOLKSWAGEN	JETTA	x				
car	VOLKSWAGEN	NEW BEETLE	x				
car	VOLKSWAGEN	PASSAT	x				
car	VOLVO	C70	x				
car	VOLVO	S70	x				
car	VOLVO	S80	x				
car	VOLVO	V70	x				

Scenario Analysis: Fleet Average NOx Emissions in Canada

Type	Make	Model	LDV	LDT1	LDT2	LDT3	LDT4
truck	WORKHORSE	P30					
			LDV	LDT1	LDT2	LDT3	LDT4
		Total	823,521	48,456	345,879	101,543	59,173
		Percentage	59.7	3.5	25.1	7.4	4.3