



TRANSPORT CANADA

**SPEED LIMITER CASE STUDY AND
INDUSTRY REVIEW**

Final Report

April 2008

Prepared by Knowles Canada

TC-1002769



Canada 

Disclaimer

This report reflects the views of the authors and not necessarily those of Transport Canada.



EXECUTIVE SUMMARY

The purpose of this review was to provide an overview of the three main groups representing the carrier industry in Canada and offer some insight into their position on mandatory speed limiters. This background information would provide context for a small case study which endeavored to assess the benefits, effectiveness and implementation issues associated with mandatory speed limiters on commercial class trucks in Canada.

Sector Overview

The background research found that the three trucking sectors, as represented by their respective associations, had rather polarized views on the subject of mandatory speed limiters. The Canadian Trucking Alliance (CTA), the association representing the for-hire sector and the group who first proposed the notion of mandatory speed limiters in trucks, continues to support their original position and is a strong advocate of nation-wide laws mandating speed limiters in all trucks operating in Canada. The other end of the spectrum is the Owner-Operators Business Association of Canada (OBAC). OBAC is strongly opposed to mandatory speed limiters in trucks and is against any provincial or national regulations making such requirements compulsory. The third group, which is the Private Motor Truck Council of Canada (PMTCC) continues to be opposed to the notion of mandatory speed limiters in trucks but has taken a wait and see attitude and is asking to see the results of Transport Canada's analysis on the subject (i.e., this and other studies that are currently underway).

Case Studies

The case studies demonstrated that speed limiters have become a 'way of life' for many carriers. A number of the people that we met and interviewed from the carrier companies indicated that speed limiters have been in use for 20 years; longer than they have been with company. Our research also found that this situation is not unique and estimates suggest that more than 60% of carrier fleets in Canada have speed limiter policies in place, many for more than ten years.

The case study research found that both carrier fleets said that their speed limiter policies were initially introduced because doing so offered an opportunity to improve the efficiency of their business by reducing operating costs (fuel and maintenance) and potentially reducing collision risks. This in turn would make

them more competitive in their industry. Unfortunately we were not able to quantify these improvements since neither carrier could provide data on pre-speed limiter costs. In addition, both carrier fleets reported a low incidence of speed related violations and the drivers interviewed did not believe that the speed controls created a significant operational or safety concern. The case study also suggested that neither of the carrier fleets studied appear to have any market disadvantage compared to their competitors as a result of their speed control policies and in fact may have a market advantage associated with driver retention and driver job satisfaction.

Key Findings

Based on our review of the available information on speed limiters there are three important findings;

1. The potential fuel savings associated with speed limiters is significant and could be as high as \$250 million per year for the carrier industry in Canada. Fuel savings is the main driver behind the decision by most carriers to implement speed limiter policies.
2. The environmental benefits are equally significant representing a potential reduction of greenhouse gas (GHG) emissions amounting to 0.6 megatonnes per year. Environmental concerns are probably the main driver behind the decision by some provinces (Quebec and Ontario) to introduce speed limiter regulations.
3. Many carriers recognize the merits of an effective speed limiter policy and program as a good business decision and implementing such a program gives them a competitive advantage. They have realized savings in fuel, maintenance and operating costs; they are beginning to recognize the environmental benefits and they are contributing to a reduction of collisions.

Collectively, these findings are an indication that mandatory speed limiters have significant benefits for industry, for government and the general public.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

INTRODUCTION 4

PART ONE - STAKEHOLDER OVERVIEW..... 5

1. The Trucking Industry In Canada - Sector Overview 6

2. Canadian Trucking Sector Associations 9

3. Trucking Sector Positions On Mandatory Speed Limiters..... 13

Conclusion (Part One) 19

PART TWO - CASE STUDIES 21

1. Introduction 21

2. Methodology 21

3. Fleet Profile..... 22

4. Speed Limiters 23

5. Trip data..... 28

6. Fuel consumption 29

7. Maintenance and repair issues 31

8. Driver issues 32

9. Safety issues 34

10. Market advantage 36

Conclusion (Part Two) 38

APPENDIX A – TRIP DATA 40

APPENDIX B – FUEL CONSUMPTION 41

APPENDIX C – MAINTENANCE COSTS..... 44

APPENDIX D – VIOLATION DATA 45

APPENDIX E – COLLISION DATA..... 47

CONCLUSION..... 51

INTRODUCTION

The Motor Carrier Group of Transport Canada retained Knowles Canada to conduct research into the notion of mandatory speed limiters in trucks. The phase of the project involved the provision of overview and contextual information regarding the perspectives of the three main trucking sectors – for-hire carriers, private carriers, and owner-operators. The second was a case study on the impacts of speed limiters based on the experience of carriers that are using speed limiters. Synectics Transportation Consultants Inc. (Synectics), acting as a sub-consultant to Knowles Canada, was responsible for the case study.

The purpose of the case study was to assess the benefits, effectiveness and implementation issues associated with speed limiters on commercial class trucks with a GVW of 11,000 kg. or more. The assessment was performed using carriers that are actually using speed limiters. The original plan was to have representative carriers from each of the three Canadian trucking segments (for-hire, owner-operator, private) however; the owner-operator association (OBAC) was not able to provide a representative carrier within the study timeframe.

The issue of mandatory activation of speed limiters in all heavy trucks is complex topic with multiple considerations and divergent positions. While it remains important to assess the *potential* implications of a speed limiter requirement from a road safety, economic and environmental perspective, it is also important to incorporate the *real-world* experience of those who currently operate speed limited trucks.

Given this, the purpose of this assignment is to provide tangible and concrete information on the experience with speed limiters in the Canadian trucking industry. This includes benefits, concerns, operational impacts, implementation issues and any other information that will be useful to transportation ministers in their review and consideration of speed limiters across Canada.

Just as background, a speed limiter is a microchip in the truck's engine control module (ECM) that allows the truck engine's top speed to be preset or limited. Virtually all trucks built since 1995 come equipped with this technology. The

device needs to be activated and can be set at different speeds. Activation and setting¹ is typically performed by a qualified technician and, for the most part, the device is difficult to tamper with. More information is provided on the device in Part Two.

PART ONE - STAKEHOLDER OVERVIEW

As part of our research, we have been asked to provide information on the three main trucking sectors (owner-operators, private carriers and for-hire carriers) in Canada; an overview of the three associations that represent these sectors (OBAC, PMTC and CTA) and insight into the position each has on the issue of mandatory speed limiters. The purpose of this information is to provide background and contextual information that will help the reader understand and appreciate the position of each group.

This information was collected using four sources as follows:

Web Sites -- All of the associations have web sites that are full of information on the association and their position on various issues. They also contain a number of reports and other documents that address issues that are pertinent to the association and its members.

Internet – Speed limiters is a fairly hot topic in North America and there are countless reports, articles, research papers and blogs on the subject.

Research Papers – There are a number of research papers on the subject of speed limiters.

Discussion with Senior Association Representatives – The consultants spoke with a senior representative from each of the associations in varying degrees. Much of the research work was done prior to these discussions and the conversation itself was used to confirm and expand on the research findings. All industry associations were provided with draft material and asked to comment.

¹ Currently speed limiters have one speed setting. There is however new technology, called Intelligent Speed Adaptation (ISA), in which the device is linked to a GPS and mapping system which identifies local speed limits and relays the information to the speed limiter which then adjusts itself to local speed limits.

1. THE TRUCKING INDUSTRY IN CANADA - SECTOR OVERVIEW

The trucking sector in Canada is a large and growing business, estimated to be nearly \$55 billion a year industry in 2003² ³. The industry is represented by three main categories of carriers⁴. Although each of these groups is fairly distinct, there is considerable overlap between them. In terms of truck population, three provinces account for over 75 per cent of the heavy truck fleet in Canada: Ontario (37%), Alberta (25%) and Quebec (13.5%).⁵

The three sectors are:

For-Hire -- This sector, as the name implies, is represented by third party carriers that haul goods for a fee. For-hire carriers represent a cross section of small, medium, large and very large fleets with some carriers having as many as 2,000 to 3,000 tractors and a similar number of trailers. The for-hire sector represents roughly \$24 billion of the \$55 billion industry total.⁶

For-hire services include the provision of a tractor, a driver and may include the trailer as well. There are more than 10,000 for-hire carrier companies currently operating in Canada and this sector represents roughly 30%⁷ of the national market. In 2005, the fore-hire sector employed 109,284 drivers⁸. Examples of for-hire carriers include Kriska Holdings Ltd., Schneider International Transport, MacKinnon Transport, Robert Transport and McMillan Transport, to mention a few.

Private Fleets – Private carriers are businesses that maintain a fleet of trucks and trailers for the purpose of carrying their own goods. These companies are

² The industry dollar figures are from the Transport Canada website *Carriers by Industry Segment*.

³ The \$55 billion dollars does not include the owner-operator sector and does include couriers, which represent just over 10% of the total.

⁴ There are numerous other categories as well but they have not been considered as part of this report. Examples of other categories include farm trucks, government trucks, plus a wide assortment of other service and utility vehicles.

⁵ From the Canadian Trucking Alliance website.

⁶ Ibid.

⁷ Estimates indicate there are roughly 615,000 power units in Canada and 185,000 belong to for-hire carriers.

⁸ Statistics Canada, 2005 Census

typically involved in private trucking as they have a need to control the delivery services of the goods and products. Private fleets are an integral part of a company's distribution system and provide a logistical support service to the companies that own them. They may use dedicated company drivers, leased drivers or owner-operators. Many private carriers are also licensed to carry goods for other users in much the same manner as a for-hire carrier.

Private carriage is the largest representative among the three sectors and there are an estimated 10,000 private carriers operating in Canada. The numbers are somewhat skewed by the fact that this sector includes vehicles owned and operated by companies ranging from bakeries and florists to some of the largest manufacturing corporations in the country. The sector accounts for just over 50%⁹ of the heavy trucks on the road and it generates \$25 billion of the \$55 billion industry total¹⁰. Private carriage however only represents about 35% of the kilometers driven due to the fact that loads carried by this sector are smaller and typically travel shorter distances. Examples of private fleets include Molson Breweries, Kraft Canada, Praxair Canada and HBC Logistics, to mention a few.

Owner-Operators (O/O) – The owner-operator sector is slightly different than the other two sectors and some will argue that owner-operators do not represent a sector of the trucking industry but rather are a sub-set of the other two sectors. The owner-operators are made up primarily of self-employed individuals who own one or more tractors and provide driving services on a sub-contracted basis. They can offer cartage services on a one-off contract or as a standing service to a client. Owner-Operators usually provide a tractor and driver and will pull a trailer owned and loaded by the client. The client in some cases can be a private fleet or a for-hire carrier that needs an additional driver. Owner-operators fill in the gaps in the industry left by the other two main sectors and they represent an important component of the trucking industry. As a result, the carrier industry relies quite heavily on this sector and the services it provides.

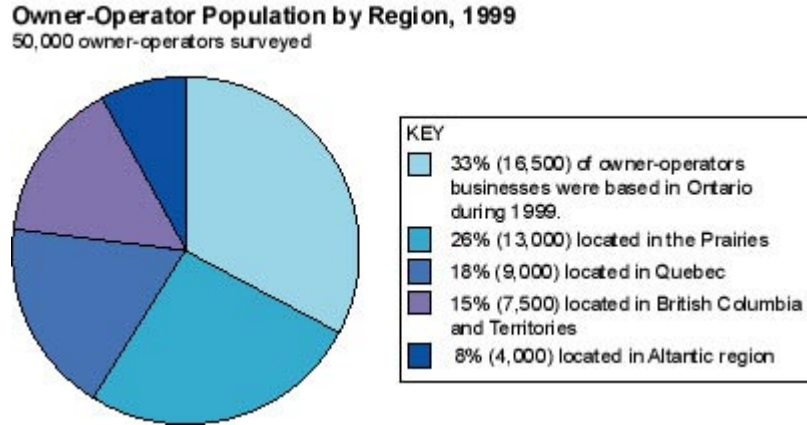
The Owner-Operator portion of the industry is the most difficult to define or measure. There is very little data collected on this group in Canada¹¹ and any data that is available is somewhat ambiguous because of the wide variation in

⁹ Estimates indicate there are roughly 615,000 power units in Canada and 340,000 belong to private carriers.

¹⁰ The industry dollar figures are from Transport Canada website *Carriers by Industry Segment- 2003 and they do not include owner-operators.*

¹¹ Statistics Canada stopped collecting data on Owner-Operators due in part to the lack of a clear definition.

the status of owner-operators.¹² There are an estimated 36,000 owner-operators currently in Canada and this sector represents roughly 15%¹³ of the national market. In 2005, the O/O sector employed 78,500 drivers¹⁴. The pie chart below, although dated, provides an indication of where the owner-operators are located in Canada.



Source: OBAC website Facts and Stats – original source: Small For-hire Carriers and Owner-operators Survey (SFO)

¹² Examples might include part-time O/O drivers, O/O drivers that are employed by a private or for-hire carrier on a full-time basis.

¹³ Estimates indicate there are roughly 615,000 power units in Canada and 90,000 belong to owner-operators.

¹⁴ Statistics Canada, 2005 Census

2. CANADIAN TRUCKING SECTOR ASSOCIATIONS

As mentioned above, the Canadian trucking industry is made up primarily of three key sectors: for-hire carriers; private fleets; and owner-operators. Each sector has an association that represents the interests of the sector and its members. The associations are:

- For-Hire Carriers = Canadian Trucking Alliance (CTA)
- Private Fleets = Private Motor Truck Council of Canada (PMTCC)
- Owner-Operators = Owner-Operator Business Association of Canada (OBAC)

Note that there are a number of carriers in Canada that are members of more than one association. This is a reflection of the fact that there is a considerable cross-over of services between sectors. For example, a private carrier may provide for-hire services to a third party and it may use the services of an owner-operator to fulfill a driver or tractor shortage.

Below is a short summary of each association, including information on their size, the main role of the association and specific interests of the sector including those areas of interest that are unique to that sector.

Canadian Trucking Alliance (CTA)

The Canadian Trucking Alliance (CTA) is the national voice for the trucking industry in Canada and represents the industry's viewpoint on national and international policy, regulatory and legislative issues that affect trucking. CTA defines its role as 'a driving force in effecting change, ensuring that the industry's interests are promoted and improving the business climate for trucking companies in Canada.'¹⁵ Another important component of CTA is to promote safety and sound environmental policies that benefit all Canadians.

The CTA is a federation of the seven (7) provincial trucking associations located in Vancouver (BC), Calgary (AB), Regina (SK), Winnipeg (MB), Toronto (ON), Montreal (QC) and Moncton (NB).

¹⁵ Quote from the CTA website Cantruck.com

The CTA website states that they represent a broad cross-section of the trucking industry—some 4,500 carriers, owner-operators and industry suppliers. Fleet sizes range from one or two vehicles to 2 or 3,000. The actual number of for-hire carriers operating in Canada is estimated to be in the area of 10,000¹⁶.

One of the unique characteristics of the for-hire sector, compared to the private carrier sector, is the fact that the Canadian for-hire trucking firms carry over 80 per cent of total tonnage shipped intra-provincially yet only account for 30% of the trucks on the road. Private carriers, which represent roughly 55% of the trucks on the road, tend to make shorter trips, carry lighter loads and operate smaller trucks compared to the for-hire sector.

As is the case with the other sector association, a number of carriers that hold a CTA membership also have membership in PMTC.

Generally, CTA is considered to be the most publicly active and perhaps strongest truck lobby group among the three main associations. They are fervent advocates involved in a number of industry-related change initiatives and regularly receive media attention on truck issues that have a public interest.

The Chief Executive Officer of the CTA is **Mr. David Bradley**. CTA offices are located at 324 Somerset Street West, Ottawa, ON K2P 0J9. Telephone: 613-236-9426. The CTA website is www.cantruck.ca.

Affiliations

CTA is a national organization and is the federation for the individual provincial trucking associations. CTA also has an affiliation with its American counterpart, the American Trucking Association or the ATA (www.truckline.com).

Private Motor Truck Council of Canada (PMTC)

The Private Motor Truck Council of Canada was established in 1977. Its website states that PMTC is “the only Canadian association dedicated to the interests of private fleet operators.” PMTC provides “forums for fleet operators and industry

¹⁶ Transport Canada *Moving Forward Report 2007*

stakeholders to exchange views and resolve issues, and represents member views to government, protects member rights, and promotes member interests.’

As mentioned, private carriage is the largest representative among the three main trucking sectors and accounts for roughly 55% of heavy trucks on the road. The PMTC website states that these fleets spend more than \$19 billion annually.

Fleet sizes range from the very small (a little as one vehicle) fleets used by small business such as bakeries and florists, to very large inter-provincial and international fleets. Many of the smaller fleet operators generally do not report their fleet activities separately for tax or business reporting purposes, making the actual number of private fleets in Canada impossible to estimate. The Transport Canada study titled *Moving Forward Report 2007* estimated the number of private carriers in Canada to be more than 10,000. PMTC advised us that they have approximately 6,000 private fleets listed in their database.

As is the case with the other sector associations, a number of carriers that hold a PMTC membership also have membership in CTA or its affiliates and some may have a membership with OBAC as well.

The President of PMTC is **Mr. Bruce Richards** and their offices are located at 1155 North Service Road West, Suite 11, Oakville, Ontario L6M 3E3. Telephone 905-827-0587. The PMTC website is www.pmtc.ca

Affiliations

PMTC is a stand alone national association that has an informal working relationship with its North American counterpart the National Private Truck Council (www.nptc.org).

Owner-Operator Business Association of Canada (OBAC)

OBAC was launched in September 2002 and describes its purpose as ‘improving the circumstances under which owner-operators do business through education, advocacy, and public relations’¹⁷. OBAC’s mission is to improve the prospects for success of Canada's owner-operators and professional drivers.

¹⁷ Source: OBAC website: see *About OBAC* page.

OBAC is a member-driven organization and is represented by a seven-member board of directors; all with ties to the owner-operator community, and a stake in the success of the owner-operator sector. OBAC is actively involved in the legislative process both on the federal and provincial levels, participating in discussions on issues affecting all professional truckers. It sees itself as a strong supporter of the entrepreneurial spirit, and describes itself as the owner-operator's strongest ally.

The Owner-Operator sector represents about 15% of the long haul market in Canada. The majority of owner-operators are one person companies but there are cases where an owner-operators organization consists of as many as 5 or 10 drivers and an equal number of tractors.

Determining owner-operator numbers was very difficult. According to Statistics Canada Labour Force Survey estimates from 1998, there were roughly 50,000 independent truckers or owner-operators truck drivers on the road in 1998. That number rose to 78,500 in 2005. The Transport Canada report titled *Moving Forward 2007* used the number 36,000. Part of the difficulty is the definition of owner-operator and the fact that many drive on a part-time basis which tends to make it difficult to obtain an accurate count. Generally, owner-operators are estimated to make up around 20% to 22% of the truck drivers in Canada and 15% of the trucks on the road.

The Executive Director of OBAC is **Ms. Joanne Ritchie** and OBAC offices are located at 275 Slater Street, Suite 900 Ottawa, Ontario K1P 5H9 Telephone: 613-237-6222. The website is www.obac.ca.

Affiliations

OBAC is a national association and has a direct affiliation with its U.S. counterpart the Owner-Operators Independent Driver's Association (OOIDA) – see www.ooida.com.

3. TRUCKING SECTOR POSITIONS ON MANDATORY SPEED LIMITERS

The three industry associations have established different positions on the issue of mandatory speed limiters.

- CTA is strongly in favour of mandatory speed limiters. Their association made the initial recommendation and has developed a national policy on the mandatory use of speed limiters across Canada.
- OBAC is at the other end of the spectrum. They have come out strongly against the use of mandatory speed limiters and have published a report called *Comments of the OBAC in Response to the Ministry of Transportation's Request for Comments on the OTA Proposal to Mandate Speed-Limiters for Heavy Trucks*.
- PMTC believes the use of speed limiters is a business decision and is asking for more information on the costs and benefits of speed limiters before they finalize their position.

To better explain the different perspectives, the information below summarizes the main points of each industry association. Note that it is not the intent of the author to evaluate or judge the different industry perspectives, but merely to present all sides in an open and unbiased manner.

Perhaps the best way to manage through the different perspectives is to start with the CTA's position since it was this association that made the initial recommendation to make speed limiters mandatory.

Canadian Trucking Alliance's Perspective on Mandatory Speed Limiters

CTA and their provincial counterpart, the OTA, first raised the notion of mandatory speed limiters in December 2005. CTA issued a full Press Release on March 2, 2006 announcing their endorsement of a national policy making speed limiters mandatory in all heavy trucks¹⁸. The press release called upon all provincial governments to pass a law making it mandatory that the speed limiters

¹⁸ CTA's policy statement specifies that the law will be applicable to all straight trucks and tractor trailers combinations built after 1995 that have GVW >11,000 kg.

on all trucks that operate into, out of and within their provinces be activated and that the maximum “pedal” speed of trucks be set at no more than 105 km/h.

CTA’s position on the issue is summarized in a policy statement titled, *Policy Statement on Speed Limitation and Lane Discipline*. The document is available from their website (www.cantruck.com).

CTA’s main argument in support of mandatory speed limiters is predicated on fuel savings, the environment, and road safety. The Press Release identified the following benefits:

Fuel Savings – CTA estimates suggest a 4-to-5% savings in fuel costs. This means potential fuel savings of as much as 10,500 litres of diesel fuel per year by a typical tractor-trailer unit running approximately 125,000 km per year on average. CTA estimated that this would amount to an annual savings of about \$8,400 per truck¹⁹ and potentially 50 million litres of fuel saved per year in total.

Reduced Greenhouse Gas Emissions – CTA estimates suggest a potential reduction of greenhouse gas emissions (GHG) of up to 350 kilotonnes in total per year in Canada.

Road Safety (Fewer Collisions) – The CTA Press Release talks about less severe truck/car crashes and references a number of studies that support their perspective.

Improved Lane Discipline – CTA’s view is that with mandatory speed limiters in place, lane discipline²⁰ by trucks will improve as a by-product since trucks will not be able to achieve the speeds required to drive in the left lane.

Less Tailgating – CTA also argues that limiting speeds to 105 km/h will reduce the opportunity to tailgate – which usually occurs when another vehicle is in the middle lane and traveling at slower speeds. (The middle lane of a three lane highway is the truck passing lane.)

¹⁹ The Press Release was issued in March of 2006. Diesel prices at the time were about 80 cents per litre. The February 26th, 2008 average price for diesel in Canada was 115.8 cents per litre (source: Environment Canada). Based on an average consumption of 10,500 litres per year, the potential savings at current prices would total in excess of \$12,000 per truck per year. Based on an estimated industry-wide fuel savings of 50 million litres per year, the cost savings to the industry could be in the order of \$57,900,000 per year.

²⁰ Lane discipline refers to trucks using the left lane on a three lane highway (which is illegal) or the centre lane when, based on their speed, they should be in the right lane.

CTA's complete information package on speed limiters can be found on their website using the following link:

<http://www.cantruck.com/industry/speedlimiter.php>

Further information is also available on the OTA's website at the following link:

<http://www.ontruck.org/speedlimiters/pdf/OTA-Speed-Policy-Press-Materials-2.pdf>

PMTC's Perspective on Mandatory Speed Limiters

Initially, PMTC did not support mandatory speed limiters because they did not believe government should be interfere in business decisions. They posted a press release on their web site on March 6, 2006 declaring their position. PMTC states that the CTA (OTA) proposal lacks sufficient evidence to support or confirm 'that the issue of speeding trucks is of such magnitude that speed limiters should be mandatory on all trucks in the province.' They, like OBAC, point out that one of the most quoted sections of the OTA's own proposal states "trucks are the least likely vehicles to be speeding on Ontario's highways." They then ask the question why trucks are the only vehicles being considered for mandatory speed limiters?

PMTC carries their argument forward by questioning the magnitude of the problem and concludes that truck speeding may not be a significant issue. They do some analysis of speeding ticket data which suggests that the speeding infractions by class 'A' drivers represents less than 3.5%²¹ of the provincial (Ontario) total and the majority of those infractions were at the lower end of the scale (i.e., up to 15 kph over the limit).

²¹ Statistics for 2003 indicate that some 20,600 Class 'A' drivers received speeding tickets compared with some 587,000 such tickets for class G license holders. Of those Class 'A' convictions, 60% were for speeding at the lower end of the scale: i.e., up to 15 kph over the limit.

PMTC concludes that ‘without proof that truck speeding is a significant, out-of-control issue they cannot support a regulation that would require speed limiters for all trucks’.²²

PMTC’s position was outlined in a document entitled “*The Limitations of Speed Limiters*” in which it addressed the questions and issues of *Perception vs. Reality*; the limited impact of speed limiters set at the proposed 105 kph on secondary highways and roads with speed limits of less than 105 kph, or in construction or other reduced speed zones; the previous research on the subject by the National Highway Traffic Safety Administration; the higher emissions that result from operating outside of the so-called ‘sweet spot’ of rpms; the inherent danger of split speeds; the experience in Australia with equipment tampering; and the question of competitive barriers with other jurisdictions.

In that same document, PMTC proposed three specific alternative solutions, including: mandating speed limiters for chronic offenders – fleets or individuals; determining whether Ontario’s increased fines for speeding in construction zones (Bill 169) has been effective and if so adopt similar provisions; and seeking long-term solutions to the lack of enforcement resources available to the various agencies.

Subsequently PMTC, at the request of Ontario’s Ministry of Transportation, provided another document explaining its views, in which they identify four key areas of concern.

Inappropriate Approach – PMTC thinks that mandatory speed limiters in trucks is misguided and will not impact the majority of drivers who speed – passenger car drivers.

Wrong Target Group – PMTC argues that data on speed and speeding tickets indicates that trucks are represented by proportionately fewer speeders, proportionately fewer collisions, and safer drivers.

Getting the Facts – PMTC has asked Ontario not to legislate speed limiters until Transport Canada has concluded its study on the impact of speed limiters.

Changing Public Attitudes – PMTC would rather see the speeding problem addressed through education and targeted enforcement.

²² From PMTC New Brief, January 2006, *The Speed Limiter Question*.

The PMTC Newsletter article referenced above is available on their website at the following link: <http://www.pmtc.ca/public/news/januaryFrontPage06.pdf>
The report titled “*The Limitations of Speed Limiters*” is available directly from Mr. Richards.

OBAC’s Perspective on Mandatory Speed Limiters

OBAC’s position is summarized in a paper that was submitted to the Ontario Ministry of Transportation as a response to the Ministry’s invitation to provide feedback on the CTA proposal. The response is titled *OBAC Comments in Response to the Ministry of Transportation’s Request for Comments on the OTA Proposal to Mandate Speed-Limiters for Heavy Trucks*. OBAC also issued a Press Release summarizing their response on their website on January 12, 2006.

Fuel Savings – OBAC questions the CTA fuel savings of 4% to 5% saying it is based on an old study from 1987²³ and because of changes in truck technology, the savings figures are out of date.

Road Safety – OBAC argues that there is no statistical evidence indicating speed limiters will reduce truck accidents. OBAC also argues that highway safety engineers recognize that the safest speed to travel is the speed of traffic and speed limiters will force trucks to drive at a significantly lower speed than other vehicles on the road.

Truck Speed – OBAC’s basic argument is founded on a point made in the CTA information – that trucks are the least likely vehicles on the road to speed. OBAC asks the question, *why mandatory speed limiters for trucks?* OBAC argues that the focus shouldn’t be on trucks but rather on lighter vehicles.

Competition for Drivers – OBAC believes the CTA’s objective behind mandatory speed limiters is a means to find a solution to the driver recruiting problem facing for-hire and private carriers. OBAC believes that drivers would prefer to drive trucks with no speed limiter and many larger carriers have speed

²³ The study showed that a 0.1 mpg decrease in fuel efficiency for every mile per hour of speed above 55 mph.

limiter policies in place and as a result, are losing skilled drivers to segments of the market that tend not to have speed limiter policies.

Extraterritorial Travel – OBAC argues that Canadian carriers will be operating at a maximum speed of 105 km/h yet 22 U.S. states and ‘several’ Canadian provinces have maximum speeds greater than 105 km/h.²⁴ Their point is that limiting a carrier’s speed in those jurisdictions will make it difficult to compete.

Enforcement – OBAC argues that the CTA proposal requires Ministry of Transportation of Ontario (MTO) Enforcement Officers to be involved in speed enforcement when this has traditionally been an OPP responsibility.

The complete report referenced above can be found on OBAC’s website at the following link.

http://www.obac.ca/DynamicWeb/CMFiles/OBAC_Final_Comments_Speed_Limiters20PMU-222006-3512.pdf

²⁴ A number of U.S. states have a maximum speed of 120 km/h (75 mph).



CONCLUSION (Part One)

There is no doubt that there are substantial energy savings and environmental advantages associated with the use of speed limiters. Conservative estimates suggest potential fuel savings could be in the order of 225 million litres of fuel per year²⁵ and a reduction in greenhouse gas emissions (GHG) of up to 0.6 megatonnes²⁶ per year across Canada²⁷. Reductions in fuel alone represent more than \$250 million²⁸ in cost savings and when added to savings related to maintenance and operations could be as high as \$300 million per year. Collectively, these advantages are significant to both the industry and the environment and are a key supporting factor behind the speed limiter proposal.

The question is will electronically limiting truck speeds increase or decrease road safety? Intuitively, one would think that slowing down a truck would result in some safety benefit however opponents argue that slowing down trucks creates a speed differential with other vehicles which can actually be a detriment to road safety. There are studies that confirm and deny both sides of this argument. At the present time, industry estimates indicate that roughly 60%²⁹ of for-hire trucks on the road are operating with an activated speed limiter and almost 100% of private fleets either have an activated speed limiter or a company policy limiting speed. Some trucks have their speed set at 105 kph, others at 110 kph and some may be as high as 115 kph or higher.

If speed differential were a significant factor in collisions, one would expect to see an increase in collisions involving trucks during the early stages of the initial availability of electronic speed limiters. Speed limiters became standard equipment on most trucks manufactured after 1995 and carriers have had the option to activate their speed limiters since. Many carriers took advantage of the device and set maximum speed limits at that time³⁰. Based on collision data there was no noticeable increase in collisions involving commercial class

²⁵ Ray Barton Associates Limited, A Discussion Paper on Speed Limiters for Trucks Operating in Canada, October 10, 2006.

²⁶ Ibid.

²⁷ Note that the fuel savings and GHG reduction figures quoted in Section 3 of the report were taken directly from the CTA web site and are considerably more conservative.

²⁸ 225 million litres of fuels x \$1.158/L = \$260,550,000

²⁹ Both the 60% and the 100% figures are estimates provided by industry representatives.

³⁰ According to some estimates, virtually 100% of private fleets (55% of the trucks on the road) have either activated their speed limiter device and/or have a speed limit policy in place.

vehicles, at least of the sort of types of collision one would expect to see stemming from an expected increase in speed differentials.

Perhaps one of the reasons why the introduction of speed limiters went statistically unnoticed is the fact that different companies have different maximum speeds. This resulted in trucks traveling at a variety of speeds on the highway and may have reduced the degree or extent of the speed differential thus minimizing or averting an increase in collision risks.

The other issue which continues to be significant for PMTC and OBAC is the safety record of the trucking industry and the rationale behind targeting trucks versus some other group of drivers like chronic or habitual speeders. This is an interesting issue since the idea of mandatory speed limiters in trucks originated and continues to be promoted by one of the trucking associations (i.e., CTA). Ontario and Quebec saw merit in the idea and are now proceeding to make legislative changes to support mandatory speed limiters.

In summary, the Industry Review portion of this assignment has answered some of the questions surrounding mandatory speed limiters. The potential energy and environmental advantages are substantial and perhaps significant enough to warrant a national policy on mandatory speed limiters. The impact on safety however is unclear and it may require an analysis over the implementation period to properly assess potential safety concerns. Given the unclear and inconsistent nature of the safety impacts, they have been deemed not significant enough to warrant stopping such a national policy.

PART TWO - CASE STUDIES

1. Introduction

Recognizing that the impact of speed limiters varies between different carriers and trucking sectors, the consultant team wanted to specifically assess the impact on representative carriers from the three main industry sectors (for-hire, private and owner-operator). Transport Canada through the trucking associations provided the consultant team with both a for-hire and a private truck carrier who were willing to participate in the study. For business confidentiality reasons, the truck carriers cannot be identified. The for-hire truck carrier chosen is based in Eastern Ontario. The private carrier chosen is based in Toronto. The client made several attempts to find an owner-operator carrier for this study; however due to time constraints a participant for the owner-operator industry sector could not be located. It was therefore decided to not pursue finding a representative of that particular carrier group.

This section of the report presents the methodology and the information collected from both the for-hire and private carrier.

2. Methodology

The overall goal of the case study was to document the benefits and experience in the use of speed limiters in terms of a variety of parameters from the perspective of the two trucking firms, particularly safety and fuel efficiency. To assess the impact, the consultant team contacted the two carriers in February 2008 and gave them a list of potential questions to which to respond. Some of the initial questions were discarded due to business confidentiality issues or data availability. The questions used were reviewed by Transport Canada. Both inputs gave Synectics an opportunity to refine the questions. The potential questions were divided into two broad groups, quantitative and qualitative.

The quantitative questions were used to collect measurable and objective data on the fleet and its performance. The qualitative questions were used to collect information on the overall experience each of the firms have had with regard to

speed limiters. The questions were to be posed to a management, safety and maintenance representative and finally, a representative truck driver. The truck driver chosen was an individual who had been associated with the carrier for a significant period of time.

Ideally, Synectics wished to make a comparison of speed limiters pre and post implementation. However, it was not possible to collect any meaningful data for the pre-implementation period. Both trucking firms included in the case study have used some form of speed control for close to twenty years. No data is available that is representative of the pre-implementation period.

Once the two truck carriers and Transport Canada had an opportunity to review the list of questions, a final list of questions was prepared and sent to them in advance of a site visit. The list of questions was standardized for both. During the site visit, Synectics conducted an interview with each of the representatives and had an opportunity to review a variety of materials on site.

The remaining sections of this report document the information collected and are organized into the following headings:

- Fleet profile;
- Speed limiter use;
- Trip information;
- Fuel consumption issues;
- Maintenance and repair issues;
- Driver issues;
- Safety issues; and
- Competition in the marketplace.

3. Fleet Profile

The for-hire carrier was founded in 1978 and has experienced steady growth up to the present. In 1989, the carrier officially became ‘for-hire’ with the deregulation of the trucking industry. As a result, they serve a variety of clients using its own privately leased fleet of trucks. In addition, a number of owner-operators have been sub-contracted to carry out work on behalf of the for-hire carrier. These owner-operators own their own tractor and are responsible for

their own costs. The for-hire carrier recently acquired another trucking firm. Vehicles in the recently acquired fleet are included in this study.

Currently, the for-hire carrier operates 357 tractors (this includes both the for-hire carrier's units and units owned by owner operators). The for-hire carrier has a total of 1,072 trailers in their fleet, of which 195 are temperature controlled and 877 are dry vans. The make of their tractors is International, Volvo or Peterbilt. The owner operators use tractors of all makes.

The for-hire carrier's tractors are leased while owner operator tractors are privately owned. The tractors are on average 3.4 years old while owner operator tractors are 5.1 years old. Typically after five years, the for-hire carrier will replace its tractors.

A fully loaded tandem unit has a gross vehicle weight of 80,000 lbs (36287 kg). A fully loaded tridem unit has a gross vehicle weight of 109,000 lbs (49442 kg).

The private carrier is a part of a large organization operating out of six provinces. This particular case study is only examining the private carrier's fleet based on Toronto, Ontario.

The private carrier's fleet in Toronto has a total of 34 tractors. In addition, they possess 49 tandems, 8 triaxles, and 86 quad trailers. The private carrier's tractors are primarily International with one Western Star.

Tractors used by the private carrier are no more than four years old with the majority of the tractors being less than two years old. The private carrier typically deploys the newer tractors on the long haul trips while keeping the older tractors closer to home.

4. Speed Limiters

The term speed limiter created some confusion in the original discussions with the fleet representatives. In reality, speed controls in the trucking industry are controlled by a device attached to the engine called the engine control module (ECM). The ECM is configured to restrict the truck from traveling above certain

speeds while set to cruise, when the pedal is being applied etc. An example of an ECM is shown in **Figure 1**.



Figure 1 – Example of an engine control module (ECM)

The for-hire carrier has used speed controls since 1986 and adapted a company-wide policy of using speed governors (the predecessor to having speed control settings in the ECM itself) in 1988. Truck speeds were monitored using a ‘tach card’ (a print out of the truck’s speed over the course of an entire trip).

By 1990, all of the for-hire carrier trucks had a speed governor. In the nineties, as ECMs were introduced into the trucking industry, they began to use ECMs to manage the speed of their trucks. The entire fleet was quickly converted over to using ECMs to manage speeds and the old trucks with the speed governors were quickly sold off.

In the eighties, the private carrier also used a ‘tach card’ to monitor a truck driver’s speed. In those days, there was no formal disciplinary policy at the private carrier for traveling in excess of a particular speed. Starting in the early nineties as ECMs emerged in the trucking industry, the private carrier began setting the ECM in the tractor to control speeds. The private carrier did not identify any implementation issues associated with the introduction of speed controls. Later in the nineties, they purchased a software system (Cadec) that could be used to monitor the driver and truck’s performance. Around this time, they adopted a formal policy on speed controls. Cadec was then replaced in 2006 by PeopleNet (www.peoplenetonline.com/), the current monitoring system.

Both systems make use of an in-vehicle GPS system that allows them to track the location of the truck, as will be discussed in more detail later.

The motivation behind the introduction of speed controls was primarily monetary. Managers in both of the firms anticipated that speed controls would result in less fuel consumption and allow the firms to be more competitive. Lower costs could then be passed on to the customer.

A second important consideration in the decision to adapt speed control settings was safety. The two firms believed that controls on speed would result in fewer crashes. The for-hire carrier, which transports goods for a wide variety of customers, promotes themselves as a firm that cares for its employees and is environmentally conscious. As a practice, they build sufficient lead time into their delivery schedule and ensure that their customers appreciate the time required to travel between two destinations, given the maximum allowable speed and regulations governing the maximum allowable driving time in the United States and Canada. Similarly, the private carrier allows for sufficient lead time in delivering its product throughout Ontario.

Both firms have speed parameters set within the Electronic Control Module (ECM) in the engine. Four different types of speed settings are configured into the ECM:

- Maximum cruise speed;
- Maximum pedal speed;
- Maximum permitted free roll speed (used to measure the proportion of time a truck is traveling ‘over speed’); and
- Maximum permitted critical speed (resulting in an immediate warning and disciplinary action).

Each of these is explained below.

The maximum **cruise speed** is the maximum speed at which the cruise control can operate. The maximum **pedal speed** is the maximum speed the truck will travel on a flat surface with the acceleration pedal fully applied. Trucks may still go beyond the maximum pedal speed if they are traveling downhill. Trucks are not permitted to exceed the **free roll speed** for a proportion of time – exceeding this speed is considered ‘over speed’. Truck drivers at both firms exceeding the

free roll speed for 5 percent of the engine hours for an entire month face disciplinary action. The **critical speed** is the maximum allowable speed permitted under any circumstance. If a truck exceeds the critical speed, an automated message is sent immediately to the dispatcher. The dispatcher then sends a warning message to the truck driver to slow down; the truck driver will then face disciplinary action upon their return to the truck headquarters.

Both use a tiered system for disciplining their truck drivers for speed infractions, consisting of a verbal warning, a written warning, suspension (ranging from 1 to 5 days) and finally termination. Both firm reported speed violations; however termination is an extremely rare occurrence.

Table 1 shows the speed settings configured into the ECM for both carriers.

Table 1 - Speed settings configured into the ECM

Speed setting	For-hire	Private
Cruise	62 mph (99 km/h)	103 km/h
Pedal	63 mph (101 km/h)	108 km/h
Over speed (Free roll)	65 mph (105 km/h)	105 km/h
Critical	68 mph (109 km/h)	114.99 km/h

The ECM controls all of the engine settings. Maintenance staff with both carriers use a standard template that is loaded into the ECM so that all of their tractors are set in the same way. Similarly, all owner operators working on behalf of the for-hire carrier are required to have the ECM in their tractor set to the same settings as ‘in-house’ tractors. All of the settings in the ECM are password protected and configured in-house. Therefore, it is virtually impossible to reset the speed settings in the ECM.

The two fleets use a variety of methods of monitoring the truck driver’s performance by means of a commercially available system (PeopleNet in the case of the private carrier and SensorTracs in the case of the for-hire carrier) (www.qualcomm.com/technology/assetmanagement/services/sensortracs.html). Both systems make use of an in-vehicle GPS system that allows them to track the location of the truck. This is communicated to a satellite. The satellite system also broadcasts the truck’s speed, engine RPMs and idling, miles per gallon (kilometers per litre), hours in trip and miles (kilometers) driven on an hourly basis to the dispatcher. Critical speeds are instantaneously broadcast to the

safety representative, who will respond by sending a warning message. The PeopleNet interface used in the private carrier's trucks is shown in **Figure 2**.



**Figure 2 –
PeopleNet
interface used in
the private
carrier's trucks**

Upon return, the ECM is fully queried and a complete history of the truck's movement and performance is downloaded and reviewed. In addition, the drivers keep an electronic log of trip related information. The three sources of information (satellite tracking, the ECM output, and driver's electronic log) are reviewed to ensure that they are in agreement and the engine is functioning at an optimum performance. Significant disagreements between any of the three sources of information may suggest tampering. In a few rare occurrences, a driver within the 'for-hire' truck carrier fleet has been caught disarming the ECM, thereby allowing them to travel beyond the maximum allowable speed. In these instances, tampering with the ECM was evident and the driver was dismissed immediately. The firm that is responsible for maintaining the private carrier's trucks report that they have never had any evidence that a driver has tampered with the ECM. The settings are checked once a year or if the fuel report for a particular tractor indicates evidence that the tractor is traveling at speeds higher than allowed.

Both have a formal written policy on the maximum allowable speeds. At the for-hire carrier, the policy is applicable to both in-house tractors and tractors owned by an owner-operator working for them. The policy is reviewed during the



orientation for new drivers. In addition, all drivers are required to participate in an annual refresher course on a yearly basis. Speed issues are highlighted at this annual refresher course although it is one topic among many covered. They have not made any significant changes to their speed policy over the past number of years. With the recent introduction of PeopleNet, the private carrier has been able to more rigorously enforce their speed controls; therefore the occurrence of speed related violations has increased as a result of increased detection (of violations).

No discernable costs are associated with the implementation of these speed control policies at either truck carrier.

5. Trip data

The for-hire carrier has a strategic location in Canada just across from the United States. It delivers freight in Ontario and Quebec and a number of destinations in the United States east of the Mississippi River. Its trucks also stay primarily on freeways due to the long distances involved. The following is the breakdown of the destinations served by the for-hire carrier:

- Fifty-five percent of their freight is shipped to Pennsylvania and Illinois;
- Ten percent of their freight is shipped to New York State; and
- The remaining destinations are a number of States along the Eastern seaboard, Ontario and Quebec.

As a result of the above destinations, they do a variety of short and long distance hauls. Same day trips are considered short haul trips while multiple day trips are considered long haul trips. A typical week consisting of a set of short hauls will typically result in 45 – 60 hours of travel time and approximately 1600 kilometres of travel. A typical week consisting of a set of long haul trips will be approximately 3000 – 4000 kilometres in length.

The private carrier's fleet in Ontario operates only within the provincial borders. They make deliveries to warehouses throughout the province, although their primarily destinations are within the Greater Toronto Area and to destinations along the QEW and Highway 401 corridor and up to Ottawa. A significant number of trucks travel between their warehouse located in Mississauga and their base of operations in Toronto. The farthest distance traveled by a truck driver would be

to northwestern Ontario (Dryden and Kenora); this is approximately a 3600 kilometre round trip and would require four days of travel.

Both carriers were unable to provide any specific statistics indicating the differences between short and long haul trips (or Canada versus United States trips) as both drivers and tractor trailers may over a given week carry out both a short and a long haul trip.

Last year, the total number of miles traveled by the for-hire trucks was approximately 34.6 million miles (55.8 million km). This figure includes owner operators. The total number of kilometers traveled by the private carrier trucks was approximately 7.3 million kilometers. The total number of trips taken by the for-hire carrier trucks was approximately 77,000. The total number of trips taken by the private carrier trucks was unknown.

Trip data is shown in **Appendix A**.

6. Fuel consumption

Both firms use diesel exclusively in their fleet. They use miles per gallon as a performance measure. Fuel consumption (aside from labour costs) represents the second most significant expense to the for-hire carrier. They regularly monitor fleet wide fuel consumption on a monthly basis. Fuel consumption is noted to be affected by:

- Emissions standards – new emissions standards introduced on January 1, 2007 have had the effect of reducing fuel efficiency;
- The season (winter fuel consumption is greater than in the summer);
- Topography - anecdotally, the for-hire carrier's management has noted that trips through mountainous terrain (e.g. trips to Pennsylvania) result in a higher fuel consumption per kilometer than trips into the Midwestern United States;
- Weight of the load;
- The type of trailer being pulled (triaxles are less efficient than tandem axles); and
- The amount of engine idling.

Despite the above all impacting fuel consumption in some way, management at the for-hire truck carrier believes that their speed control policy on its own has had a significant impact in reducing fuel consumption. It would be difficult to estimate the specific impact speed controls have had on fuel consumption given the lack of fuel consumption data for the pre-implementation period. However, according to the for-hire carrier every 1 mile per hour (*1.6 kilometre per hour*) increase in speed above 55 miles per hour (*89 kilometres per hour*) will result in a 0.1 mile per gallon (*0.24 kilometres per litre*) reduction in fuel efficiency.

The private carrier's staff also believe that controls on speed have resulted in fuel savings, but believe that the positive impact has been reduced by a number of factors. Among these are the significant amount of short haul trips they make to their warehouse in Mississauga, throughout the Greater Toronto Area (with its associated congestion) and the significant amount of time their trucks spend on rural two lane highways in northern Ontario that have lower speed limits (90 km/h).

All tractors purchased by the for-hire carrier have been optimized in terms of their engine specifications (and gear train) to operate at speeds in the range of the maximum cruising speed (99 km/h) – maximizing fuel efficiency. The private carrier's maintenance contractor also mentioned that they optimize their vehicles in the same manner (to operate at 103 km/h), although they also consider the weight of the load.

This has meant that many of the owner operators working for the for-hire carrier are at a disadvantage. Owner operators must have a speed limiter set at the limit established by the for-hire carrier. Given that their tractor trailer engines have not been optimized to operate at the maximum cruising speed – it is likely that they do not have the same fuel efficiency as the 'in-house' trucks as their specifications are configured for a cruising speed higher than that set by the speed control policy.

Engine idling is another important performance measure for both firms. Both firms are trying to reduce the amount of time the truck engine is idling – thereby reducing fuel consumption.

Quantitative data on fuel consumption is provided in **Appendix B** for the past two years. The data suggests seasonal variations in fuel consumption between the

summer months and the winter months. Savings in fuel consumption in the summer months was offset by additional costs in the winter months. Fuel consumption was greater for the private carrier (who undertakes significantly more short haul trips on urban roads). Given that the fuel consumption data is only available for a two year period, no quantitative estimate in the saving in fuel consumption can be provided.

7. Maintenance and repair issues

Anecdotally, both carriers believe that the speed limiters have resulted in reduced wear on the engine, brakes and tires. Engines being run at lower RPMs will not have as much wear and will result in reduced maintenance. At lower speeds, brakes will run cooler because less braking force occurs when the truck is required to significantly decelerate or come to a full stop at high speeds. Tires on trucks traveling at lower operating speeds will wear less than tires on trucks traveling at higher operating speeds. At higher speeds, trucks on freeways are required to make frequent lane changes. The carriers believe that this will increase wear on a truck. In contrast, trucks that stay in the right lane and allowing others to pass (by traveling at maximum cruise speed) will reduce wear.

Both carriers have a regularly scheduled maintenance program. Engines typically last the lifetime of the tractor (at least five years).

The for-hire carrier's maintenance representative stated that brakes on the tractor are typically only replaced due to rust rather than wear and typically last its lifetime. Trailer brakes similarly last its lifetime although these are more susceptible to wear. The for-hire carrier typically replaces drive tires every 400,000 kilometres and steer tires every 280,000 kilometres.

The private carrier will replace brakes every two years. They typically replace tires every 200,000 – 250,000 kilometres; tire wear is more of an issue with the private carrier due to heavier loads.

Speed controls are an integral part of the ECM, therefore there are no additional costs associated with their purchase. Both firms report no significant costs associated with servicing the ECM. They are relatively easy to activate and reset although they are password protected. Owner operators wishing to work for the

for-hire carrier must have the ECM in their tractor set to the in-house settings. Costs associated with resetting an ECM are also negligible.

Cost data associated with maintenance and repairs is presented in **Appendix C**. While anecdotally both firms expressed the opinion that their speed control policy has reduced maintenance costs, given the absence of pre-implementation cost data, Synectics was not able to draw any quantitative conclusions regarding the effect of speed controls on maintenance and repair costs. The data presented in **Appendix C** suggests that combined, costs to brakes, tires and engine constitute approximately one-third of the total maintenance and repair costs of a tractor unit. Costs associated with the ECM constitute less than one percent of the total maintenance and repair costs associated with a tractor unit.

8. Driver issues

At the time of this report, the for-hire carrier had a total of 397 full time and part time drivers. 'For hire' drivers form the majority of the drivers; a total of 304 drivers are 'for hire' while the remaining 93 are 'owner operators'. About half of the fleet consists of drivers with in excess of five years of experience.

At the time of this report, the private carrier had a total of 65 active full-time drivers, 13 temporary staff working full hours and 13 part-time staff. Some of these drivers work in the yard only (shunting trucks). Similar to the for-hire carrier, about half of the fleet consists of drivers with in excess of five years of experience.

The following information represents the opinions of the management and drivers at the two trucking firms interviewed. Given that only two drivers were interviewed, it cannot be assumed that these views are representative of that particular trucking sector.

Some tension exists within each truck carrier in terms of the driver's acceptance of the speed limiters. Some of the drivers question the need for the restriction in speed or express dissatisfaction with the practice. Some of the owner operators working for the for-hire carrier in particular have expressed dissatisfaction with the practice of limiting speed. Essentially objections to the speed restrictions amount to the following.

First of all, some drivers state that the speed restriction makes it difficult to pass other trucks, resulting in ‘elephant races’ where two trucks are traveling side by side for an extended period of time at almost identical speeds, such as illustrated in **Figure 3**. However, these ‘elephant races’ are relatively short lived and tend to sort themselves out after a short period of time. The for-hire carrier’s truck drivers generally stay in the right hand lane and let everyone else pass them. As a professional courtesy, when another truck is passing them at a slow rate, they will decrease their speed to allow the passing maneuver to proceed more quickly.



Figure 3 – Example of an ‘elephant race’ on Hwy 401 (note the SUV is being held up by the truck passing in the median lane)

The private carrier truck drivers express dissatisfaction about the 115 km/h critical speed policy and have asked for this to be set at 120 km/h to give them more flexibility. They argue that they have to ride the brakes when traveling downhill, causing greater wear and tear on the brakes and tires.

Management at the private carrier noted that truck speeds went up in the nineties when they decided to pay the truck drivers by the kilometer rather than by the hour.

Truck drivers have also complained about being on the brunt end of rude treatment (horn honking, being cut off, rude gestures) from other motorists/non speed limited trucks due to their relatively slow speed on freeways.

Despite the above issues, the truck drivers interviewed as a whole accept the restrictions on speed. The truck drivers report little or no stress as a result of the



speed restrictions due the generous allowances provided in their delivery time. Both carriers provide a sufficient lead time into their schedule. Drivers are not penalized for late deliveries as a result of congestion or inclement weather. Each of the drivers interviewed expressed satisfaction in their job and intends to remain in their current position for the foreseeable future. As a result of the above, both carriers report a low turnover rate in their truck drivers.

Truck drivers have also not expressed concern about traveling on interstates with speed limits significantly higher than Ontario. The for-hire truck driver interviewed commonly drives on interstate highways in West Virginia, Ohio and Michigan where the speed limit on freeways in rural areas is 70 mph.

When the for-hire truck driver was asked whether they believe that all trucks should be regulated by means of speed limiters, he stated that they felt they should. Reasons for this were the fuel savings, reduced insurance costs, and improved safety. In contrast, the private carrier truck driver felt that the government should not be regulating the speed of trucks. He believed that the trucking fleet should be free to make its own choice with regard to this matter. He also felt that mandatory speed controls on all trucks in Canada would cause congestion to significantly increase and as a result would reduce safety.

The speed restrictions do not appear to be a factor in the hiring of new drivers. The private carrier has numerous applicants who wish to be retained as a truck driver for the firm. The for-hire carrier has a somewhat more difficult time attracting qualified drivers – this may be more due to a broader driver recruitment issue and the lack of availability given its more isolated location in Eastern Ontario. Some owner operators wishing to do deliveries on behalf of the for-hire carrier and learning of the speed limiter requirement, have opted to find employment elsewhere.

9. Safety issues

Both firms keep records of their driver's performance in terms of speed violations (either according to internal policy or in terms of provincial/state speed limit violations) in addition to other non-speed related violations. Non-speed related violations may be internal violations (insubordination) or provincial/state

violations (e.g. driving above the posted speed, failing to wear a seat belt, and overweight load).

A review of speed violations reported at both firms indicates a relatively low number of violations are occurring. There is no discernable trend (either upwards or downwards over time) with the for-hire carrier's speed violations. The private carriers' speed violations (according to their internal policy) increased markedly after the introduction of their new system (PeopleNet). The increase in speed violations reflects the better detection capabilities of the PeopleNet system rather than an actual increase in violation rates.

'Over speed' percentages are another important performance measure used by both fleets. Both fleets track 'over speed' percentages on an individual driver basis. The 'for hire' trucking carrier's fleet wide monthly 'over speed' percentages have dropped over the past year.

Both trucking carriers also keep records of speed violations as a result of a truck driver receiving a speeding ticket (either in Canada and United States). These typically occurred on non-freeway roads with a lower posted speed. Speeding tickets were noted to be a relatively rare occurrence and no discernable trend (upwards or downwards) was noted.

Both trucking carriers keep records of other types of violations (either internal or external). Most of the internal violations are non-safety related (such as insubordination or smoking in the tractor cab). External violations relate to tickets issued to truck drivers for a variety of infractions according to the Highway Traffic Act (in Ontario) or the applicable provincial and state legislation elsewhere. Violation data are provided in **Appendix D**.

Both representatives felt that they have a safer record than many of the owner operator fleets due to the lower speeds their trucks travel at. Both review all collisions occurring that involve trucks within their fleet – either incidents occurring within the property of each firm or on a public roadway. In the case of the 'for hire' trucking firm, collisions are considered reportable if they result in \$1000 in loss or an injury or death. In the case of the private trucking firm, all collisions (including those resulting in minor damage) are considered reportable.

Approximately half of the reported collisions were relatively low speed collisions resulting in property damage only and involving a truck striking or being struck by another vehicle within the property of each firm (for example, a truck backing up into a loading dock or a fork lift damaging a truck). For the remaining collisions, the following was noted:

- The for-hire carrier had on average twenty high speed freeway collisions each year;
- The private carrier had on average five high speed freeway collisions each year;
- There is no evidence of vehicles rear ending either the for-hire or private carrier's trucks or 'vehicle run under truck' collisions occurring at high speeds;
- There is no evidence of fatigue being a factor in any collision; and
- Truck drivers were noted as being less likely to be considered 'at fault' than the other driver.

The 'private' trucking firm representative noted that they have had issues with other drivers hitting the back of their trucks in a number of occasions just as the truck was exiting the freeway onto the road near their headquarters. The truck was not traveling at full highway speeds at the time of the collision; rather it was decelerating as it entered the exit ramp.

Collision data for both trucking firms are provided in **Appendix E**.

10. Market advantage

The for-hire trucking carrier admits to being at somewhat of a disadvantage to other trucking firms with no speed controls when a tight schedule is an issue. Yet the for-hire truck carrier believes that they have a competitive edge over other competitors given the reduced fuel consumption. Most of their customers place a significant emphasis on safety and the environment. The for-hire trucking carrier promotes itself as being a fleet that has a good safety record and is environmentally conscious (through reduced fuel consumption). Some clients specifically ask to see their safety record and want to know what safety initiatives they have in place. Others, such as IKEA, will only do business with firms that promote environmentally conscious policies.

As a result of increasing fuel prices, the for-hire management representative believed that the owner operators are starting to regulate themselves, acknowledging that they can only remain competitive if they reduce their speeds as well.

The impact of speed controls on competition is less of an issue for the private truck carrier. Their major competitor also has a speed control policy. The private truck carrier representative indicated that they have a better record in terms of keeping to their agreed upon delivery times than their major competitor, who out sources a significant amount of their deliveries to owner operators.

CONCLUSION (Part Two)

The following can be concluded as a result of the case studies:

- Speed controls have been part of the two trucking fleets for a significant period of time (approximately twenty years) – as a result there is no pre-implementation data available;
- Speed controls were introduced to improve fuel efficiency and reduce collision risk;
- Speed is managed by means of a company policy upon speed limiter activation and infractions are dealt with by means of a tiered disciplinary system;
- Both carrier fleets believe that their speed controls have resulted in an improvement in fuel efficiency although it is one of many influencing factors;
- The effect of speed controls on fuel efficiency cannot be accurately quantified;
- Both carrier fleets representatives believe that their speed controls have resulted in reduced engine, brake and tire wear;
- Both carrier fleets representatives reported a low incidence of speed related violations;
- The drivers interviewed do not believe that the speed controls have created significant operational or safety concerns;
- Drivers expressed some frustration with the speed control – although this does not appear to have adversely affected their overall level of stress or job satisfaction;
- The safety impacts of speed controls cannot be accurately quantified however the collision history does not show any evidence that the speed limiters are contributing to the occurrence of collisions;
- Anecdotally both truck carriers believe that the speed controls have resulted in a reduction in collisions; and
- Both carrier fleets do not appear to have a market disadvantage over their competitors as a result of their speed control policy.

APPENDICES



APPENDIX A – TRIP DATA

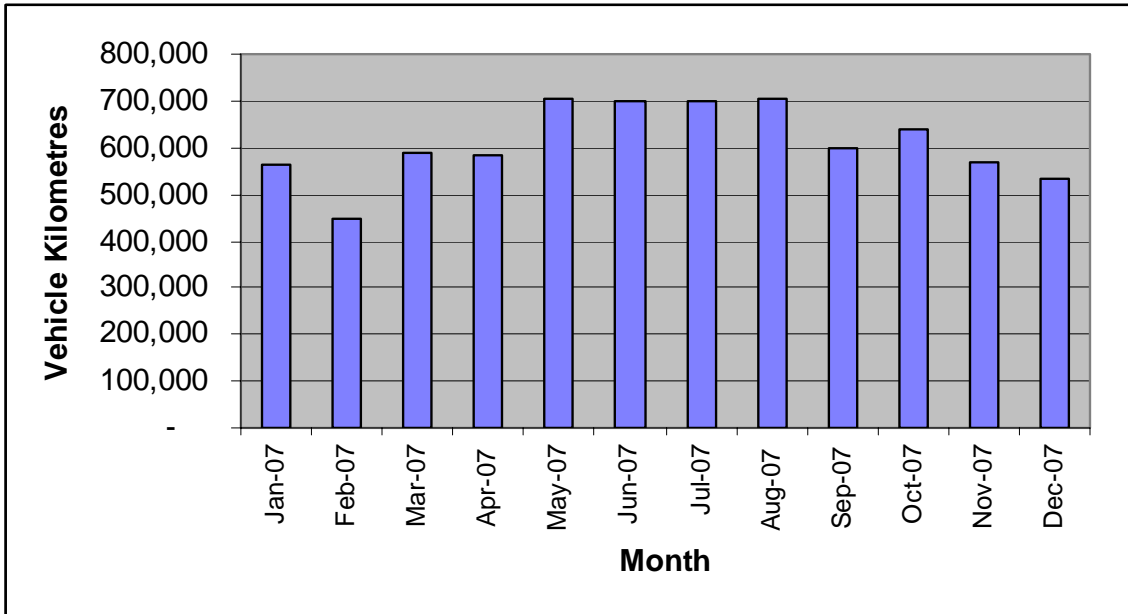


Figure A-1: Total monthly vehicle kilometers traveled by the private carrier (Ontario data only): 2007



APPENDIX B – FUEL CONSUMPTION

Fuel consumption

Fleet wide miles per gallon was 4.75 (49.5 L/100 km) in 2007 for the private truck carrier. The representative provided Synectics with weekly data on the calculated fleet wide mile per gallon. This was converted into litres per 100 km. **Figure B-1** shows on a weekly basis the reported fleet wide litres per 100 km beginning 2007 up to the present.

The for-hire truck carrier also provided the consulting team with monthly data on the calculated fleet wide miles per gallon. This was converted into litres per 100 km. **Figure B-2** shows on a monthly basis the reported litres per 100 km for the period 2006 to the present.

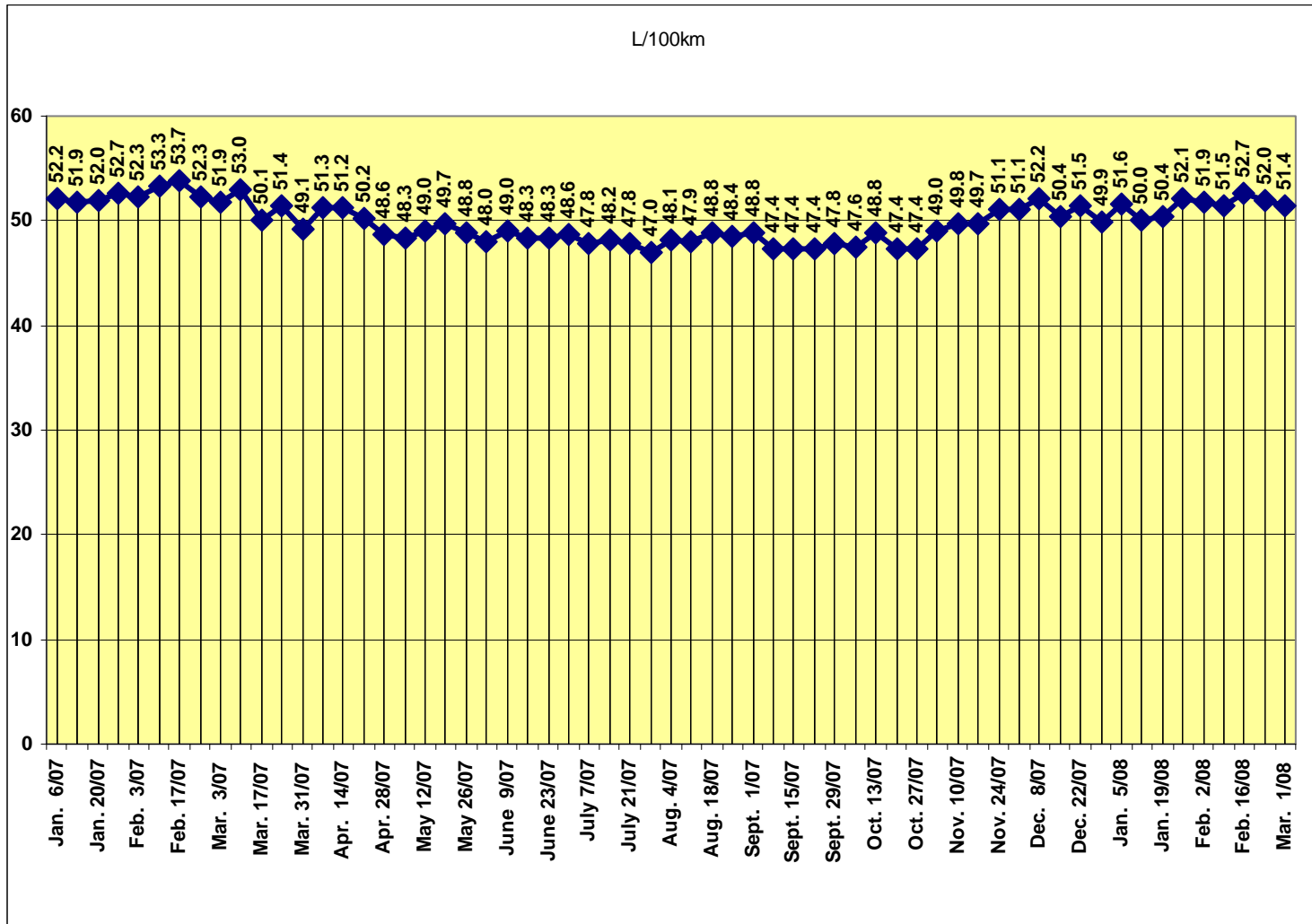


Figure B-1: Fleet wide fuel consumption in litres per 100 km: Private truck carrier (January 2007 to present)

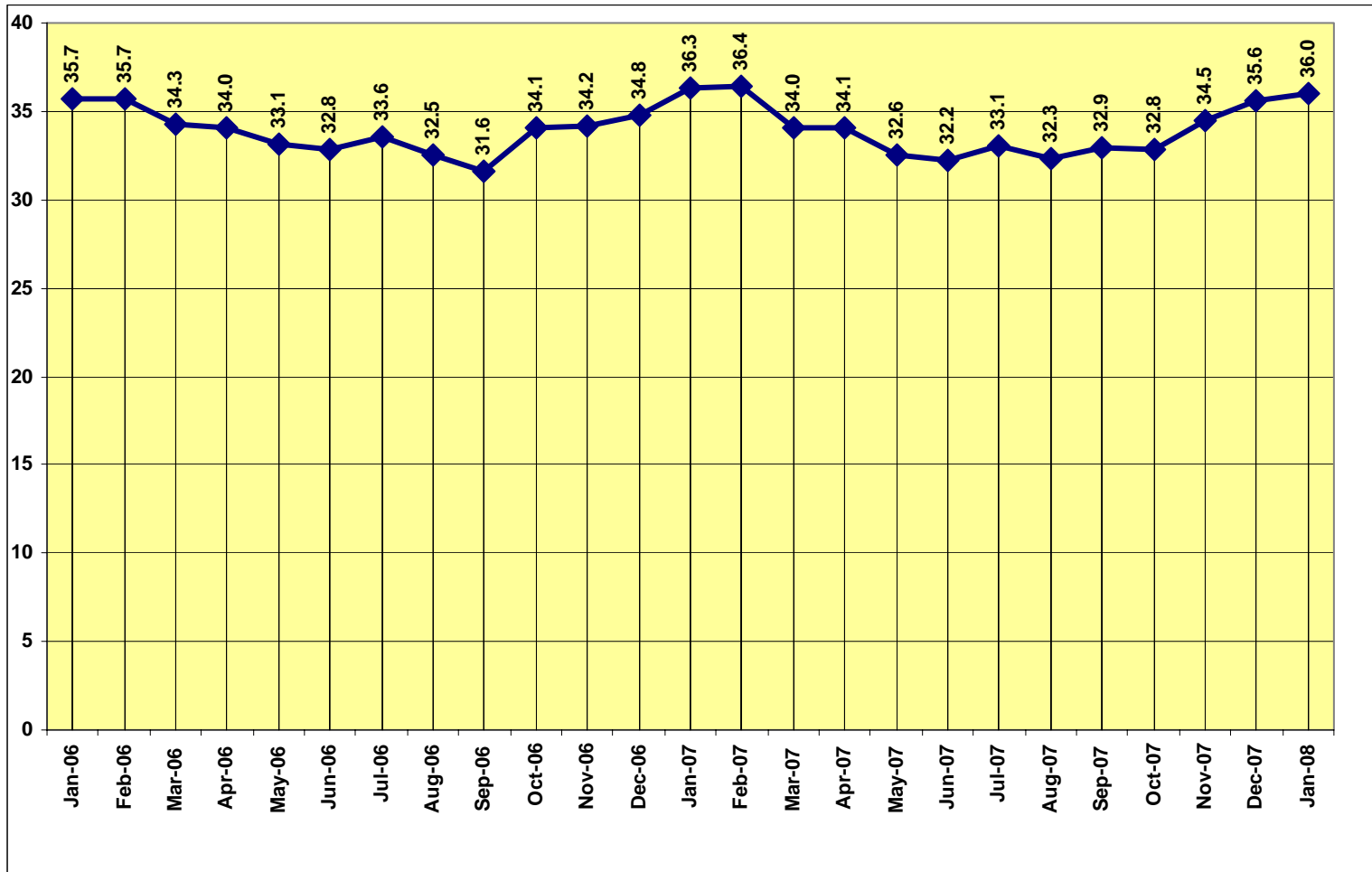


Figure B-2: Fleet wide fuel consumption in litres per 100 km: For hire truck carrier (January 2006 to present)

APPENDIX C – MAINTENANCE COSTS

Maintenance and Repair Costs

Table C-1 presents the approximate fleet wide maintenance and repair costs for the for-hire truck carrier for the period March 2007 – February 2008 for items directly related to the ECM, the engine, tires and brakes.

Table C-1 Maintenance and repair costs

Item	Approximate total cost (labour, parts and external servicing)	Approximate cost per mile (kilometre)
Brakes (tractors)	\$143,000	\$0.0085 (\$0.0053)
Brakes (trailers)	\$140,000	\$0.0042 (\$0.0026)
Brakes (triaxles)	\$49,000	\$0.0211 (\$0.0131)
Multi-function electrical/ electronic devices	\$800	\$0.000 (\$0.000)
Power plant	\$180,000	\$0.0107 (\$0.0066)
Electrical accessories	\$11,000	\$0.0007 (\$0.001)
Tires (tractors)	\$254,000	\$0.0151 (\$0.0093)
Tires (trailers)	\$412,000	\$0.0124 (\$0.0077)
Tires (triaxles)	\$34,000	\$0.0144 (\$0.0089)
Total (tractors)	\$1.6 million	\$0.0956 (\$0.0593)
Total (trailers)	\$1.3 million	\$0.0385 (\$0.0239)
Total (triaxles)	\$345,000	\$0.1552 (\$0.0962)

The private carrier was unable to provide specific maintenance costs (itemized as above). The total cost of maintenance and repair costs for both tractors and trailers (all types) was approximately \$1.27 million for the year 2007.



APPENDIX D – VIOLATION DATA

Violations

Table D-1 shows the ‘critical speed’ and violations as a result of a speed ticket for the entire private truck carrier fleet for the years 2005 through 2007. ‘Critical speed’ violations are instances when the truck exceeded the critical speed (>114.99 km/h). The increase in 2007 in ‘critical speed violations’ was due to the implementation of the new PeopleNet system in latter part of 2006.

Table D-1 ‘Critical speed’ and speed ticket violations

Year	‘Critical speed’ violations	Speed ticket violations
2004	4	2
2005	8	0
2006	5	2
2007	24	1

Table D-2 shows the total number of internal violations not related to speed and non-speed related violations relating to the *Highway Traffic Act* in Ontario.

**Table D-2 Internal violations (not related to speed) and
Highway Traffic Act violations**

Year	Internal violations (not related to speed)	<i>Highway Traffic Act</i> violations
2004	13	3
2005	12	6
2006	5	6
2007	6	4

The total proportion of time that the private truck carrier’s fleet of trucks were ‘over speed’ in 2007 was **1.06** percent.



Figure D-3 shows the percentage of time that the for-hire trucks were ‘over speed’ on a monthly basis from January 2007 to the present.

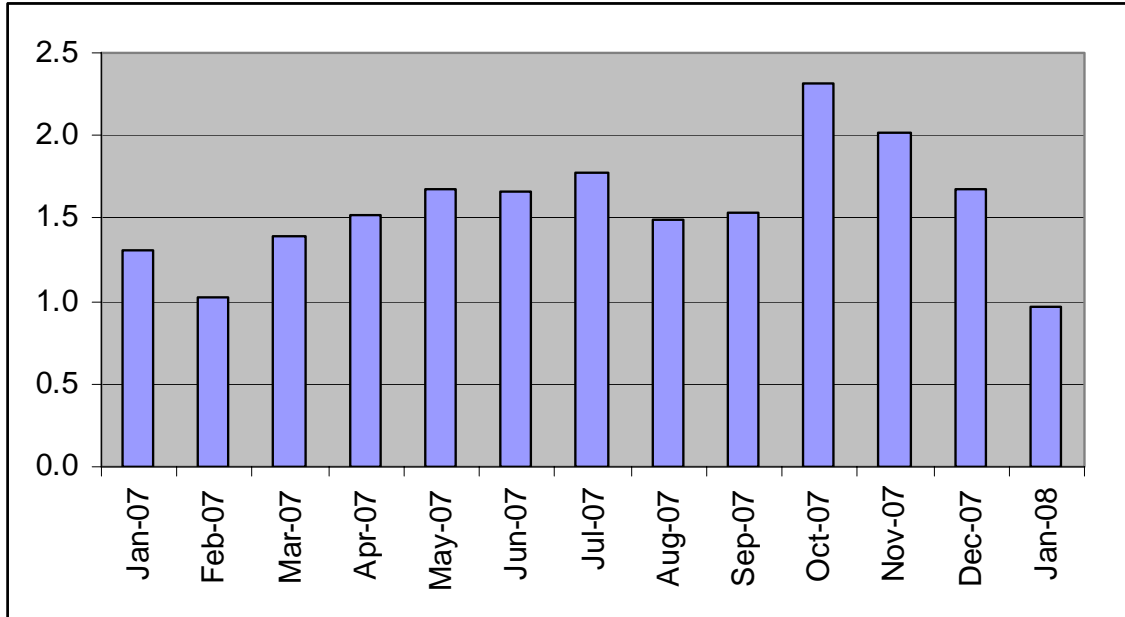


Figure D-3 Percentage of time that for-hire trucks were ‘over speed’ (>105 km/h)



APPENDIX E – COLLISION DATA

Figure E-1 shows the yearly number of freeway related collisions involving the for-hire trucks over the past four years. Non-freeway related collisions were not examined. Speed controls would not be an issue on other road facilities, given the lower operating speeds. It should be noted the increase in collisions may be partially attributed to the recent acquisition of another trucking firm, with the corresponding increase in fleet size.

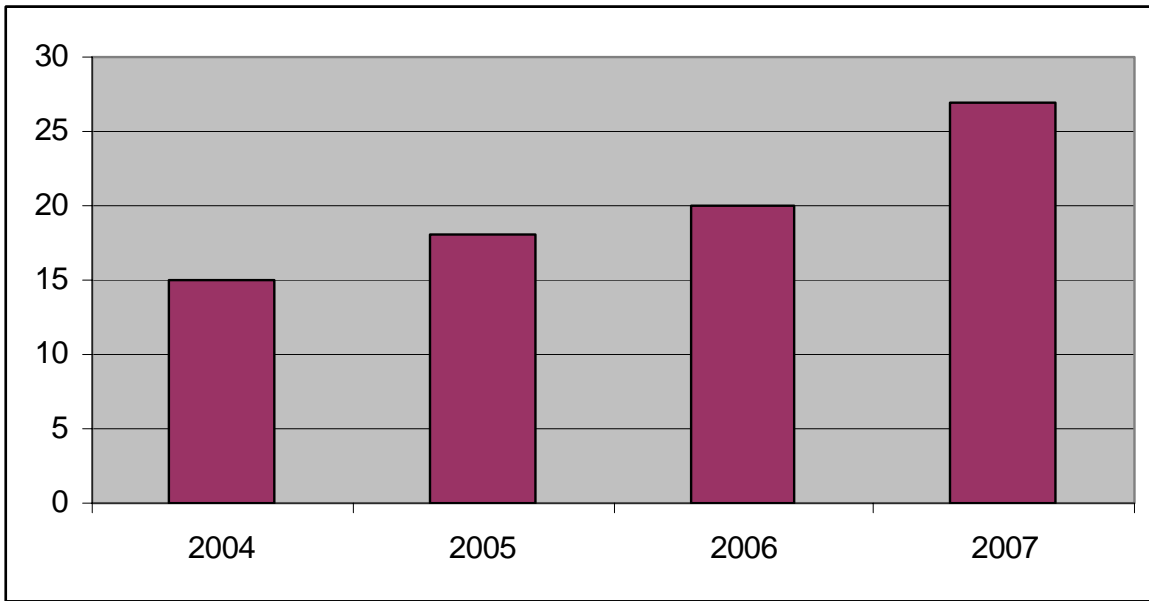


Figure E-1 Freeway related collisions involving the for-hire trucks (2004 – 2007)

Figure E-2 shows the circumstances associated with the freeway collisions involving for-hire trucks over the four year period. ‘Struck by other vehicle’, ‘lane change/sideswipe’ and ‘rear end’ were the most predominant circumstances noted. The ‘rear end’ descriptor does not specify which vehicle rear ended the other (either the for-hire truck or the other vehicle). However, as stated earlier, management with the for-hire trucking fleet have said that they have never had a collision (at high speeds) in which a vehicle rear ended one of their trucks. Based on this, one would assume that the rear end collisions involving a for hire truck were at lower speeds (perhaps due to inclement weather or congestion) or involved the for hire truck striking the other vehicle.

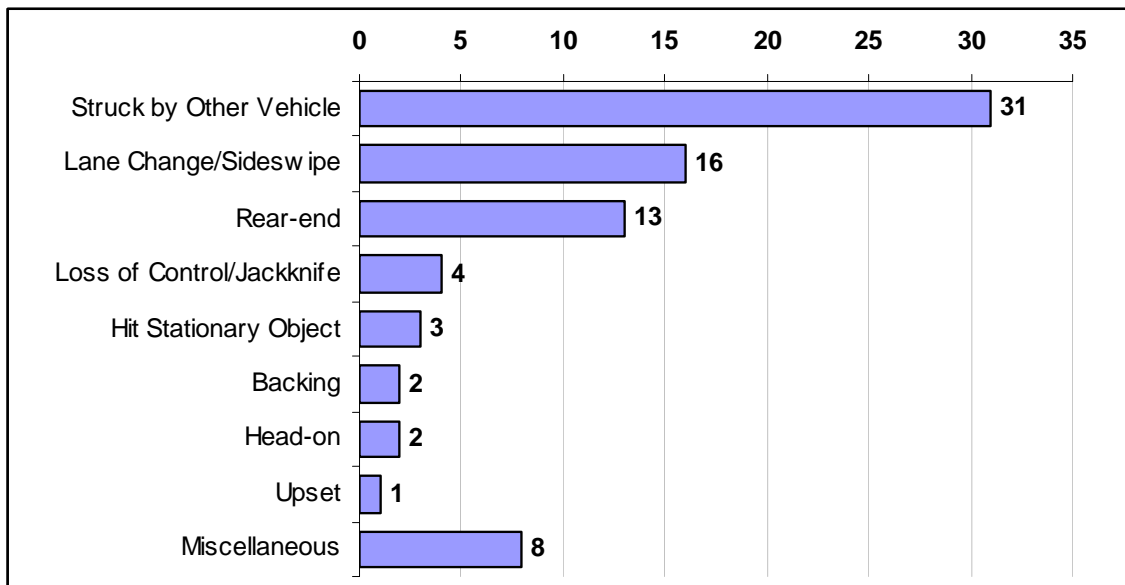


Figure E-2 Circumstances associated with the freeway collisions (2004 – 2007)

Figure E-3 shows the yearly number of freeway related collisions involving the private carrier's trucks over the past four years. Non-freeway related collisions were not examined. Speed controls would not be an issue on other road facilities, given the lower operating speeds.

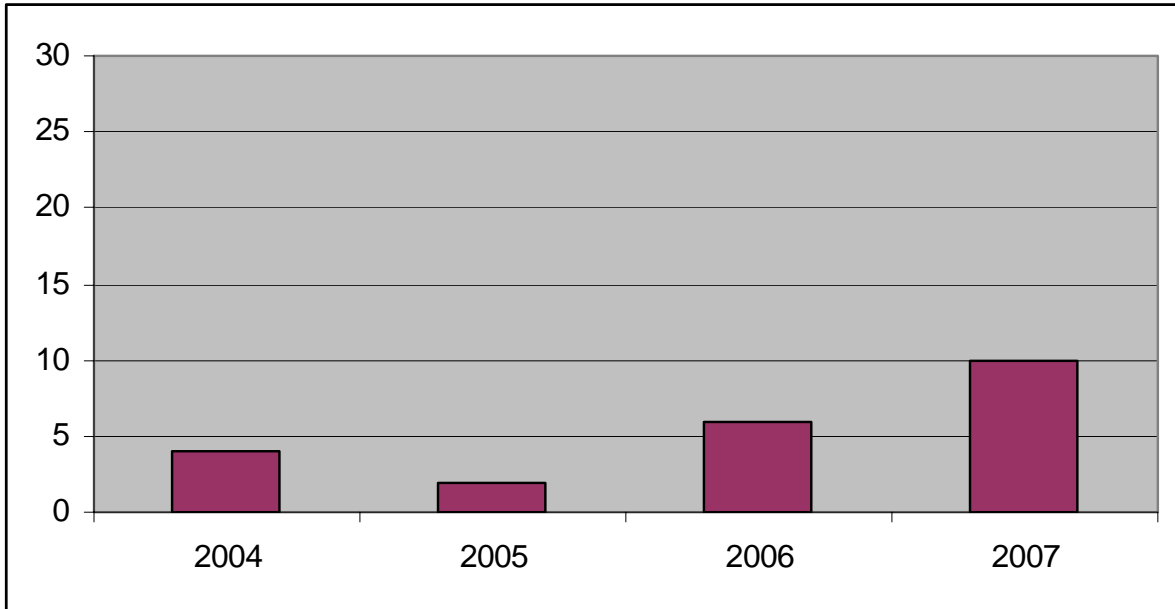


Figure E-3 Freeway related collisions involving the private carrier's trucks (2004 – 2007)

Figure E-4 shows the circumstances associated with the freeway collisions over the four year period for the private carrier. Half of the collisions were 'lane change/sideswipe'. In two of the five rear end collisions, the other vehicle struck the back of the trailer. As noted earlier, the representative at the private carrier noted a pattern of rear end collisions just at the freeway exit to the road leading to their headquarters. This is the ramp the private carrier's trucks must use to exit freeway when returning to headquarters.

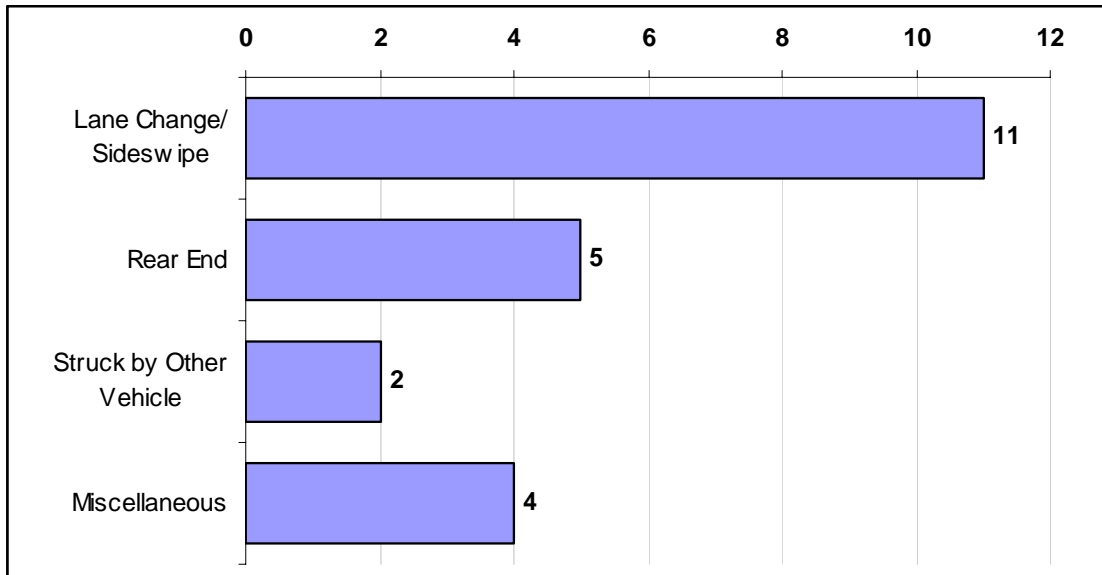


Figure E-4 Circumstances associated with collisions involving the private carrier's on freeways

CONCLUSION

Based on our review of the available information on speed limiters there are three important findings.

The potential *fuel savings* associated with speed limiters is significant and could be as high as \$250 million per year for the carrier industry in Canada. Fuel savings is the main driver behind the decision by most carriers to implement speed limiter policies.

The *environmental benefits* are equally significant representing a potential reduction of greenhouse gas (GHG) emissions amounting to 0.6 megatonnes per year. Environmental concerns are probably the main driver behind the decision by some provinces (Quebec and Ontario) to introduce speed limiter regulations.

Many carriers recognize the merits of an effective speed limiter policy and program as a *good business decision* and implementing such a program gives them a competitive advantage. They have realized savings in fuel, maintenance and operating costs; they are beginning to recognize the environmental benefits and they are contributing to a reduction in collisions risks.

Collectively, these findings are an indication that mandatory speed limiters have significant benefits for industry, for government and the general public.