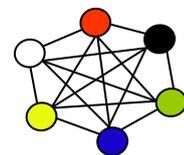


REPORT ON A SURVEY OF KEY INFLUENCERS, FLEET OPERATORS, AND DRIVERS OF HEAVY AND LIGHT COMMERCIAL VEHICLES IN NEW ZEALAND TO ASCERTAIN THE PRACTICES, ATTITUDES, PERCEPTIONS AND BARRIERS TO CHANGE IN RELATION TO INTRODUCING FUEL EFFICIENCY INTERVENTIONS

THE MINISTRY OF TRANSPORT FLEET COMMITMENT PROGRAMME
and
Prepared for the Ministry of Transport

PROJECT EXECUTED BY
KISSLING CONSULTING LTD, CHRISTCHURCH, NEW ZEALAND
In conjunction with
Dr Michael Coyle, IMISE LTD, HUDDERSFIELD, UNITED KINGDOM



Kissling Consulting Ltd

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The key expert consultant on fuel efficiency monitoring used in this research project was Dr Michael Coyle of Imise Limited, Oakes, Huddersfield, West Yorkshire, United Kingdom. Following on from his Doctoral research at the University of Huddersfield, Dr Coyle built an international reputation as a fuel efficiency expert for commercial road vehicle fleets. Many firms follow his advice and obtain significant fuel savings and thereby lower their operational costs and environmental footprint. He has a policy that his clients do not have to pay him if they do not make savings.

Dr Chris Kissling's consultant practice in New Zealand provided project management along with his considerable personal knowledge of the New Zealand transport scene gathered through 40 years of his own and supervised postgraduate research effort. He is a Past Chairman of The Chartered Institute of Transport in New Zealand and holds the Foundation Chair of Transport Studies at Lincoln University.

Three colleagues assisted with the interviews conducted with the 54 operators in the main centres, Auckland, Wellington and Christchurch. We are pleased to have received the excellent professional services of two recent Masters graduates, Kerstin Rupp and Lorelei Schmitt, both graduate planner employees of SKM Ltd in Wellington, and of Dr Jean-Paul Thull, Senior Lecturer in Transport at Lincoln University.

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Dr Christopher Kissling
Kissling Consulting Limited
7 Waiiau Street, Cracroft, Christchurch
New Zealand

DEFINITIONS

Contractors

These are businesses involved in civil engineering that operate road going vehicles to transport waste and products out of or into places where the engineering work is taking place. Vehicle fuel costs are small part of the overall business costs.

Easysheet

This is a single sheet that covers the top of the tipper body and can be opened or closed very quickly either manually or by electric means. It seals the body around its top edges. As shown in the picture to the right.



Fuel Champion

All projects need a project manager. The fuel champion is the person who is responsible for improving the fuel efficiency within a company. The title 'Project Manager' is a very generic term, whilst 'Fuel Champion' states clearly what the project is about and the person's role.

Fuel Efficiency Intervention

This is a product or service, which claims to improve fuel efficiency.

Hubmeter

A hubmeter is located as the name suggests in the wheel hub and records the distance travelled by interacting with the road wheel that is located on the hub.

Safe and Fuel Efficient Driving (SAFED)

This is the UK Government's driver development programme. Funded by the government it is aimed at improving the driving skills of professional drivers.

PROJECT EXECUTIVE SUMMARY

OVERVIEW

This overview containing conclusions and recommendations is based upon the findings in the four separate parts of the research project, which consisted of the following:

PART ONE:	In depth interviews with six key industry influencers
PART TWO:	In depth interviews of 54 vehicle operators;
PART THREE:	Telephone survey of 300 fleet operators, and
PART FOUR:	On the job interviewing of 300 commercial vehicle drivers

The research was conducted to identify themes relating to fuel monitoring and fuel efficiency that are both generic and specific to industry sub-sectors and a number of stakeholders. The following conclusions that have been drawn and recommendations made are based upon the in-depth analysis of the responses from those interviewed in all four parts.

OVERALL CONCLUSIONS

Against a background of sharply increased fuel prices and a increasing awareness of environmental issues there was tremendous interest in improving fuel efficiency. The first step in improving fuel efficiency is to have a robust and highly accurate fuel consumption monitoring system. Without such a system it is not possible for operators to know precisely their present fuel consumption, which is normally referred to as a baseline. Furthermore, they need to be able to establish whether or not a fuel saving intervention has worked and that its introduction will be cost effective. There was more interest in fuel efficiency than fuel monitoring, but you cannot have the former without the latter and possibly this was not fully understood by the interviewees or communicated correctly by the interviewers. Whilst improved monitoring will enable better internal benchmarking, respondents were resistant to external – even blind – benchmarking, due to the commercial sensitivity of the information.

There is a desire amongst operators to be more fuel efficient to reduce their costs and increase profitability. The means to achieving this are through identifying and developing 'Fuel Champions' who have the authority that goes with the responsibility of being in charge of fuel efficiency. Also better quality information delivered in the main via the internet. To have credibility the information needs to come from an independent source rather than an intervention supplier. The Government and Trade or Transport Associations scored very highly on this matter reinforcing the need for information to be authoritative and objective rather than a source with a vested interest. This opens up a potential avenue for cooperation between Government and industry.

The preferred formats for the information are best practice guides and case studies. A best practice guide tends to be a generic document, whilst case studies are more specific to a particular type of operation.

At present the monitoring that takes place tends to be done as part of the financial checks that accounts personnel undertake as part of their normal duties rather than from an operational perspective. This is one of the reasons why drivers do not receive feedback on how well they are performing in terms of fuel consumption; despite the fact that drivers would like to have access to such information. This also prevents the introduction of fuel bonus mechanisms. It was also found that the larger companies tend to monitor more than the smaller operators.

There is expectancy, enunciated by the key influencers and echoed by some operators, that technology will continue to be a key element determining both vehicle specifications, type of fuel used and how the vehicles are deployed on tasks. The increasing use of GPS to manage the disposition of vehicles in a fleet is but one example.

It is the newer vehicles that have the in-built engine technology and in-cab display systems. Therefore it is the operators with the newer fleets that stand to benefit first. Many commercial vehicles are purchased second hand and continue to be used for many years. Therefore, the infiltration of the in-cab displays and engine monitoring technology will take time to permeate the entire industry

Three key obstacles to attaining better fuel efficiency are confirmed. These are the need to allocate sufficient management and supervisory time; the need to overcome lack of knowledge of fuel monitoring techniques and methods; and the need for better access to unbiased authoritative information. It is over to management to solve the time allocation issue, but external assistance may help alleviate the other two key obstacles.

A number of operators had considered using alternative fuels, but very few actually do, with no one alternative fuel emerging as a favourite. This is an area that would probably benefit from further research.

Investigating all areas where sub-sectors show the highest levels of fuel efficiency should be investigated and where possible transferred to the other sub-sectors.

Due to the amount of prompting that took place in the interviews and surveys, there appears to be a gap in management knowledge. *This is something that was raised at a number of workshops that was attended by operators, many of whom had participated in the survey and interviews.*

Drivers of vehicles are interested in how fuel efficient they are personally and took a very positive view to improving their driving skills with some difference between sub-sectors. The larger the company the greater is the interest in fuel efficiency by their drivers.

There is an encouraging consistency in many of the answers across all of the survey and interview parts. From the evidence gained from the interviews and surveys there is a commonality of outlook such that there is an opportunity for all stakeholders' (Government, Trade and Transport Associations, vehicle operators and drivers) to derive a number of benefits from a structured approach to improving fuel monitoring

and fuel efficiency. As to how this could be accomplished will now be discussed in the recommendations.

RECOMMENDATIONS

Management needs educating in how to effectively manage fuel consumption data; this could be achieved through bespoke training, case study material, best practice guides. The outcome of which is to develop 'Fuel Champions' within companies who will implement improvements to monitoring to produce robust baselines and benchmarks and to enable the evaluation and subsequent implementation of any interventions.

A number of authoritative and objective New Zealand based case studies and best practice guides that are endorsed and supported by Trade and Transport Associations and are easily accessible to vehicle operators should be produced. Examples of such work can found in the UK, USA and Canada. A desktop analysis should be undertaken to identify those that can be easily adapted for a New Zealand operating context.

Operationally based fuel consumption monitoring and reporting systems should be developed. This should be seen as the primary function of the fuel champion in any organisation, because data management is the first fuel efficiency intervention. It can also be used to provide feedback to drivers on their fuel efficiency and to support driver development programmes and self financing fuel bonus schemes.

In order to get operators of different fleet sizes to appreciate the importance of allocating the time to learn about how to improve fuel efficiency the case study material should contain examples of large operators, medium sized operators and owner drivers all deriving benefits from applying the same intervention. The information pages of relevant Trade and Transport Associations and Ministry of Transport could hold the case studies as pdf files for downloading. Hard copies could also be distributed by the transport press and Trade and Transport Associations.

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BACKGROUND TO PROJECT

Purpose

The purpose of this research project was to undertake a survey of key influencers, fleet operators, and drivers of heavy and light commercial vehicles in New Zealand to ascertain the practices, attitudes, perceptions and barriers to change in relation to introducing fuel efficiency interventions.

Inefficient fuel use not only translates into unnecessary costs in the conduct of transport and contracting businesses, but it also inflates the volume of fuel that has to be imported. New Zealand is by no means self-sufficient in the supply of fuel for the transport sector. Use of fossil oil-based fuel for transport also contributes to greenhouse gas emissions. The New Zealand Government is concerned about climate change and is a signatory to the Kyoto Protocol that seeks to limit and reduce greenhouse gas emissions. Therefore, identifying practical and cost effective measures that could lead to achieving greater fuel efficiency is a goal that Government seeks.

This project is designed to find out how the commercial road transport sector views fuel efficiency monitoring, and to gauge what support there might be for introducing measures to combat three perceived implementation issues; lack of time to address fuel management; lack of knowledge of measures that can be implemented, and lack of authoritative information.

Methodology

Interviews

Six key influencers were identified by the client. The selection of Trade Associations / industry federations was made by the client with the identification of the actual persons decided in consultation with senior management in those organisations. These senior industry figures have an intimate knowledge of their sectors of the industry gained over many years. All six key influencers were interviewed in depth using a format that related closely to the format used for other operator interviews and the telephone surveys discussed below. The schedule of questions used for the interviews of the key influencers is attached as Appendix A.

A stratified sample was drawn up by the client (Ministry of Transport) using the database held by Land Transport New Zealand (LTNZ) now part of the newly established New Zealand Transport Agency (NZTA). The stratification was designed to provide random examples of both heavy and light vehicle fleets of large, medium and small organisations, operating in the greater Auckland, Wellington and Christchurch areas, and spanning eight vehicle operational sub-sectors, namely, Bus & Coach, Company Cars & SUVs; Contractors; Goods Service; Heavy Vehicles; Light Vans & Utilities (Ute); Light vehicles; and Taxis. A total of 54 vehicle operators were interviewed. The schedule of questions used is attached as Appendix B.

The face-to-face interviews with the 6 key influencers and 54 operators were planned to last for 45 minutes but there was such enthusiasm that the interviews often overran, with one lasting 3 hours.

Surveys

A sample random survey of 300 commercial vehicle fleet operators, not including ones drawn for interviews, was conducted by telephone using a third party organisation selected by the Ministry of Transport with whom they have dealt in the past with satisfaction. The questions put to these telephone interviewees is attached as Appendix C. They follow the same general pattern as for the interview questionnaires.

Another survey of 300 drivers was conducted by personnel used in the past by LTNZ to question drivers who had stopped their vehicles at places such as service stations where they refuel their vehicles. The questionnaire form used in the driver survey is attached as Appendix D.

Representation of the Industry

As we did not have control of the sample selection process we cannot be certain that the stratified sample drawn is truly representative of the overall commercial road vehicle fleet in New Zealand. From our analysis it appears that some sectors are under-represented in the driver survey. We needed to combine some responses to obtain useable sub groups. We identify these in the analysis sections of this report. Nevertheless, we have confidence that the different interview and survey instruments did elicit reasonably robust information that does reflect views generally held across the industry as well as differences associated with specific sectors.

Analytical Process

The first stage of our analysis required the information obtained in the interviews and surveys to be entered into a database amenable to later insertion into spreadsheets. We analysed the information in four parts;

PART ONE:	In depth interviews with six key industry influencers
PART TWO:	In depth interviews of 54 vehicle operators;
PART THREE:	Telephone survey of 300 fleet operators, and
PART FOUR:	On the job interviewing of 300 commercial vehicle drivers

This approach permitted the investigation to have depth and breadth. The four parts should be read as segments of the complete report as they collectively provide an informed overview of the state of fuel-monitoring in the commercial vehicle fleet in New Zealand together with an appraisal of how industry players are likely to respond to possible initiatives aimed at reducing the amount of fuel needed to complete their tasks. Having conducted the four part analyses, we were able to draw out common threads as well as aspects peculiar to the specific data groups.

Context: Influence of High Fuel Prices, and Road User Charge (RUC) Increase

At the time of the interviews and surveys in August 2008, New Zealand was experiencing its highest ever fuel prices. In one sense this made the project very timely as those questioned were acutely aware that the price of fuel was becoming relatively more important within their industry sectors. It was a “hot” topic along with the industry’s annoyance with the manner in which the Government had raised Road User Charges (RUC) on diesel fuel without any warning that would have let businesses advance purchase RUC in large quantities at the old prices. These events will have coloured the responses received and may have influenced willingness to cooperate. Those who chose not to participate may have felt antagonistic towards officialdom as a consequence of the RUC incident. Those that did choose to participate may have seen the project as providing information that could help them combat the high costs of fuel in the future.

The Interview and Survey Instruments

The survey instruments may have started them thinking such that their responses were couched to make it appear that they were implementing or about to implement a variety of fuel-saving mechanisms simply to appear to be up with the play – perhaps telling the interviewers what they thought the interviewers wanted to hear.

Where respondents gave answers without needing to be prompted, we can assume they had already thought about the issues raised. That is why note was taken of whether prompting was needed. In the face-to-face interview situations, our five interviewers were able to read “body language” to some extent to gauge whether the responses received were well-held opinions based upon accessible information, or otherwise. If the interviews are largely congruent with the surveys in the patterns of answers received, then we can be more confident that the larger surveys do reflect widely held industry views. Those interviewed had little chance of schooling the responses received from those surveyed.

1. PART ONE: ANALYSIS OF KEY INFLUENCER INTERVIEWS

1.1 KEY INFLUENCER SUMMARY

The focus in PART ONE is on interviews with six key influencers¹ drawn from Trade Associations and industry federations involved in commercial vehicle operations in New Zealand. The survey format was designed to enable assessment of current fuel-efficient fleet management practices (including fuel-use monitoring). The selection of Trade Associations / industry federations was made by the client with the identification of the actual persons decided in consultation with senior management in those organisations.

In all, 17 tables are included in Part One and they form the basis of the evaluation of the views of the six key influencers. The interview survey instrument is attached as Appendix A to this report.

A prerequisite to being able to assess the relative impact of any possible actions is that operators instigate fuel-use monitoring regimes. This is acknowledged by the key influencers. We observe, however, that fuel-use monitoring is the first step many in the industry have yet to take.

Our interviewees noted that some sub-sectors have achieved more than others and methods for transferring or sharing of useful skills and experiences should be considered.

Analysis of the information provided through the interviews indicates that there are several avenues and initiatives that might be followed that would lead to improved fuel efficiency in the New Zealand commercial vehicle fleet. These are:

- Driver development programmes mindful of fuel efficient driving techniques
- Adoption of aero-dynamic technology on vehicles
- Greater use of hybrid vehicles
- More electric vehicles except in heavy vehicle fleets
- Better routing of vehicles to eliminate unnecessary kilometers driven
- Better matching of vehicle types to tasks

It was the task of individual operators to apply whatever means best suited their operations.

There are several factors that inhibit the industry from adopting some of these initiatives. Three primary inhibitors are:

¹ Key influencers are industry leaders holding senior executive positions in the commercial transport trade associations and contractors federation whose members are the focus of this project. They are, by dint of their experience and close association with their own members, seen to be in positions that have influence inside and outside their organizations as they pursue the interests of members.

- (1) A perceived lack of time to give fuel monitoring and fuel management sufficient attention, which is mostly an internal organisational and prioritisation issue only amenable to subtle external influence.
- (2) A lack of knowledge of technologies available and measures that can be taken and what would be their likely impact, and,
- (3) A lack of available authoritative information from trusted sources to overcome lack of technical knowledge that might motivate rethinking of priorities in managing fuel in vehicle fleets.

There is support for encouraging government – industry relationships / partnerships that could help alleviate two of these three main inhibitors to the adoption of better fuel efficiency practices in the New Zealand commercial vehicle fleet.

Government could assist with overcoming inhibitors (2) and (3) above through working with Trade Associations who are trusted by their members to provide honest and accurate information that will better inform operators, such that they might seize more of the opportunities available to improve their fuel efficiency management regimes.

One of our reviewers questioned why would a Trade Association want to become involved in establishing and maintaining heavy vehicle fuel consumption data for benchmarking purposes? There is not likely to be a commercial dividend to the Trade Association. Unless the task is funded by a third party source like government, there could be some resistance because of the unrecoverable cost in managing the system.

Nevertheless, given the recognition by these industry leaders that better guidance is needed, the government could consider setting in place advisory groups that include Trade Associations representatives to give effect to developing authoritative and appropriate case studies and guides, together with educational training materials.

It is perceived by the key influencers that the industry overall is currently not well positioned in terms of personnel and systems aimed at improving fuel efficiency in commercial vehicle fleets. Few “fuel champions” are identified or well known in the industry. Therefore, initiatives that help identify and encourage the development of fuel champions should be supported as they offer a good means of embedding best practice within operators’ organisations. There was no clear message from key influencers as to how encouraging fuel champions might be achieved. Any reward system was over to individual operators to consider. We observe, in this context, that our analysis of the other data sets in this project showed few operators had embraced a reward system to encourage either fuel champions or outstanding fuel efficiency behaviour. The key influencers did not know of any reward systems.

We observe that there is no reason for New Zealand to start from ‘point zero’ when it can research what has been accomplished in other countries such as the United Kingdom, Canada and USA, and then adapt those practices for New Zealand. Much of this research is desktop activity, with revealed successes elsewhere being used to mount New Zealand based demonstration projects as case studies.

Driver development such as SAFED, supported by appropriate monitoring, is an approach that has proved successful in the United Kingdom and a recent trial in New Zealand brought forth quite enthusiastic responses. The key influencers recognised the imperative for driver development and were very supportive of driver development programmes that are aligned with New Zealand conditions.

1.2 KEY INFLUENCER ANALYSIS

Key Influencers

This PART ONE analysis focuses on interviews conducted with six key influencers drawn from specific sectors of the commercial road transport sector. They were chosen in consultation with the Ministry of Transport, and in accordance with the contract, to consider the current state of fuel-efficiency monitoring and management in commercial vehicle operator fleets in New Zealand.

The aim is to ascertain from the key influencers what measures government might promote with likely success to achieve better management practices with respect to fuel savings and added safety through fuel-efficient driving; monitoring of fuel-use; fuel-efficient driver training, and uptake of new transport vehicle technology along with adaptation to emerging fuel options.

The key influencers were considered to have a close knowledge of their own particular sub-sector of the industry and be as aware as most of the issues they face and the trends taking place, short, medium and long term. These six high level interviews complement the interviews conducted with heavy and light vehicle operators (large, medium and small) in the following five categories:

1. **Bus and Coach** represented by the Bus and Coach Association
2. **Goods Services** represented by Road Transport Forum and NZ Trucking Association (Owner Drivers)
3. **Contractors** represented by Contractors Federation
4. **Taxis** represented by the Taxi Federation
5. **Light Vans** represented by Employers and Manufacturers Association

A sixth category “passenger cars” was intended to be represented by the Rental Vehicle Association. This proved not to be possible at the time and the sixth key influencer was added from the goods service background with emphasis on owner drivers. Many of the operators had passenger cars in their fleets driven by management staff and others for tasks that would be inappropriate for their main vehicle fleet. We observe that driver behaviour was likely to be as variable in company passenger cars as would be found in the hirers of rental vehicles. Choice of vehicle might reflect user preference more so for hire vehicles than for company cars unless determined by company policies.

It is pertinent to remind readers that these interviews were undertaken against a background of the transport and construction industries facing the highest fuel prices ever recorded in New Zealand.

With a sample of only six key influencers representing particular trade/industry associations/federations, no rigorous statistical analysis of their views could be reported. What follows is a distillation of the thoughts and responses these six people made to the questions posed as set out in the Appendix A.

PERCEIVED MAJOR ISSUES

The six respondents were asked 'What are the major issues facing vehicle operators?' They were asked to award 100 points between the issues they nominated according to their perceived level of importance. The results are shown in Table 1-1.

Nine major issues were identified shown in italics below.

The two respondents representing truck operators together awarded 160 points to *Maintaining rates in the face of rising compliance costs affecting margins*. It is a big challenge for this sector to keep satisfactory margins for members in a highly competitive market. One of these split the 100 points allocating 60 to maintaining rates and another 40 to *cartage costs in general*. Taken together the total points summed to 200 by these two respondents showing that this area of concern overshadowed all others in their eyes.

Fuel Costs (120 points) scored with the other four of the six interviewed, two allocating 40 points, one 30 and the other 10. This suggests strongly that this issue is of current interest and of rising concern.

Driver Shortage was noted by three respondents, two allocating fifty percent of their allowable 100 points for a total point count of 110. One noted the high degree of international mobility of driving staff especially the drift to Australia from New Zealand for their better wages and conditions.

Road User Charge concerns (45 points) were of concern with three respondents with one noting his members were also not happy with the *method to pay for roads* and the way projects are prioritised, this adding another 35 points in this category for a total of 80 points. A road pricing system of some sort is seen to be needed.

Overcapacity was seen as a major issue in the taxi industry. Many drivers spend long periods waiting for fares, and if they cruise trying to anticipate where jobs will occur, they consume extra fuel.

Congestion - Only one respondent raised the issue of congestion (15 points) perhaps not surprisingly from Auckland where traffic congestion is purported to be strangling the economy, given the primate city dominance of Auckland.

General Overheads nominated by one respondent is likely related to maintaining rates and cartage costs in general.

Table 1-1 Major Issues and level of importance

Questions Put	1. What are the Major Issues Facing Vehicle Operators? What Level of Importance?								
KEY INFLUENCER INTERVIEWS	Driver Shortage	Fuels Costs	Road User Charges	Cartage costs in General	Maintaining rates, compliance costs and keeping margins	General Overheads	Over capacity	Method to pay for roads	Congestion
Key Influencer 1	50	40	10						
Key Influencer 2				40	60				
Key Influencer 3		30				20	50		
Key Influencer 4					100				
Key Influencer 5	15	10	25					35	15
Key Influencer 6	50	40	10						

Not Government Policy

FUEL EFFICIENCY CULTURE

Table 1-2 Fuel efficiency culture

Respondent	Does the Sector have a fuel efficiency culture?	
	YES	NO
1	●	
2		●
3		●
4		●
5	●	
6		●

Table 1-2 indicates that four out of the six respondents say there is no fuel efficiency culture and one of the yes responses was made conditionally subject to further sector consultation indicating some uncertainty or perhaps wishful thinking.

BENCHMARKING

The consensus appears to be that a few do use internal benchmarking systems. Whilst most don't, more are contemplating using benchmarking, mainly because the cost of fuel has driven the search for efficiencies. Most current benchmarking is cost based, not based on fuel efficiency monitoring. (see Table 1-3)

Table 1-3 Benchmarking

Respondent	Do operators use internal benchmarking systems?		Are operators likely to use an internal benchmarking system?	
	YES	NO	YES	NO
1	● a few		●	
2		●		●
3		●	●	
4	●		●	
5		●		●
6	● a few		●	

A GREEN AGENDA?

Two thought the industry has developed a “green agenda” but the majority thought otherwise although only one did not think a green agenda would become commonplace some time sooner rather than later. (Table 1-4) There are members of the Taxi Federation that pursue a green agenda quite vigorously (Green Cabs), and the contractors also appear to be moving quite rapidly in that direction.

Table 1-4 A green agenda

Respondent	Does the Sector have a Green Agenda?		Will the Sector have to adopt a Green Agenda?
	YES	NO	YES
1	●		
2		●	●
3	●		
4		●	NO
5		●	●
6		●	●

FUEL CONSUMPTION MONITORING

There is an even spread of opinion across the sectors with two key influencers saying fuel consumption monitoring is good, two saying average and two saying poor. None said very poor (Table 1-5). Most noted that there is more in-built instrumentation in new vehicles that helps to encourage regular monitoring. One noted the paradoxical trend towards heavier vehicles that use more fuel but produce less carbon per unit of payload, so inviting questions about appropriate road user charging systems. It was observed that there is also a linkage between capacity utilization and efficient fuel burn to be considered. In the heavy vehicle industry there can be a major wastage factor which is associated with under utilization of the maximum allowable payload or where utilization is being achieved from transporting high volume low value commodities that could be railed or shipped. The key influencers perceive that there is considerable variability among companies with respect to fuel consumption monitoring.

Table 1-5 Fuel consumption monitoring

Respondent	How good in general is fuel consumption monitoring in the sector?		
	Good	Average	Poor
1	●		
2			●
3			●
4	●		
5		●	
6		●	

FUEL EFFICIENCY

One respondent (representing contractors) thought fuel efficiency in general could be categorised as good within the sector but two others thought it was poor (Table 1-6). The remainder said it was average. This spread of opinion suggests performance is mixed across the sector with considerable room for improvement.

Table 1-6 Fuel efficiency in commercial transport

Respondent	How good in general is fuel efficiency in the sector?		
	Good	Average	Poor
1	●		
2			●
3		●	
4		●	
5			●
6		●	

WOULD OPERATORS BE INTERESTED IN RECEIVING INFORMATION ON FUEL CONSUMPTION MONITORING?

Most of the respondents thought that operators would be extremely interested or at least interested in receiving information on monitoring their fuel consumption (Table 1-7). It was stressed that the presentation of the information must be put to them simply for the sake of comprehension and encouragement to apply the information.

Table 1-7 Operator interest in receiving information on fuel consumption monitoring

	Operator Interest in receiving info on their fuel consumption monitoring ?	
Respondent	Very Interested	Interested
1	●	
2	●	
3	●	
4		●
5	●	
6		●

WOULD OPERATORS BE INTERESTED IN RECEIVING INFORMATION ON FUEL EFFICIENCY?

The responses show that it is likely that there would be considerable interest in the sector for receiving such information. There is currently a wait and see attitude with many operators. This opens the way for good operators to demonstrate to the rest of industry the value they attach to improving fuel efficiency. (see Table 1-8)

Table 1-8 Operator interest in receiving information on improving fuel efficiency

	Would operators be interested in receiving info on how to improve their fuel efficiency?		
Respondent	Very Interested	Interested-Possibly interested	Not Particularly interested
1	●		
2	●		
3	●		
4		●	
5	●		
6		●	

ARE YOU AWARE OF ANY VEHICLE FUEL CONSUMPTION GUARANTEE REQUIREMENTS IN CONTRACTS

None of the respondents was aware of any vehicle consumption guarantee requirements in contract negotiations by their members. Guaranteeing vehicle fuel efficiency as part of a contract is not known to these key influencers and therefore most unlikely to be a common practice in New Zealand.

WHAT ARE SEEN TO BE THE IDEAL SOURCES FOR OBJECTIVE AND AUTHORITATIVE INFORMATION ON FUEL MONITORING

The respondents were provided a list of sources for information on fuel monitoring and asked to rate them on a scale of 1 to 5, from most important (1) to least important (5). They could also nominate additional sources. The results of the ratings are shown in Table 1-9.

Industry Trade or Transport Associations are seen as the ideal source for objective and authoritative information on fuel monitoring with an average rating of 1.67. There is considerably less confidence in the other listed sources such as the transport press (3.17), other vehicle or equipment operators (3.17), Government agencies (3.17) and vehicle equipment manufacturers or dealers who were the least supported source (3.33). Where support for a Government Agency was nominated, it was NZTA. The only other source nominated was academic (2.0) - as these researchers are seen to be unbiased with no commercial axe to grind. Their presentations to industry conferences were welcomed.

Table 1-9 Ideal source for information on fuel monitoring

	Ideal Source for Objective and Authoritative Information on fuel monitoring? Use 1-5 Scale Most Important to least important					
Respondent	Industry Trade or Transport Assoc	Transport Press	Other Vehicle or Equipment Operators	Vehicle or Equipment Manufacturer or Dealer	Govt Agency	Other
1	1	3	2	2	3	Academic (2)
2	1	5	5	3	2	NZTA
3	1	4	5	3	2	NZTA
4	1	3	4	5	5	
5	4	2	2	3	4	
6	2	2	1	4	3	

WHAT ARE SEEN TO BE THE IDEAL SOURCES FOR OBJECTIVE AND AUTHORITATIVE INFORMATION ON FUEL EFFICIENCY

The respondents were provided a list of sources for information on fuel efficiency and asked to rate them on a scale of 1 to 5, from most important (1) to least important (5). They could also nominate additional sources. The results of the ratings are shown in Table 1-10.

Industry Trade or Transport Associations are seen as the ideal source of objective and authoritative information on fuel efficiency followed by Vehicle Manufacturers/Dealers. This shows clear discrimination between information on

monitoring and efficiency with respect to sourcing such information from the Vehicle Manufacturers or Dealers. Whereas they rated bottom of the list for objective and authoritative fuel monitoring information, they came second for fuel efficiency information. The transport press did not score well on either monitoring or efficiency information. Academics were respected for their objectivity in both cases.

Table 1-10 Ideal source for information on improving fuel efficiency

9b. Ideal Source for Objective and Authoritative Information on fuel efficiency ? Use 1-5 Scale Most Important to least important						
Respondent	Industry Trade or Transport Assoc	Transport Press	Other Vehicle or Equipment Operators	Vehicle or Equipment Manufacturer or Dealer	Govt Agency	Other
1	1	3	2	2	3	Academic (2)
2	1	5	5	3	2	
3	1	4	5	3	2	
4	1	3	1	5	5	
5	2	4	2	1	4	
6	5	2	1	1	3	

Whilst there was strong support for the industry trade or Transport Associations for unbiased information on fuel monitoring and fuel efficiency, this is not unexpected given the positions these informants hold.

The point being made is that these organisations should be preferred sources along with government sources because they are not trying to sell equipment or services to the industry. It is another question as to whether most industry trade or Transport Associations are positioned to deliver the information.

IS THE CURRENT INFORMATION ON FUEL CONSUMPTION FOR NEW AND EXISTING VEHICLES APPROPRIATE and

IS THE CURRENT INFORMATION ON FUEL CONSUMPTION FOR NEW AND EXISTING VEHICLES ADEQUATE

All the respondents gave the same answer to the two questions, with only two respondents answering “yes”. These two probably have better access to information through the research arm of their organisations. However, the weight of opinion is negative suggesting that more could be done to better inform those making vehicle and equipment purchase decisions in the industry. (see Table 1-11)

Table 1-11 Appropriateness and adequacy of current information on fuel consumption

Respondent	14a. Current Info fuel consumption new and existing vehicles Appropriate		14b. Current Info fuel consumption new and existing vehicles Adequate	
	YES	NO	YES	NO
1	●		●	
2		●		●
3		●		●
4	●		●	
5		●		●
6		●		●

ASSESSMENT OF THE QUALITY OF PRESENTLY AVAILABLE FUEL CONSUMPTION INFORMATION

Most of these key influencers view the quality of information as below average, with one not at all sure and one saying GOOD and one saying POOR. (Table 1-12) This suggests some uncertainty in their minds and possibly they have not assessed the data themselves.

Table 1-12 Quality of presently available fuel consumption information

Assessment of Quality of presently available fuel consumption information				
Respondent	Good	Average	Below Average	Poor
1	●			
2			●	
3			●	
4	No opinion	No opinion	No opinion	No opinion
5		●		
6				●

OBSTACLES TO FUEL EFFICIENCY

The respondents were asked to rank three factors commonly cited as obstacles that limit the pursuit of fuel efficiency in the industry. These “lack of” factors were listed as:

1. Time;
2. Knowledge of fuel monitoring techniques and methods and
3. Availability of unbiased information.

Respondents could add other factors to include in their ranking. One respondent added “computer literacy” and another “appropriate industry culture”. The results are shown in Table 1-13.

Lack of knowledge about fuel monitoring techniques and methods is seen as the primary obstacle. This is also reflected in the comment on the lack of a fuel efficiency industry culture and the paucity of computer literacy skills generally in the sector’s workforce. Both skills are needed to take advantage of fuel monitoring techniques and methods.

Table 1-13 Obstacles to fuel efficiency

Rank Obstacles to Fuel Efficiency				
Respondent	Time	Knowledge fuel monitoring tech & methods	Availability unbiased info	Other
1	1	2		
2	2	1	3	Computer Literacy 3
3	4	1	2	No Culture 3
4	1	4	2	
5	2	1	4	
6	5	1	2	

HOW DO YOU THINK ANY ASSISTANCE SHOULD BE TARGETED AND WHAT FORM SHOULD THE ASSISTANCE TAKE?

Best practise Guides and Case Studies are seen as likely to be very useful to the sector. One respondent notes, however, that the information has to be kept simple if employees in the sector are going to use it. This suggests that busy people will not wish to spend much time reading and comprehending detailed documentation, or that their cognitive skills might be weak.

A consistent response is that the sector looks to government and Trade Associations to provide this assistance. One respondent recognised that the Tertiary Education sector could be a supplier of this assistance, nominating UNITEC in Auckland as an example. The responses are shown in Table 1-14.

Table 1-14 Form and targeting of assistance

	Form of Assistance				
Respondent	Best Practice Case Studies	Best Practise Guides	Monitoring Software	Operation Specific Advice	Other
1	●	●	●		simulator training
2	●	●			
3	●	●			
4		●			
5				●	
6		●			Must be simple

MAJOR INFLUENCES ON FUEL EFFICIENCY IN THE FUTURE

The six respondents were asked to consider short, medium and long term factors that they considered will influence future fuel efficiency. No prompts were supplied. The results are set out in Tables 1-15 – 1-16 – 1-17.

Table 1-15 Major influences on fuel efficiency – short term

		Short Term What will be the major influences on fuel efficiency				
Respondent	Cost/Price	Technology GPS Aero- dynamics Hybrids Electric Vehicles	Customer needs	Emission Testing	Availability Alternative Fuel	
1	●				●	
2				●		
3	●	●	●			
4	●					
5	●					
6	●					

Clearly the major short term influence is price/cost which is causing management to consider fuel efficiency issues. The demands made by customers and government (emission testing) are also accentuating the need to become more fuel efficient.

Table 1-16 Major influences on fuel efficiency – medium term

Medium Term What will be the major influences on fuel efficiency			
Respondent	Cost/Price	Technology GPS Aero- dynamics Hybrids Electric Vehicles	Fuel Alternatives
1	●		
2		●	
3		●	
4	●		
5		Bypass Human Error	
6			●

As the horizon moves out, so the expectation increases that there will be technological changes that will affect fuel efficiency and types of fuel and types of vehicle.

For the long term view, the expectation remains that changing technology will be the key influence, including the possible impact of new materials (strong and lightweight), but one respondent said the long term view is too difficult to predict.

Table 1-17 Major influences on fuel efficiency – long term

Respondent	Long Term What will be the major influences on fuel efficiency		
	Cost/Price	Technology GPS Aero- dynamics Hybrids Electric Vehicles	Materials Change
1	●		
2		●	
3		●	
4	●	●	
5			●
6	Too Hard to Predict		

VIEWS ON ALTERNATIVE FUELS

One respondent commented that “they are a reality now and more should be trialed, but they need to be priced and taxed properly.” Another said “Vehicle manufacturers are designing for them (Volvo Hybrid Trucks) - EPG Diesel (Melbourne).” Another was of the view that “the future will go full electric in cities.” A view from the Road Transport Forum’s respondent is that “it will not happen in the heavy vehicle section - tare weight needs to be reduced to improve productivity and technology will lead.” Another perspective is that “Bio is short term but algae look promising. There is likely to be more use of renewable energy sources with reticulated electricity used especially for rail transport. More oil/gas discoveries in NZ are likely.” The last comment was “They will have a place and technologies will adapt to them.”

VIEWS ON THE IMPORTANCE OF TRAINING AND TRAINING DELIVERY

Comments made include:

"Very important at all levels including top management and front-liners delivered on the job and with simulators"

"Very important - driver level (national certificate as customers are asking for it) Deliver through Master Drive heavy vehicle operator programme but note owner drivers do not earn if they go on a course"

"Important and need to raise awareness - start at entry level"

"Very important especially driver training with instruction delivered in the cab"

"Big ask to raise awareness amongst drivers but need to target entry level rather than old timers with short courses in classrooms and possible use of simulators"

"Very important at operator level with need of examples and for on-site delivery"

The focus was mainly on driver training with only one comment that specifically included management levels. This reflects the pressing concerns of management regarding shortage of skilled drivers and management's realisation that fuel savings and costs are most likely to be delivered quickly by good drivers.

Other general comments

"Need to use GPS systems more"

"Need for a licensing system to help weed out poor operators"

" Govt needs to do something rather than nothing - needs policy outcome. Margins are soft and hurting the freight sector. Fuel efficiency needs policy development - maybe section of EECA?"

" question as to whether the emissions trading scheme is good or bad but it is not understood"

Four of the six took the opportunity to add to the interview unsolicited comments listed above. They reflect views that more needs to be done, policy needs to be developed, and the necessary information needs to be disseminated in a digestible way if we are to see an uptake of best practice in the sector.

1.3 KEY INFLUENCER: CONCLUSION

The six key influencers all had an excellent knowledge of their industry sub-sectors and a good appreciation of what their members' attitudes and actions would be to any policy initiatives aimed at improving fuel efficiency in commercial vehicle fleets and in the case of contractors in their static machinery as well.

There is close congruence between the responses received in the other surveys and interviews undertaken for this project and the answers received from these six key influencers.

We pressed the key influencers to look beyond the near term future to the medium and long term. They acknowledged that the current heightened interest in fuel efficiency measures through proper monitoring of fuel use was mostly spurred by concerns about rising fuel prices. Only a few years ago, in the era of relatively cheap fuel availability, other cost factors were considered to be far more important. Consequently, the industry is not yet well positioned in terms of personnel and systems in place to move swiftly on implementing beneficiary actions aimed at improving fuel efficiency.

In the medium term, whilst cost would still be a dominant factor, the introduction of new technologies would be the precursor of change in the manner of doing business in the commercial vehicle fleets of the nation. There is considerable expectation that technology in many forms will deliver to avert any pending fuel crisis.

Long term, it was either more of the same or just too hard to predict. Inevitably there will be uptake of systems and training of personnel to take advantage of those systems to bring about improved fuel efficiencies generally in the commercial vehicle fleets.

As representatives of specific Trade Associations and federations, these six key influencers were, not unnaturally, mostly positively inclined to the notion that their organisations might be used as a conduit through which information might flow for the ultimate benefit of their members. Who might cover the cost was a possible issue. From a government policy perspective, this openness suggests there may be fruitful partnerships that can be forged. The other surveys and interviews confirmed that operators had trust in these organisations as they were not in the business of selling them a product or service.

All six have members who are experiencing difficulties in recruiting and retaining drivers, especially the good ones. They would welcome initiatives that would help alleviate this shortage. They are all positive about the need for driver development.

2. PART TWO: ANALYSIS OF IN-DEPTH INTERVIEWS (54 VEHICLE OPERATORS)

2.1 IN-DEPTH INTERVIEWS SUMMARY

A full complement of 54 operators was interviewed and their responses indicate that fuel consumption management is considered to be important or very important to the vast majority of operators. Fuel monitoring is most likely to be financially based rather than focussed on operational efficiency and if changed to operational efficiency there is the potential for major benefits to be realised. Improvements in fuel monitoring will lead to benefits in vehicle selection, operation, driver management and skills sustainability mechanisms.

The three major obstacles of time knowledge of techniques and methods and availability of unbiased information were confirmed and there is a major opportunity for a combination of Government and Trade and Transport Associations to help operators to overcome the second and third obstacles. Overcoming the first is dependent upon operators committing the resource of time, but if they are provided with authoritative and independent advice this should be a financially viable proposition for them. There is a clear preferred option for quality information on fuel consumption monitoring and fuel efficiency delivered electronically via the internet.

This is clear recognition that fuel consumption management is seen as important and most operators claim they monitor fuel use but the task is assigned to a wide spectrum of persons not one of whom has fuel manager/monitor/champion in their job title. There is good evidence that vehicle purchases are influenced by the fuel efficiency specifications of various makes and models that are considered fit for purpose. However, very little use is made of benchmarking fuel performance within a company's fleet or in comparison with other similar fleets. There is entrenched reluctance to divulge any information they might be of value to a competitor.

Less than half the operators interviewed provided feedback to their drivers on fuel use. Set alongside recognition that driving ability is a key factor in achieving fuel savings, it is somewhat surprising that there is so little communication with drivers on this matter. In Part Four this aspect is considered further as drivers indicated that they would welcome more feedback. Only one operator said they used a reward scheme for their drivers to encourage fuel efficient driving techniques, and most did not check this aspect of driving ability before employing drivers. Once drivers were employed, operators were generally supportive of driver development programmes.

With respect to obstacles in the way of introducing fuel efficiency monitoring and management, comments from the *Bus & Coach* sector included the observation that with diesel buses you cannot improve very much and there are problems with older vehicles and the capital cost of replacing them. Another obstacle identified is the hot seating of drivers and difficulties relating fuel use to individual drivers of shared vehicles. Some respondents suggested they had more important things to do or lacked resources for fuel efficiency projects and had no internal benchmarking.

The majority of operators did not use alternative fuels, although a large number were considered using them. Of those that use alternative fuels there is a wide range of different fuel types being consumed by a range of fleet operators. Most of the switch to alternative fuels is seen in light vehicle fleets. That is where hybrids are most likely to be found. Heavy fleets have mostly remained with diesel fuel with some trials in bus fleets of bio-blends. Finally, a number of operators are facing increasing demands from their customers to have a verifiably sustainable operation.

Having a more sustainable operation could result in operators having a more profitable operation and this research project has identified areas where this could be instigated and the mechanisms by which it could be achieved.

Some operators had made significant reductions in their fuel costs and subject to their fuel consumption data being scrutinised could be used as case studies to show what could be achieved. This is important, because when prompted case studies were the second preference (19/54) for operators in terms of a form of assistance. The number one preference was best practice guides (20/54). An advantage of case studies is that they can be very specific as opposed to more generalised best practice guide.

Slightly less than half of interviewees had customers who were demanding that they operated in a more sustainable manner and with the rise in environmental awareness this is likely to increase. An implication of this is that vehicle operators will have to establish their own environmental baseline, which could be done as a stand alone project or part of an overall environmental audit. When questioned 23 out of the 54 interviewees had conducted an environmental audit and that 18 of them were planning to do this on a regular basis.

2.2 IN-DEPTH INTERVIEWS INTRODUCTION

The requirement for this segment of the project was for the interviewing of 54 operators taken from a stratified sample of heavy and light vehicle fleets. A copy of the questionnaire used to structure the interview is shown in Appendix B. Three sub-sectors were identified in the contract documents in the heavy class; general freight and dairy supply; construction and wholesale/retail; forestry and logging and stock haulage. Each of these sub-sectors was to comprise nine interviews split evenly between small, medium and large operators. However, the sub-sector division was modified by the client to comprise; goods services; bus and coach; and contractors.

Similarly, the stratified sample for the light vehicle fleet was divided into three sub-sectors; taxis; light vans/Ute; and passenger cars. Again each sub-sector comprised nine interviews split evenly between small, medium and large operators.

The sample firms were generated by Land Transport New Zealand (now NZTA) from their database. In the expectation that some firms selected would not consent to being interviewed, the stratified sample list contained alternates in each category, but even then, further substitution was required to assemble the final full set of 54 interviews. Analysis of the interviews indicated that the following six sub-sectors best categorised the respondents:

Table 2-1 Sub-sectors and their sample sizes

SUB-SECTOR	TOTAL
Bus & Coach	9
Company Car / SUV	6
Contractors	10
Taxi	9
Heavy Service Vehicles	10
Light Vehicles/Vans/Utes	10
Total	54

Whilst not uniformly distributed a reasonable sample size from each sub-sector was achieved.

2.3 IN DEPTH INTERVIEWS METHODOLOGY

Prospective interviewees were contacted by telephone to explain the background to the request for an interview. Some had some prior awareness that such a survey was going to be conducted through information provided by their respective associations, but this was a minority of respondents. Whether an orchestrated advance notification industry-wide would have helped is a moot point.

Once past the point blank refusal stage, usually from front-office gatekeepers or personal assistants to management obeying instructions to avoid all surveys, generally speaking the target respondents were receptive to being interviewed and to having a chance to convey their perspective on the state of fuel monitoring and fuel efficiency initiatives in New Zealand.

At the time the interviews were conducted in August 2008, New Zealand was experiencing its highest ever fuel prices and this struck a receptive nerve. Coupled with this was the fact that Road User Charges (RUC) had just been raised by Government without the advance warning expected by the industry that would have allowed them to advance purchase RUC at the old prices, and there was deep resentment and disruptive demonstrations around the country as a result.

Fifty-four worthwhile interviews were conducted and the analysis that follows is based on those interviews.

2.4 IN DEPTH INTERVIEWS ANALYSIS

A primary step in establishing any organisation's commitment to fuel efficiency is to identify whether or not they have someone responsible. It can be seen in Table 2-2 that 66.6% of respondents indicated that they had someone responsible.

Table 2-2 Do you have someone responsible for fuel efficiency?

SUB-SECTOR	PERSON RESPONSIBLE FOR FUEL EFFICIENCY		
	No	Yes	Total
Bus & Coach	3	6	9
Company Car / SUV	2	4	6
Contractors	2	8	10
Taxi	5	4	9
Heavy Service Vehicles	3	7	10
Light Vehicles/Vans/Utes	3	7	10
Total	18	36	54

The taxi sub-sector does appear weaker in this regard than the others, which could be put down to the drivers being responsible for their own fuel consumption.

Respondents were also asked to give the job title of the person responsible as a means of indicating the level of management commitment to fuel efficiency. The job titles produced are listed below.

Job Title

Management

Branch Managers 1
 CEO 2
 Managing Director/Director 5

Technical

Chief Engineer/Director 1
 GM Technical Services 1
 Mechanic 3
 Workshop Manager 4

Driver

drivers 2

Financial

Asset & Property Assistant 1
 Financial Officer/Controller 2
 Plant & Equipment Manager 2
 Procurement specialist 1

Transport Logistics

Fleet Manager/Supervisor 2
 Operations Manager 3
 Tour Coordinator 1
 Transport coordinator 1
 Transport Manager 2

Two thirds of the firms say they have a person for whom responsibility lies for looking after the fuel efficiency of their vehicles. Only the taxi industry had more “no” than “yes” for this role, doubtless reflecting that most fleets of taxis comprise owner-drivers who individually make their own decisions. Nevertheless, in some fleets it is company policy to remove all petrol driven cars in favour of diesel as a fuel efficiency measure. Contractors appear to be leading in designating a person to look after company fuel efficiency, perhaps encouraged to do so because of the wide range of equipment both mobile and static, that they use.

The range of titles ascribed to the persons nominated as responsible for fuel efficiency indicates considerable variance with 34 different positions identified by 38 respondents. Clearly this function is seen as an adjunct to other responsibilities. None of the positions named has the function in the title. Two companies were considering making such an appointment.

The foundation for any fuel efficiency programme is to have a robust and effective fuel monitoring system and interviewees were asked whether or not their company monitored fuel consumption; the responses are shown in Table 2-3.

Table 2-3 Does your company monitor its fuel consumption?

SUB-SECTOR	DOES YOUR COMPANY MONITOR		
	No	Yes	Total
Bus & Coach	5	4	9
Company Car / SUV	4	2	6
Contractors	2	8	10
Taxi	5	4	9
Heavy Service Vehicles	1	9	10
Light Vehicles/Vans/Utes		10	10
Total	17	37	54

The variance in the responses to this question suggests that there is considerable scope for promoting monitoring of fuel use as only three of the sub-sectors show that most operators do monitor and for the rest only a minority do. Without monitoring fuel use in a consistent manner, it is not possible to assess the impact of any initiatives that seek to achieve better fuel efficiency outcomes.

Whilst not monitoring in detail themselves operators may receive reports on fuel use from their fuel suppliers who are mainly fuel card companies. Expanding the research to identify if they receive or produce fuel reports rather than just asking them if they themselves monitor resulted in an increase in positive responses as shown in Table 2-4.

Table 2-4 Do you produce or receive fuel reports?

SUB-SECTOR	DO YOU PRODUCE OR RECEIVE FUEL REPORTS			
	Don't Know	No	Yes	Total
Bus & Coach			8	8
Company Car / SUV		3	2	5
Contractors		1	9	10
Taxi	1	5	3	9
Heavy Service Vehicles		1	9	10
Light Vehicles/Vans/Utes			10	10
Total	1	10	41	52

Although a majority of firms actually monitor fuel use, a larger number do receive fuel reports mostly from their fuel suppliers in one way or another. That raises the question as to what happens to these fuel reports. Are they being used only to track costs? Whether they are used to inform fuel efficiency programmes requires further analysis. The extent to which the accuracy of reports is checked could be indicative of the value placed upon them for informing management decisions. Accordingly we turn here to the question on how often they are checked.

Table 2-5 How often do you check their accuracy?

SUB-SECTOR	HOW OFTEN DO YOU CHECK THE ACCURACY OF YOUR FUEL REPORTS							Total
	Don't check	Random	Weekly	Monthly	Quarterly	Twice a year	Annually	
Bus & Coach		2	1	5	1			9
Company Car / SUV	1	1		2			1	5
Contractors	1			8				9
Taxi	3			3		1		7
Heavy Service Vehicles	3		2	4				9
Light Vehicles/Vans/Utes	2	1	1	5	1			10
Total	10	4	4	27	2	1	1	49

Forty-nine of the 54 respondents answered this question. Ten did not check for accuracy at all, with monthly checking dominating answers overall. Undertaking checks monthly aligns with normal business accounting practices and billing cycles. Again this suggests checking may be driven more by accounting requirements than for other reasons. Accountants / financial controllers tend to be sticklers for accuracy especially where it involves regular payments of large sums of money wherein even small inaccuracies in fuel measurements could lead to gross errors. We look therefore at feedback on any problems encountered with the accuracy of fuel reports.

Table 2-6 Have you found any problems with fuel reports?

SUB-SECTOR	PROBLEMS WITH THE ACCURACY OF FUEL REPORTS		
	None	See discussion below	Total
Bus & Coach	4	5	9
Company Car / SUV	1	4	5
Contractors	5	3	8
Taxi	3	2	5
Heavy Service Vehicles	3	4	7
Light Vehicles/Vans/Utes	2	7	9
Total	18	25	43

Over half of the respondents who answered this question mentioned that there were, from time to time, problems encountered with the accuracy of the fuel reports received. Sudden spikes in the data often indicated someone, often a driver, had entered the wrong information through inaccurate transcribing of data such as odometer readings or litres of fuel drawn from the pump. Sometimes the blips in the data uncovered inappropriate (illegal) use of fuel. The litres of fuel said to be used by a specific vehicle or a piece of equipment is seen to be out of alignment with its expected performance. Other factors mentioned leading to inaccuracies were: significant errors with hubmeters especially when there are many stop start situations (buses) because the hubmeters continue to swing and clock up phantom kilometres; drivers swapping fuel cards; and cost centres not accurate with data due to vehicle movements between centres.

Having established to a certain extent current practices, the research then moved on to the importance of fuel consumption management and to what use the information is put. The first step was to ask directly about the importance of fuel management and to then look deeper into the fuel efficiency culture of the individual businesses. Table 2-7 shows the responses to the initial questions.

Table 2-7 How important is fuel consumption management to you?

SUB-SECTOR	HOW IMPORTANT IS FUEL CONSUMPTION MANAGEMENT TO YOU					
	Unimportant	Not particularly important	Average with other costs	Important	Very important	Total
Bus & Coach		1	2		6	9
Company Car / SUV			2	2	1	5
Contractors		1	1	5	3	10
Taxi	2		1		6	9
Heavy Service Vehicles	1			2	7	10
Light Vehicles/Vans/Utes		1	2	2	5	10
Total	3	3	8	11	28	53

Only six out of 53 respondents thought fuel consumption management was unimportant or not particularly important with another eight considering it was average with other costs. Most answers were skewed towards the important and very important scale (11 and 28 respectively out of 53). This is clear recognition that fuel consumption management is seen as important and most monitor. We probe further to find out how the information that is gathered on fuel use is applied.

Table 2-8 Is fuel consumption taken into account when acquiring a vehicle?

SUB-SECTOR	IS FUEL CONSUMPTION TAKEN INTO ACCOUNT WHEN ACQUIRING A VEHICLE		
	No	Yes	Total
Bus & Coach			
Company Car / SUV	1	8	9
Contractors		6	6
Taxi	1	9	10
Heavy Service Vehicles	1	8	9
Light Vehicles/Vans/Utes	1	9	10
Light Vehicles	1	9	10
Total	5	49	54

The response to this question is an emphatic yes with only 5 of the 54 saying no. Therefore, we can conclude that when looking for the next generation of vehicles in the fleet, decisions are made to purchase or lease taking fuel performance into account. To gauge performance, comparisons need to be made. We look therefore to see if use is made of benchmarks.

Table 2-9 Do you use benchmarks or similar information?

SUB-SECTOR	USE OF BENCHMARKS OR SIMILAR INFORMATION		
	No	Yes	Total
Bus & Coach	7	2	9
Company Car / SUV	4	2	6
Contractors	5	5	10
Taxi	5	4	9
Heavy Service Vehicles	5	5	10
Light Vehicles/Vans/Utes	2	8	10
Total	28	26	54

The responses are split very evenly between those who make use of benchmark information and those who do not. It would appear that light vehicle users are more likely to take advantage of benchmarking but the bus and coach sector generally do not use such indicators. If it involves internal benchmarking, the fleet or individual vehicle performance can be tracked over time and any significant dip in performance can be used as an alert for either vehicle maintenance or vehicle replacement.

External benchmarking is hindered by perceived issues of security of commercially sensitive information – not wanting to let competitors see that intimately into a company’s business. Some respondents could see the possible uptake of external benchmarking if it was conducted blind through a trusted third party. This is a function that a Trade Association might provide for its members.

Benchmarking allows consideration of performance historically. There are other ways of keeping an eye on fuel efficiency more dynamically in real time. Modern vehicles are being delivered with instrumentation as standard that can monitor fuel use as a vehicle is being driven. We asked these respondents about such technology.

Table 2-10 Do your vehicles have in-cab fuel consumption displays?

SUB-SECTOR	DO VEHICLES HAVE IN-CAB FUEL CONSUMPTION INFORMATION DISPLAYS		
	No	Yes	Total
Bus & Coach	6	3	9
Company Car / SUV	5	1	6
Contractors	5	5	10
Taxi	3	6	9
Heavy Service Vehicles	2	8	10
Light Vehicles/Vans/Utes	8	2	10
Total	29	25	54

There is a scattering of these devices spread through the sub-sectors with a preponderance in the heavy service vehicle sector and good representation from taxis. Contractors are split 50-50 with the remaining sectors having only a small deployment in their fleets according to the perceptions of our 54 interviewees. It would appear that fleet renewal is having an impact progressively, especially for fleets that employ professional drivers. In the light vehicle fleet, often the vehicle is

ancillary to the job and the drivers are not employed primarily as drivers. Where driving is the primary occupation, it can be expected that these employees will be more responsive to the information made available via in-cab displays. Surprisingly, therefore, the uptake in the bus and coach sector is only around a third. Other than what drivers can see for themselves, there is further monitoring that takes place and is recorded in modern vehicles. Whether that information is used in feedback to drivers is our next question.

Table 2-11 Do you provide feedback to drivers on fuel consumption?

SUB-SECTOR	DO YOU PROVIDE FEEDBACK TO DRIVERS ON FUEL CONSUMPTION		
	No	Yes	Total
Bus & Coach	8	1	9
Company Car / SUV	6		6
Contractors	5	5	10
Taxi	5	4	9
Heavy Service Vehicles	3	7	10
Light Vehicles/Vans/Utes	6	4	10
Total	33	21	54

The only sector that more often than not supplies feedback to drivers on their fuel consumption is that of the heavy service vehicles. Contractors are 50-50 and the rest mostly do not provide that feedback. This suggests an opportunity exists for instituting systems to provide such feedback information with a view to enhancing driver performance leading to fuel savings both for the companies involved and the nation.

Table 2-12 Do you assess a drivers fuel efficiency skills prior to employment?

SUB-SECTOR	ASSESS A DRIVERS SKILLS PRIOR TO EMPLOYMENT		
	No	Yes	Total
Bus & Coach	9		9
Company Car / SUV	6		6
Contractors	9	1	10
Taxi	6	3	9
Heavy Service Vehicles	7	3	10
Light Vehicles/Vans/Utes	9	1	10
Total	46	8	54

Very few employers of drivers use a formal assessment of their driving ability prior to employing them and as a consequence have little or no idea of how the driving technique of those drivers may or may not contribute to fuel efficient driving. There is in New Zealand a current shortage of drivers for commercial vehicles in both passenger and freight businesses. Some respondents suggested that if they unilaterally decided to subject prospective drivers to fuel efficient driving assessment, they feared those prospective drivers would look elsewhere for work. For the moment it is a matter of attracting and retaining reasonably competent drivers and not scaring them off. Driver development however is supported once

they have them in their employ with a majority operating continuing skill improvement programmes.

Table 2-13 Do you operate a continuing skill improvement programme?

SUB-SECTOR	CONTINUING SKILLS IMPROVEMENT PROGRAMME		
	No	Yes	Total
Bus & Coach	5	4	9
Company Car / SUV	4	2	6
Contractors	2	8	10
Taxi	4	5	9
Heavy Service Vehicles	3	7	10
Light Vehicles/Vans/Utes	6	4	10
Total	24	30	54

Whilst testing for skills in fuel efficient driving is not practiced as part of recruitment, once firms have obtained their drivers there appears to be a greater commitment to programmes that will help improve safe and fuel efficient driving behaviour. As the next tabulation indicates, such a commitment by the majority does not involve offering any rewards to drivers who conserve fuel. Only one respondent has such a scheme in place.

Table 2-14 Do you reward drivers for conserving fuel?

SUB-SECTOR	DO YOU REWARD FUEL CONSERVATION		
	No	Yes	Total
Bus & Coach	9		9
Company Car / SUV	6		6
Contractors	9	1	10
Taxi	8		8
Heavy Service Vehicles	10		10
Light Vehicles/Vans/Utes	10		10
Total	52	1	53

Further research is needed to ascertain whether any reward scheme would lead to more safe and fuel efficient driving. There is a known connection between fuel efficient driving and safety when drivers are taught to read the road and traffic conditions so that they can minimise heavy braking or rapid acceleration, use appropriate gear shifting and not drive over the speed limit.² A culture change for management and drivers is needed to remove the pressure to deliver on time in competitive commercial environments, no matter what other factors may contribute to delays. New Zealand can learn from experience elsewhere on this issue such as the UK SAFED programme and SmartDriver, which is part of the Canadian FleetSmart programme.

The fuel efficiency skills of any driver are only one of a number of interventions that can be implemented and interviewees were subsequently asked if they had tested any interventions at all in the last two years. Two examples from overseas are

² SAFED Impact Assessment 2007, Department for Transport, UK

reducing kilometres travelled per drop by 18% to 25% through computerised routing and scheduling Watson R (1999)³ and the closing of a tipper body easysheet when empty to improve fuel consumption by 6.8% Wilcox D (1999)⁴.

Table 2-15 Have you tested any interventions in the last two years?

SUB-SECTOR	HAVE YOU TESTED ANY INTERVENTIONS IN THE LAST 2 YEARS		
	No	Yes	Total
Bus & Coach	3	5	8
Company Car / SUV	2	4	6
Contractors	1	9	10
Taxi	1	8	9
Heavy Service Vehicles	2	8	10
Light Vehicles/Vans/Utes	3	7	10
Total	12	41	53

The response to this question indicates that firms are implementing actions to help improve vehicle fuel efficiency with 41 out of 53 active in this respect. All sectors show more positive responses than negative with few laggards. Most of those that had not implemented actions indicated they were contemplating or had approved actions in the near term. This shows a concerted buy-in that must stem from a heightened awareness of the benefits to be obtained from the quite wide range of options available. Examples of actions taken include: better planning of operations (routeing and scheduling) to reduce unnecessary kilometres travelled; improved vehicle specification when acquiring vehicles; switched to diesel vehicles in entire fleet; instructions given to drivers to minimise idling time; tyre management; improving aerodynamics of vehicles and redesign of trailers; use of GPS for security and better asset utilisation; reduction in road speed; fitted fuel meter devices on vehicles; vehicle comparison trials over same routes and times of the day; added bio-diesel fuel; better monitoring for engine maintenance; used MasterDrive or Drive Smart training for drivers in fleet; and regular emission testing. Most respondents said the interventions had been successful with improvements ranging from 4% to 50% or more by use of different vehicle and through driver training for fuel efficiency, but the firm that switched to diesel did not notice much difference.

The interviewees were then asked to rate obstacles to fuel efficiency on a scale of 1 to 5 with 1 being the most important. Only six respondents said that they did not have any obstacles. Others comments from the *Bus & Coach* sector included: the observation that with diesel buses you cannot improve as much and there are problems with older vehicles and the capital cost of replacing them. Another obstacle is the hot seating of drivers, whilst some suggested they had more important things to do or lacked resources for fuel efficiency projects and had no internal benchmarking but they were considering starting.

In the *Company Car / SUV* sector it was noted that vehicles were often the choice of the employees or the make and model was determined by company policy. Others

³ R. (1999) **One operators perspective for improving the fuel efficiency of the commercial vehicle fleet.** One day conference on improving vehicle fuel efficiency to reduce costs and environmental impact, 15th April, University of Huddersfield

⁴ Wilcox D. (1999) Sobering results from sheets-to-the-wind tests. **Transport Engineer**, August, p.30

had not thought about obstacles, besides they had too many drivers who are too busy and under pressure to have interest in or time for considering fuel efficiency matters.

Contractors wanted better broadcast information on fuel types to enable them to compare fuels objectively. Some looked to Government incentives. Others admitted they lacked the necessary planning staff or resources to conduct monitoring; besides other aspects of the business were more important.

Taxis are all owned by contracted staff so there is less incentive. Where there are several drivers for one vehicle working in shifts there is little incentive to monitor fuel efficiency closely and there is no obligation to report.

Heavy Vehicle operators saw driver behaviour, maintenance routines, the gathering of information, getting other people to buy in, and external influences on driver behaviour as obstacles.

For *light vehicles* the obstacles mainly centred on maintenance issues, the type of work to which the vehicles were applied, problems with dealerships not providing good accurate information, and traffic congestion nullifying most attempts to improve efficiency.

These obstacles are a recurring litany indicating it will not be a simple task to overcome them. Some attitudes are deeply ingrained and adoption of new ways will take an industry culture shift unless the industry is subjected to severe jolts such as rapidly rising fuel costs.

Specifically, respondents were asked to rank, time, knowledge of techniques and methods and availability of unbiased information as obstacles to implementing fuel efficiency measure. The responses with 1 being most important and 5 least important are listed in the following Tables 2.16 to 2.18 by sectors.

Table 2-16 Lack of time

SUB-SECTOR	TIME					Total
	1	2	3	4	5	
Bus & Coach			1			1
Company Car / SUV	1	3			1	5
Contractors		2	2		1	5
Taxi	1	2			5	8
Heavy Service Vehicles	2	3	2		1	8
Light Vehicles/Vans/Utes	3	1	2	1		7
Total	7	11	7	1	8	34

The number of responses ranking time as an obstacle totalled 34. Eighteen of the 34 placed "time" (lack of) as rank one or two, with half that number ranking this factor as four and five, mostly indicating that if it is important they will reorganise priorities as far as time goes. Taxis operators were clear that time was not an important factor but the other sectors scattered their rankings more widely.

Table 2-17 Knowledge of techniques and methods

SUB-SECTOR	KNOWLEDGE OF FUEL SAVING TECHNIQUES AND METHODS					
	1	2	3	4	5	Total
Bus & Coach					1	1
Company Car / SUV	3		1		1	5
Contractors		4	1		1	6
Taxi	1		4		3	8
Heavy Service Vehicles		3	3	1	1	8
Light Vehicles/Vans/Utes	1	2	2		1	6
Total	5	9	11	1	8	34

One third of the 34 respondents saw knowledge of techniques and methods as a middle ranking issue, 14 saw it as more important by assigning ranks one and two, whilst nine respondents did not see this factor as very important at all. No sector was greatly biased to either extreme.

Table 2-18 Availability of unbiased information

SUB-SECTOR	AVAILABILITY OF UNBIASED INFORMATION					
	1	2	3	4	5	Total
Bus & Coach	1	1				2
Company Car / SUV	1		1		2	4
Contractors	4	1	2			7
Taxi	2	2		1	2	7
Heavy Service Vehicles	1	1	4	1		7
Light Vehicles/Vans/Utes	1	1	2		2	6
Total	10	6	9	2	6	33

This factor was seen as relatively more important than unimportant across all sectors with 16 recording ranks of one or two, and only eight indicating the availability of unbiased information as being of low importance. Even so, there appears to be considerable interest in receiving information on fuel consumption monitoring which will provide actual figures related to operator's own use rather than general information derived from industry-wide data sources. Table 2-19, comprising the views of 54 operators, indicates strong bias to "very interested" in this matter of fuel consumption monitoring.

Table 2-19 Information on improving fuel consumption monitoring

SUB-SECTOR	INTERESTED IN RECEIVING INFORMATION ON FUEL CONSUMPTION MONITORING					
	Not interested at all	Not particularly interested	Possibly interested	Interested	Very interested	Total
Bus & Coach		1		4	4	9
Company Car / SUV				4	2	6
Contractors			2	3	5	10
Taxi			1		8	9
Heavy Vehicles				5	5	10
Light Vehicles			3	2	5	10
Total	0	1	6	18	29	54

More interest was shown in obtaining information about improving fuel efficiency, which is the focus of Table 2-20. Some 47 of the 53 respondents were either interested or very interested.

Table 2-20 Information on improving fuel efficiency

SUB-SECTOR	INFORMATION ON IMPROVING FUEL EFFICIENCY				
	Not particularly interested	Possibly interested	Interested	Very interested	Total
Bus & Coach	1		4	4	9
Company Car / SUV			3	2	5
Contractors		2	4	4	10
Taxi			2	7	9
Heavy Service Vehicles		1	3	6	10
Light Vehicles/Vans/Utes		2	3	5	10
Total	1	5	19	28	53

Having established that considerable interest exists for receiving information, the question to follow addressed how the respondents would like to receive that information. By far the majority (48 out of 54) wished to receive the information electronically via email. This reflects the ubiquitous nature of electronic communications and probably the ease with which any information received electronically can be passed on to others in an organisation.

Table 2-21 Preferred method of communication

SUB-SECTOR	PREFERRED METHOD OF COMMUNICATION		
	Electronically via email	Hard copy via post	Total
Bus & Coach	8	1	9
Company Car / SUV	5	1	6
Contractors	9	1	10
Taxi	8	1	9
Heavy Service Vehicles	10		10
Light Vehicles/Vans/Utes	8	2	10
Total	48	6	54

We turn next to a consideration of which organisation respondents would go to for the desired information. The answers provided reflect expectations that the nominated organisations would have the desired information, and/or that they could be relied upon for the quality of that information. Table 2-22 tabulates the results by sectors for 50 useable responses.

Table 2-22 To which organisations would you go for information?

TO WHICH ORGANISATION WOULD YOU GO FOR INFORMATION	SUB-SECTOR						
	Bus & Coach	Company Car / SUV	Contractors	Taxi	Heavy Service Vehicles	Light Vehicles/ Vans/Ute	Total
Don't know	1	1	1	2	1		6
Would not bother	1						1
Other	1	2	1	1		1	6
Government organisation	2	2	2	1		4	11
Other vehicle operators					1		1
Trade or Transport Association	1		2	3		3	9
Transport Press						1	1
Vehicle manufacturer/distributor	2	1	3	2	7		15
Total	8	6	9	9	9	9	50

Vehicle manufacturers/distributors scored 15 followed by Government organisation with 11 and Trade or Transport Association on nine. Heavy Service Vehicle operators looked mainly to the manufacturers (7 out of 15) but no other sector showed much deviation from the general pattern of responses to the sources suggested in the questionnaire. Respondents were, however, encouraged to nominate other sources and these are listed in Table 2-23.

Table 2-23 To which other organisations would you go for information?

TO WHICH ORGANISATION WOULD YOU GO FOR INFORMATION	SUB-SECTOR						
	Bus & Coach	Company Car / SUV	Contractors	Taxi	Heavy Service Vehicles	Light Vehicles/ Vans/Ute	Total
AA						1	1
Also other operators and Transport press					1		1
Bus & Coach Ass, Tyre Suppliers, Fuel companies	1						1
Bus & Coach association	1						1
Contractors Federation (Trade or transport federation) - prompted (all)			1				1
EECA	1						1
Government organisation (Fuel Saver)			1				1

TO WHICH ORGANISATION WOULD YOU GO FOR INFORMATION	SUB-SECTOR						
	Bus & Coach	Company Car / SUV	Contractors	Taxi	Heavy Service Vehicles	Light Vehicles/ Vans/Ute	Total
Fuel company					1		1
Fuel company websites, AA, Custom Fleet, Government, LTSA light car		1					1
Google			1				1
Government organisation						1	1
Government, manufacturer, other vehicle operator	1						1
Govt ECCA	1						1
Head Office - Workshop Director -> Chief Engineer	1						1
Internet			1	1		1	3
Internet: particularly for information on emerging technology				1			1
Leaseplan: Fleet Manager, LTNZ Fuelsaver					1	1	1
Might already know lots of the information		1					1
Mike Noon GM Motoring Advocacy at AA in WLG						1	1
No idea really					1		1
Not sure	1						1
Oil/Fuel company					1		1
Other vehicle operators		1					1
Parent organisation is one of the largest heavy vehicle distributors, and HV operators, in the southern hemisphere			1				1
Through Internet					1		1
Trade and transport organisation, vehicle manufacturer						1	1
Trade or Transport Association & Vehicle distributor					1		1
Transport Association; roadng NZ does very little. ERMA/EECA mentioned			1				1
Vehicle distributor & govt organisation						1	1
Vehicle manufacturer/distributor					1		1
Vehicle manufacturer/distributor						1	1
Vehicle manufacturer/Distributor				1			1
Websites such as greencars.com and rightcars				1			1
www.rightcar.govt.nz		1					1

TO WHICH ORGANISATION WOULD YOU GO FOR INFORMATION	SUB-SECTOR						
	Bus & Coach	Company Car / SUV	Contractors	Taxi	Heavy Service Vehicles	Light Vehicles/ Vans/Ute	Total
Total	7	4	6	4	8	8	37

Eleven respondents were forthcoming on the form of assistance they would like to receive with more than one response for the same source as shown in Table 2-24.

Table 2-24 Form of assistance unprompted

SUB-SECTOR	UNPROMPTED				
	Case studies	Best Practice Guides	Monitoring software	Specialist Adviser	Total
Bus & Coach					
Company Car / SUV					
Contractors			1	1	2
Taxi	1		1		2
Heavy Service Vehicles		1			1
Light Vehicles/Vans/Utes	1	1	4		6
Total	2	2	6	1	11

When prompted, all respondents (54) made their indications as set out in Table 2-25.

Table 2-25 Form of assistance prompted

SUB-SECTOR	PROMPTED				
	Case studies	Best Practice Guides	Monitoring software	Specialist Adviser	Grand Total
Bus & Coach	3	3	2		8
Company Car / SUV		1	1		2
Contractors	4	3	4	1	12
Taxi	6	4	2	1	13
Heavy Service Vehicles	3	4	3	1	11
Light Vehicles/Vans/Utes	3	5			8
Grand Total	19	20	12	3	54

When unprompted the following replies were each given once:

Best practice case studies, monitoring software
 Educating the public- or organisation
 General analysis of fuel saving tips - Government
 Government or Fuel Company
 In-company – type of vehicle
 Media
 Monitoring software
 Nothing

Older plant and equipment - lack of information - need info on used equipment - handout material
 PowerPoint presentations on software and operational specific advice in their working environment
 Training for Drivers
 Training for Drivers; reports from fuel suppliers
 Which cars are fuels efficient?

Respondents were given the opportunity to nominate other forms of assistance they would like to receive resulting in the list presented in Table 2-26. These indicate a range of forms of assistance each of which reflects areas that could be exploited in future targeted assistance.

Table 2-26 Other forms of assistance

OTHER FORMS OF ASSISTANCE	SUB-SECTOR
A full management system & set up to allow for city v suburbs and able to apply a benchmark	Light Vehicles
Company can take care of it themselves - information possible to find if intention to do so to put system in place	Light Vehicles
Driving tips	Heavy Vehicles
Driving videos best practice	Company Car / SUV
Energy audit	Bus & Coach
Government?	Heavy Vehicles
Guides for members as well as for staff	Light Vehicles
Literature, reports, trade magazines, software	Bus & Coach
Media	Taxi
Operational specific advice - comprises one or more visits to the operator by specialist advisor	Light Vehicles
PowerPoint presentations	Contractors
Subsidies by sustainable business	Taxi
Video based training	Bus & Coach
What models researched in motor industry and what additions might assist	Heavy Vehicles

It is important that any supplier of information is seen as authoritative and independent and subsequently interviewees were asked to nominate who would be their preferred supplier of such information.

Table 2-27 Who is a preferred supplier of information?

SUB-SECTOR	PREFERRED SUPPLIER					
	Other	Private consultancy	Vehicle dealership	Trade or Transport Association	Government	Total
Bus & Coach	2			2	3	7
Company Car / SUV	1		1			2
Contractors		1		2	5	8
Taxi	1		1	1	6	9
Heavy Service Vehicles			2	5	2	9
Light Vehicles/Vans/Utes			1	4	3	8
Total	4	1	5	14	19	43

The preferred supplier of information is either government sources or trade / Transport Associations (19 and 14 out of 43 respectively). This probably reflects confidence in these sources over the alternatives.

Table 2-28 Is the present information on fuel consumption appropriate?

SUB-SECTOR	APPROPRIATE			
	Don't know	No	Yes	Total
Bus & Coach	1	5	3	9
Company Car / SUV	2	1	2	5
Contractors	1	2	7	10
Taxi		3	6	9
Heavy Service Vehicles	1	5	4	10
Light Vehicles/Vans/Utes	1	3	6	10
Total	6	19	28	53

A little over half of the respondents thought that the information on fuel consumption is appropriate. However, when questioned about the adequacy of that information the yes response fell below 50%.

Table 2-29 Is the present information of fuel consumption adequate?

SUB-SECTOR	ADEQUATE			
	Don't know	No	Yes	Total
Bus & Coach	1	6	2	9
Company Car / SUV	2	1	3	6
Contractors	1	6	3	10
Taxi		3	6	9
Heavy Service Vehicles	1	5	4	10
Light Vehicles/Vans/Utes		7	3	10
Total	5	28	21	54

The results in Table 2-29 raise the issue of how good is the information and we asked respondents to provide their assessment of the quality of fuel consumption information they receive. This is shown in Table 2-30.

Table 2-30 Assessment of the quality of fuel consumption information

SUB-SECTOR	QUALITY OF PRESENT INFORMATION					Total
	Poor	Below average	Average	Good	Very good	
Bus & Coach	2	3	2	1		8
Company Car / SUV		1	2	3		6
Contractors	1	2	6			9
Taxi		2	1	4	2	9
Heavy Service Vehicles		3	5	2		10
Light Vehicles/Vans/Utes		3	3	3		9
Total	3	14	19	13	2	51

The split is fairly even between those who see the quality of fuel consumption information as below average or poor, and those who deem it to be average, and those who say it is good to very good. Only two taxi respondents were prepared to say the information was very good and informants from other sectors mostly clustered around the average rating.

When asked how they would like such information structured the responses were:

1. Any that were unbiased
2. average by unit, by model, by driver
3. Backing information and comparisons
4. benchmarking - web pages tracking industry sector -
5. By energy companies, in everyone's minds
6. By individual driver and individual vehicle
7. By individual driver, vehicle: make; type and group.
8. by manufacturer as vehicle make, vehicle type and vehicle group
9. case studies
10. Geo-mapping route optimisation service, vehicle make, vehicle type
11. government information rather than manufacturer information would be good, govt should be more involved in checking manufacturer info
12. impartial, testing various manufacturers, comparing manufacturers
13. Implications of load factors on vehicles
14. Individual
15. individual driver
16. Individual vehicle
17. individual vehicle, take environments into consideration
18. individual vehicle, vehicle make
19. no need to look
20. table format
21. tailored to industry and vehicle group; geographical/vehicle/maintenance records
22. unsure
23. use proven techniques with costing of each technique that is available by vehicle types
24. vehicle group
25. vehicle make
26. Vehicle make and vehicle type
27. vehicle make, vehicle type - using graphs
28. vehicle makes + sizes: with machinery - diff variety -> all different makes and models are available in NZ->hard to get evaluated
29. vehicle type
30. Vehicle type - international benchmark
31. vehicle type and make
32. vehicle type taking into account location/topography
33. web sites, email

There is a push by government to introduce bio-fuel into the fuel mix available in New Zealand. This is seen as a measure to supplement and thereby reduce the need to import fuel as well as to contribute positively to the reduction in production of greenhouse gases from the operation of transport vehicles. It is therefore interesting to find out what the sector is doing with respect to use of alternative fuels. Table 2-31 provides an insight.

Table 2-31 Do you currently use an alternative fuel?

SUB-SECTOR	DO CURRENTLY USE AN ALTERNATIVE FUEL							
	No	Bio	Yes - Unstated	CNG	LPG	Hybrid	Electric	Total
Bus & Coach	5	1	2				1	9
Company Car / SUV	6							6
Contractors	8				1			9
Taxi	2				3	1		6
Heavy Service Vehicles	9				1			10
Light Vehicles/Vans/Utes	8			1				9
								0
Total	38	1	2	1	5	1	1	49

The clear majority do not use alternative fuels (38 out of 49) and those that do are lightly scattered over the fuel types listed in Table 2-31 but LPG being the most

common alternative especially with taxis. With such a small uptake currently, and only the bus and coach sector indicating use now of bio-fuel blends, it is important to see if the industry is contemplating any significant changes. We ask the question with results tabulated in Table 2-32.

Table 2-32 Have you considered using an alternative fuel?

SUB-SECTOR	ARE YOU CONSIDERING USING AN ALTERNATIVE FUEL		
	No	Yes	Total
Bus & Coach	1	8	9
Company Car / SUV	2	4	6
Contractors	5	5	10
Taxi		9	9
Heavy Service Vehicles	5	5	10
Light Vehicles/Vans/Utes	4	5	9
Total	17	36	53

Two thirds of the respondents answered that yes they had considered using an alternative fuel. This indicates that they have done some homework and come to decisions that mostly have resulted in them not using alternative fuels apart from the taxis sector. The heavy vehicle fleet is currently wedded to the use of diesel fuel even though about half of the operators in that sector have considered using an alternative fuel. A switch to an alternative fuel in that sector is seen as unlikely in the eyes of the key influencers interviewed from that sector (see section one - key influencers).

As with many businesses, attention to what clients want is paramount if one's business is to survive. Therefore, we look to see what message customers are giving commercial vehicle operators and whether a "green agenda" is emerging.

Table 2-33 Do your customers demand you have a sustainable operation?

SUB-SECTOR	DO YOUR CUSTOMERS DEMAND THAT YOU HAVE A SUSTAINABLE OPERATION		
	No	Yes	Total
Bus & Coach	6	3	9
Company Car / SUV	3	3	6
Contractors	6	4	10
Taxi	2	7	9
Heavy Service Vehicles	6	4	10
Light Vehicles/Vans/Utes	6	4	10
Total	29	25	54

A little under half of the respondents acknowledged that their customers are now demanding they operate in a sustainable manner. Just what definition is used to describe a "sustainable operation" is not necessarily the same throughout the industry. Nevertheless, the industry has noted the rising environmental concerns in the community reflected in government policy initiatives with a realisation that unsustainable business practices may need to be addressed. Moving to do

something about fuel efficiency is for them a win-win action as it will help reduce fuel costs at the same time as scoring on the environmental monitor. To assess the level of commitment to achieving better environmental outcomes, we asked respondents whether they have or plan to conduct environmental audits. This is reported in Tables 2-34 and 2-35.

Table 2-34 Have conducted or are planning to conduct an environmental audit?

SUB-SECTOR	ENVIRONMENTAL AUDIT			
	Don't Know	No	Yes	Total
Bus & Coach		7	2	9
Company Car / SUV		3	3	6
Contractors		3	7	10
Taxi		5	4	9
Heavy Service Vehicles	1	9		10
Light Vehicles/Vans/Utes		3	7	10
Total	1	30	23	54

Slightly less than half the 54 respondents spread over all sectors have not undertaken an environmental audit, with Contractors and Light Vehicle operators most active in conducting such audits and the Heavy Service Vehicles and Bus and Coach operators being the sectors least oriented to environmental audits. During the interview process, a frequent comment following this question was that they were contemplating undertaking environmental audits. Whether the interview triggered this response or whether it was a reflection on developing company policy, is not certain. For those that do conduct environmental audits now, 18 of the 23 said they would be continuing to do so in the future on a regular basis.

Table 2.35 Will the environmental audit be a regular event?

SUB-SECTOR	ENVIRONMENTAL AUDIT ON A REGULAR BASIS
	Yes
Bus & Coach	1
Company Car / SUV	
Contractors	6
Taxi	4
Heavy Service Vehicles	
Light Vehicles	7
Total	18

It can be seen from Table 2-35 that neither the heavy service vehicles nor company car/SUV sub-sectors plan to conduct an environmental audit on a regular basis. Of the 23 that had conducted an environmental audit 18 responded that it would become a regular event.

2.5 IN DEPTH INTERVIEWS CONCLUSION

Any fuel efficiency programme needs to have management support and to be founded upon a robust fuel monitoring system. The face to face interviews with the operators enabled a detailed discussion to take place around the questions and for greater certainty in the responses. Against the background of high fuel costs, fuel consumption management is apparently important, but monitoring from the point of view of operational efficiency could be improved and this would enable more effective and efficient fuel management techniques and methodologies.

The majority of interviewees (66.6%) indicated that they had someone responsible for fuel efficiency and when this was probed deeper a wide range of job titles was revealed, which suggests different levels of importance and understanding of precisely what is 'fuel efficiency'. There were 31 different positions identified by 38 respondents with this function being seen as an adjunct to other responsibilities. None had a dedicated 'Fuel Champion' although two companies were considering making such an appointment. This was also an issue that was sub-sector sensitive.

Analysis of the responses to the questions relating to fuel consumption monitoring and the uses to which information from monitoring systems can be put were very revealing and the conclusion to be drawn is that most of the monitoring that takes place is financially based. What this means is that the fuel spend is reported every four weeks or every month as is the norm with internal accounting procedures. The operational efficiency of the vehicles measured by their fuel consumption for a given distance tends not to take place. There are many benefits to be drawn from using such, but few are being applied. This is despite the majority (73.6%) of interviewees indicating that fuel efficiency was important or very important to them. Improvements in fuel consumption monitoring can reap major benefits as well as being the foundation for effective fuel management.

It is generally accepted that a vehicle's driver can have a major influence on its fuel consumption yet few operators (14.8%) evaluate a drivers skills before employing them. However, once employed a majority (55.6%) do have a continuing skills development programme, but with regards to sustaining skills development only one rewarded fuel conservation.

The key obstacles to fuel efficiency were confirmed as time; knowledge of techniques and methods and availability of unbiased information. Whilst only operators can do anything about the first obstacle, the other two can be alleviated by other agencies through the provision of high quality unbiased information. Interviewees confirmed that they would be interested or very interested in receiving such information pertaining to fuel consumption monitoring (82.8%) and fuel efficiency (88.7%); their preferred method of communicating such information being electronically via the internet.

At present, the top three organisations that operators would go to are in order of preference are:

- | | |
|-------------------------------------|-----|
| 1. Vehicle manufacturer/distributor | 30% |
| 2. Government organisation | 22% |
| 3. Trade or Transport Association | 18% |

However, when asked who would be their preferred source of information the top three positions are:

- | | |
|-------------------------------------|-------|
| 1. Government organisation | 44.2% |
| 2. Trade or Transport Association | 32.6% |
| 3. Vehicle manufacturer/distributor | 11.6% |

This suggests that there could be a strong role for Government and Trade or Transport Associations to play in helping operators, and that operators would be more accepting of information from them.

The majority of operators (77.6%) did not currently use alternative fuels whilst (67.9%) were considering such fuels. The driving force behind alternative fuels being reduced costs and environmental benefits. Some operators (46.3%) are facing demands from customers to have a sustainable operation although the precise definition of sustainable can vary from 'carbon neutral' to 'carbon minimisation'. With the increase in Corporate Social Responsibility (CSR) reporting it is likely that this will increase – driven by the users of transport. A smaller minority (42.6%) had conducted an environmental audit but only eighteen (33.3%) planned to make this a regular event.

3.PART THREE: ANALYSIS OF SURVEY OF 300 OPERATORS

3.1 OPERATOR SURVEY SUMMARY

Part Four of this project report focuses on a telephone based questionnaire survey of 300 New Zealand commercial vehicle operators across eight sub-sectors comprising both heavy and light vehicle fleets. This telephone survey was designed to enable assessment of current fuel-efficient fleet management practices (including fuel-use monitoring). Those surveyed were drawn as a stratified sample from the database held by Land Transport New Zealand (LTNZ) now renamed New Zealand Transport Agency (NZTA). The client was responsible for creating the stratified sample.

The principal method of analysis of the responses received was tabulation and cross tabulation. In all, 25 tables are included in this part of the report and they form the basis of the definitive evaluation. The telephone survey instrument is attached as Appendix C to this report.

This analysis of telephone interviews should be read in conjunction with the other parts to this report, one analysing the views of 54 operators who were interviewed face-to-face, another analysing the views of 300 drivers surveyed on the job, plus the analysis of the views of six key influencers drawn from the primary Trade Associations or federations. The key influencers were also interviewed face-to-face.

Analysis of the information provided through the telephone questionnaire indicates that there are strong similarities here to the responses given in the face-to-face interviews with the 54 operators and with the six key influencers. This reinforces the likelihood that interventions recommended in this report stand a good chance of bringing about improved fuel efficiency in the New Zealand commercial vehicle fleet.

We reiterate here that a prerequisite to being able to assess the relative impact of any of these possible actions is that operators instigate fuel-use monitoring regimes. That is the first step many in the industry have yet to take.

A high proportion of operators in the telephone survey want to improve their fuel monitoring. They are generally not well versed in the range of possible measures that could be taken or where they could go to obtain that information. For this they need access to authoritative information from trusted sources. Their preferred source is their Trade Association and/or the government. Operators are suffering a shortage of drivers. There is recognition of the need for ongoing driver development to improve driver skills to drive in a fuel efficient manner. Operators understand that drivers are a key factor in bringing about fuel savings. There is, however, an almost complete absence of driver incentive schemes. That action does not currently fit with the culture of these operators.

To summarise the responses regarding obstacle to implementation of fuel efficiency measures, the telephone survey respondents saw the major obstacles to improving fuel efficiency being time, knowledge and availability of unbiased information. Whilst

the second and third obstacles can be reduced by external or third party initiatives the resource of time is something that can only be dealt with internally by a vehicle operator.

3.2 OPERATOR SURVEY INTRODUCTION

This specific section of the report focuses on heavy and light commercial vehicle operators and in accordance with the objectives set for the project assesses current fuel-efficient fleet management (including fuel use monitoring) practices as viewed by the vehicle operators. The survey was undertaken in August 2009 against a background of the highest fuel prices ever recorded in New Zealand.

300 operators from a number of sub-sectors and a range of fleet sizes were interviewed telephonically and their responses recorded. The sub-sectors consisted of:

- Bus & Coach;
- Company Car / SUV;
- Contractors;
- Courier;
- Goods Service;
- Heavy Goods;
- Light Van / Ute;
- Light Vehicle and
- Taxi

Table 1 below shows the sub-sectors and fleet sizes produced from 299 useable responses.

Table 3-35 Sub-sector representation

SUB-SECTOR	TOTAL
Bus & Coach	9
Company Car / SUV	51
Contractors	64
Goods Service	53
Heavy Vehicle	33
Light Van / Ute	76
Light Vehicle	11
Taxi	2
Total	299

Note: there were three blanks recorded in the sub-sector field

It can be seen from Table 3-1 that the bus and coach and taxi sub-sectors are not as well represented in this sample as the other sub-sectors and this must be taken into consideration when conducting the analysis, due to the impact of weighting.

3.3 OPERATOR SURVEY METHODOLOGY

Three hundred vehicle operators across a range of sub-sectors were surveyed by telephone and their responses to a questionnaire (Appendix C) recorded and latter entered into a database for analysis. The principle method of investigation is to tabulate and cross tabulate the data at the sub-sector level.

The sub-sectors that combine to make up the heavy vehicles are Bus & Coach, Contractors, Goods Service and Heavy Vehicles, which provide a total of 157 operators (53% of the sample). The remaining operators are all classified as light vehicle operators.

3.4 OPERATOR SURVEY ANALYSIS

A dataset comprising of 16,500 useful and useable observations was created as a result of the survey. Some of the data fields were blank and unless indicated otherwise in the following tables, were not included in any analysis.

FUEL MONITORING AND THE IMPORTANCE OF FUEL EFFICIENCY

The first fuel efficiency intervention and the foundation upon which fuel efficiency is built is that of monitoring (data collection, analysis and reporting) of fuel consumption data at the individual driver and vehicle level. To this end operators were asked whether they monitored fuel consumption. Their responses are shown in Table 3-2, which shows that the vast majority of operators do monitor their fuel consumption.

Table 3-36 Does your company monitor fuel consumption?

SUB-SECTOR	DOES COMPANY MONITOR				
	Don't Know	No	Yes	Total	Yes (%)
Bus & Coach		1	8	9	88.9%
Company Car / SUV		15	34	49	69.4%
Contractors		14	47	61	77.0%
Goods Service	1	7	45	53	84.9%
Heavy Vehicle	1	2	30	33	90.9%
Light Van / Ute		15	57	72	79.2%
Light Vehicle		3	8	11	72.7%
Taxi		1	1	2	50.0%
Total	2	58	230	290	79.3%

It can be seen that there is significant differences between the sub-sectors with heavy vehicles and bus and coach monitoring the most and taxis along with company car / SUV monitoring the least. This could be due to the higher fuel consumption of the heavier vehicles and thereby the greater cost.

When asked to state the total distance travelled or the volume of fuel consumed by the fleet in the last financial year only 39 respondents could supply a figure including estimates. This suggests that the monitoring process does not involve producing data on distance travelled and fuel consumption as measured by l/100 km (a form of operational performance monitoring).

It must be pointed out that during the 54 in-depth face-to-face interviews that were conducted with operators it was discovered that monitoring tended to be financial monitoring rather than operational performance monitoring. Therefore, these results are more likely to refer to cost monitoring in terms of monthly fuel spend per vehicle instead of fuel consumption performance, which is what the survey was intended to determine.

If a company is monitoring effectively then someone must be managing the process and this led to respondents being asked if there was someone responsible for the fuel efficiency of the company vehicles and to state the person's job title. Table 3-3 shows the breakdown of whether or not companies have someone responsible for fuel efficiency.

Table 3-37 Do you have someone responsible?

SUB-SECTOR	DO YOU HAVE SOMEONE RESPONSIBLE			
	No	Yes	Total	Yes (%)
Bus & Coach	2	7	9	77.8%
Company Car / SUV	28	23	51	45.1%
Contractors	34	28	62	45.2%
Goods Service	22	30	52	57.7%
Heavy Vehicle	9	24	33	72.7%
Light Van / Ute	44	32	76	42.1%
Light Vehicle	4	7	11	63.6%
Taxi	1	1	2	50.0%
Total	144	152	296	51.4%

Overall only 51.4% of companies have someone responsible with a wide dispersion from 50% in the taxi sub-sector to 77.8% in the bus and coach sub-sector. Against a background of high fuel costs such a figure appears low, but there is no previous data to compare it against to determine if there have been any changes. On closer examination the job titles of these people responsible for fuel efficiency ranged from mechanics and drivers to managing directors.

The potential sources of data on fuel consumption other than being recorded by the driver were investigated, because all sources have a role to pay and establishing their role and its importance will help in the development of fuel efficiency strategies. It can be seen in Table 3-4 that the vast majority of operators exclusively use fuel cards to source their fuel.

Table 3-38 How do you source your fuel?

SUB-SECTOR	FUEL SOURCE		
	CARD ONLY	MIXED	OWN TANK ONLY
Bus & Coach	7	1	
Company Car / SUV	34	2	
Contractors	42	14	1
Goods Service	47	4	
Heavy Vehicle	25	6	1
Light Van / Ute	61	4	1
Light Vehicle	9	1	
Taxi	1		
Total	226	32	3

The fuel card companies will bill the operators on a regular basis and it is possible that instead of just supplying a paper copy or electronic pdf file showing the total amount of fuel purchased in a specific period, the original electronic files can be downloaded from which the operator can then produce their own bespoke reports. This would require the fuel card company capturing the vehicles odometer reading at the time fuel is drawn and if possible some form of driver identification. Therefore, the system becomes reliant upon the driver correctly entering the odometer reading, which will enable accurate vehicle performance data to be captured and, if driver performance is to be monitored as well, the driver must be identified at the time of refuelling. Generating data and reports is meaningless unless someone is receiving and taking action based upon the information contained in a report. It is therefore important to determine that reports are being produced or received (bearing in mind that most operators use fuel cards). Table 3-5 shows that out of 290 operators just over half (55.9%) are actually receiving or producing such reports and this does appear to be something that is sector sensitive.

Table 3-39 Do you produce or receive reports?

SUB-SECTOR	PRODUCE OR RECEIVE REPORTS				
	Don't Know	No	Yes	Total	Yes (%)
Bus & Coach	1	2	6	9	66.7%
Company Car / SUV	1	23	25	49	51.0%
Contractors		26	36	62	58.1%
Goods Service	5	17	29	51	56.9%
Heavy Vehicle	1	6	26	33	78.8%
Light Van / Ute	1	38	35	74	47.3%
Light Vehicle	1	5	4	10	40.0%
Taxi		1	1	2	50.0%
Total	10	118	162	290	55.9%

Care must be taken when interpreting this information, because the person responding to the survey might not be the person to whom a report would be sent or tasked with producing a report. If accepted at face value however it does reveal an area for improvement.

Subsequent investigation reveals that of the 162 that produce or receive a report, 146 check their accuracy, which again shows an area for a small improvement. With this in mind it is important to understand how important fuel consumption management is to vehicle operators. Table 3-6 shows the response to such a question and unsurprisingly it was found to have a very high number of responses that considered it to be very important or important.

Table 3-40 How important is fuel consumption management?

SUB-SECTOR	HOW IMPORTANT IS FUEL CONSUMPTION MANAGEMENT					Total
	Unimportant	Not particularly important	Average with other costs	Important	Very important	
Bus & Coach			1	1	7	9
Company Car / SUV	1	7	9	14	19	50
Contractors	1	3	12	4	43	63
Goods Service	1	5	2	16	29	53
Heavy Vehicle		2		5	26	33
Light Van / Ute		6	11	21	38	76
Light Vehicle		1	1	3	6	11
Taxi					2	2
Total	3	24	36	64	170	297

It can be surmised that almost 79% (234/297) of respondents found fuel consumption management to be important or very important and only 9.1% (17/297) found it to be unimportant or not particularly important. Table 3-7 expresses the information in Table 3-6 in percentage terms.

Table 3-41 How important is fuel consumption management in % terms?

SUB-SECTOR	HOW IMPORTANT IS FUEL CONSUMPTION MANAGEMENT				
	Unimportant	Not particularly important	Average with other costs	Important	Very important
Bus & Coach			11%	11%	78%
Company Car / SUV	2%	14%	18%	28%	38%
Contractors	2%	5%	19%	6%	68%
Goods Service	2%	9%	4%	30%	55%
Heavy Vehicle		6%		15%	79%
Light Van / Ute		8%	14%	28%	50%
Light Vehicle		9%	9%	27%	55%
Taxi					100%

Extra care must be taken with the small number of taxis in the sample, but showing the breakdown of the data in percentage terms does enable other judgements to be made. Companies, in which vehicle fuel costs are a small part of overall business costs such as manufacturing companies, might not consider fuel consumption management to be important.

The collection and generation of fuel consumption information by itself is of little use on its own. It has to be used. Comparing fleet metrics with external benchmarks or

other fleet information enables changes in performance to be measured. However, as shown in Table 3-8 only a minority of respondents (34.5%) actually do this.

Table 3-42 Are external benchmarks or other fleet information used?

SUB-SECTOR	USE OF EXTERNAL BENCHMARKS OR OTHER FLEET INFORMATION			
	Don't know	No	Yes	Total
Bus & Coach	1	2	6	9
Company Car / SUV		36	15	51
Contractors	2	43	18	63
Goods Service		34	19	53
Heavy Vehicle		16	17	33
Light Van / Ute		51	23	74
Light Vehicle		9	2	11
Taxi			2	2
Total	3	191	102	296

This has identified an area where it is possible for vehicle operators to improve their fuel efficiency. It is, however, reliant upon having a robust monitoring system, which has already been reviewed. This part of the analysis finishes by asking operators if they take fuel consumption into account when purchasing a vehicle and is intended to check if fuel efficiency is important. Table 3-9 shows that it is taken into account by 77.9% of respondents.

Table 3-43 Is fuel consumption taken into account when purchasing vehicles?

SUB-SECTOR	FUEL CONSUMPTION TAKEN INTO ACCOUNT DURING VEHICLE PURCHASE			
	Don't know	No	Yes	Total
Bus & Coach		1	8	9
Company Car / SUV		12	39	51
Contractors	1	18	44	63
Goods Service		7	46	53
Heavy Vehicle		7	26	33
Light Van / Ute		16	60	76
Light Vehicle		4	7	11
Taxi			2	2
Total	1	65	232	298

Quite a large proportion of all respondents in each sub-sector take fuel consumption into account and this can put pressure on vehicle manufacturers and dealerships. However, the composition and quality of information provided to vehicle operator's needs to be considered.

COMPOSITION AND QUALITY OF INFORMATION

Whilst vehicle operators can generate their own internal data and information they can also be influenced by external information made available through a number of mediums and from different resources. This next stage in the analysis will concentrate on this area. In the case of new vehicles operators, they were asked if

they thought fuel consumption information currently available was both appropriate (provides information on the important factors) and adequate (gives enough information on the appropriate factors). Their response to the first question is shown in Table 3-10.

Table 3-44 Is the current information on new vehicle fuel consumption appropriate?

SUB-SECTOR	APPROPRIATE			
	Don't know	No	Yes	Total
Bus & Coach	2		6	8
Company Car / SUV	13	12	25	50
Contractors	13	14	35	62
Goods Service	12	8	33	53
Heavy Vehicle	5	5	23	33
Light Van / Ute	17	20	38	75
Light Vehicle	3	2	5	10
Taxi	1		1	2
Total	66	61	166	293

Just over half 56.7% think that the information is appropriate with the remainder split almost equally between the other two conditions. The response to the question on adequacy is shown in Table 3-11.

Table 3-45 Is the current information on new vehicle fuel consumption adequate?

SUB-SECTOR	ADEQUATE			
	Don't know	No	Yes	Total
Bus & Coach	1	1	6	8
Company Car / SUV	14	10	26	50
Contractors	15	6	41	62
Goods Service	12	10	31	53
Heavy Vehicle	6	4	23	33
Light Van / Ute	20	10	45	75
Light Vehicle	3	2	5	10
Taxi	1		1	2
Total	72	43	178	293

Slightly more of the respondents 60.8% think that the information is adequate; with only a small percentage 14.7% replying that the information is inadequate.

Taken together the data in Tables 3-10 and 3-11 indicate that there is an opportunity for vehicle dealerships to help the purchasers of new vehicles, by providing more appropriate and adequate information on fuel consumption. Having dealt with new vehicles, the next step is to determine the views of operators on the quality of information that is presently available on fuel consumption?

Table 3-46 What is your view on the quality of the present information?

SUB-SECTOR	QUALITY OF PRESENT INFORMATION						Total
	Don't know	Below average	Poor	Average	Good	Very good	
Bus & Coach			1	3	5		9
Company Car / SUV	6	3	5	17	15		46
Contractors	4	12	3	20	15	3	57
Goods Service	9	10	4	13	11	4	51
Heavy Vehicle	4	4		11	10	1	30
Light Van / Ute	5	12	6	29	18	4	74
Light Vehicle	2	1	1	2	3	1	10
Taxi			2				2
Total	30	42	22	95	77	13	279

The figures in Table 3-12 reveal that only a third (32.3%) of vehicle operators think that the present information is good or very good. This suggests that another opportunity for encouraging more decisions on vehicle purchases is beckoning, because better informed operators should make better decisions. The key is getting the right information to them through the right communication channels. The appetite for further information on fuel monitoring and fuel efficiency needs to be checked to find out, if information was made available, would respondents be interested in receiving it. The data in Tables 3-13 and 3-14 contains the answers to these questions.

Table 3-47 Information on improving fuel consumption monitoring

SUB-SECTOR	WOULD YOU LIKE TO RECEIVE INFORMATION ON IMPROVING FUEL MONITORING					Total
	Not interested at all	Not particularly interested	Possibly interested	Interested	Very interested	
Bus & Coach	2		1	3	3	9
Company Car / SUV	2	13	3	14	19	51
Contractors	12	8	1	6	36	63
Goods Service		7	1	36	9	53
Heavy Vehicle	1	2	2	16	12	33
Light Van / Ute	5	10	5	29	26	75
Light Vehicle	1	2	1	2	4	10
Taxi					2	2
Total	23	42	14	106	111	296

The figures in Table 3-13 show that overall 73.3% of respondents would be interested or very interested in receiving information on how to improve their fuel consumption monitoring. This is a very high proportion and appears to reinforce earlier conjectures. The follow-up question referred to information on improving fuel efficiency and the results can be seen in Table 3-14.

Table 3-48 Information on improving fuel consumption efficiency

SUB-SECTOR	WOULD YOU LIKE TO RECEIVE INFORMATION ON IMPROVING FUEL EFFICIENCY					
	Not interested at all	Not particularly interested	Possibly interested	Interested	Very interested	Total
Bus & Coach	2		2	1	4	9
Company Car / SUV	2	11	4	13	21	51
Contractors	12	8	1	7	35	63
Goods Service		5	1	38	9	53
Heavy Vehicle	1	2	2	14	14	33
Light Van / Ute	5	11	5	29	26	76
Light Vehicle	1	1	1	3	4	10
Taxi					2	2
Total	23	38	16	105	115	297

Again a high proportion of respondents (74.1%) would be interested or very interested in receiving information on how to improve their fuel efficiency.

Reviewing vehicle operator responses to the composition and quality of data reveals that they have expressed a strong desire for receiving quality information on improving fuel monitoring and fuel efficiency. Such information could come from a variety of sources and its degree of independence and accuracy could be compromised by the source. That is to say there is a big difference between what is essentially marketing material from a supplier of a product or a service and information that is authoritative and independent in that the supplier has no vested interest in what is contained in the information. A number of respondents were unsure as to whom their first preferred supplier of such information should be, but out of 212 usable responses the clear leaders were their trade or Transport Associations (40.6%) followed by Government (35.4%) as shown in Table 3-15.

Table 3-49 Preferred supplier of information

SUB-SECTOR	PREFERRED SUPPLIER OF INFORMATION					
	Other	Private consultancy	Vehicle dealership	Government	Trade or Transport Association	Total
Bus & Coach			1	2	4	7
Company Car / SUV	1	1	4	14	14	35
Contractors	1		8	13	21	43
Goods Service		3	6	17	11	37
Heavy Vehicle	1		6	5	11	23
Light Van / Ute		1	12	21	22	56
Light Vehicle	1		3	2	3	9
Taxi	1			1		2
Total	5	5	40	75	86	212

Of the five others that were recommended, three suggested fuel companies and two web sites. Both a trade or Transport Association along with a government department could be seen as authoritative and independent whilst the remaining

three could have a vested interest. A fuel company is unlikely to recommend a competitors products nor is a vehicle dealership. Private consultancy could be independent, but they might not be seen as authoritative.

Having established the preferred sources of information the next task is to identify the preferred method of communication. From the 261 responses shown in Table 3-16 the majority (64.8%) would prefer emails. This would of course speed up the communications and be environmentally friendly.

Table 3-50 Preferred method of receiving information

SUB-SECTOR	PREFERRED METHOD OF RECEIVING INFORMATION			
	Electronically via email	Hard copy via post	Personal contact	Total
Bus & Coach	6	3		9
Company Car / SUV	33	11	1	45
Contractors	25	29		54
Goods Service	34	15		49
Heavy Vehicle	19	10		29
Light Van / Ute	43	18	2	63
Light Vehicle	8	2		10
Taxi	1		1	2
Total	169	88	4	261

A third (33.7%) would prefer to receive their information in a hard copy format through the post. However, efforts should be made to make electronic copies and emails more favoured.

A further part of the research inquired as to the preferred form of assistance that they would prefer. There were five possible responses: case studies material; good practice guides; monitoring software; site specific advice and other. Table 3-17 shows that there were very few unprompted responses, which implies that the respondents were not aware of what form help could take.

Table 3-51 Forms of assistance unprompted

SUB-SECTOR	UNPROMPTED RESPONSES			
	Case Studies	Best Practice Guides	Monitoring Software	Site Specific Advice
Bus & Coach	1			
Company Car / SUV		2		
Contractors	1			1
Goods Service				
Heavy Vehicle			1	
Light Van / Ute				
Light Vehicle				
Taxi				
Total	2	2	1	1

This is a very important issue because if vehicle operators are unaware of what forms of help will be useful to them they cannot ask for such help and an outcome of this research is that they might start asking for such assistance. The follow up question to its one was to prompt the respondents by naming the different forms of assistance and by logical extension getting them to think about what would help them. The responses to the prompts are shown in Table 3-18, which as expected contains a lot more data than Table 3-17.

Table 3-52 Forms of assistance prompted

SUB-SECTOR	PROMPTED RESPONSES			
	Case Studies	Best Practice Guides	Monitoring Software	Site Specific Advice
Bus & Coach	5	4		3
Company Car / SUV	4	15	4	3
Contractors	7	12	3	9
Goods Service	23	16	4	5
Heavy Vehicle	5	5	5	4
Light Van / Ute	19	26	10	5
Light Vehicle	5	2		2
Taxi	1			
Total	69	80	26	31

From Table 3-18 it can be deduced that vehicle operators favour the use of best practice guides and case studies, which also lend themselves to email for communication purposes. Site specific advice where an advisor visits a company and provides advice specific to their needs would be highly expensive. Finally, monitoring software whilst also easily emailed might need some sort of support function, which would add cost to the process. Other forms of assistance were recorded 74 times and the suggestions, which are quite varied, are listed in Appendix E.

The outcome from this part of the research is that vehicle operators are keen to receive authoritative information from an independent source and most would prefer to receive the information electronically; although, a sizable minority would prefer a hard copy. Few respondents could think unprompted of the form of assistance that they would prefer, but once prompted best practice guides and case study material were strongly favoured.

A key element in fuel efficiency is the driver of the vehicle and how well their fuel efficiency is managed and this is the next area of the research to be explored.

DRIVER MANAGEMENT

Another part of the project asked drivers who were being surveyed whether or not they normally drove that vehicle on the day of the survey and the majority responded that they did although the bus and coach sub-sector did not. Irrespective of whether or not drivers have dedicated vehicles or swap vehicles on a regular basis they need to be effectively managed.

The starting point is to assess a driver's skill in the area of fuel efficiency before employing them. Therefore, operators were asked if they did this and their responses are shown below in Table 3-19. The overall low figure of 10.5% could be influenced by the driver shortage and an emphasis on keeping the wheels turning, rather than identifying and employing only drivers who will save the company money through reduced fuel bills.

Table 3-53 Pre-employment fuel efficient skills assessment

SUB-SECTOR	PRE EMPLOYMENT ASSESSMENT				
	Don't know	No	Yes	Grand Total	Yes %
Bus & Coach		5	4	9	44.4%
Company Car / SUV		46	4	50	8.0%
Contractors	2	48	12	62	19.4%
Goods Service		51	2	53	3.8%
Heavy Vehicle		30	3	33	9.1%
Light Van / Ute		71	5	76	6.6%
Light Vehicle		10	1	11	9.1%
Taxi		2		2	0.0%
Total	2	263	31	296	10.5%

It can also be seen that two sectors differ from the rest and the reasons for this should be identified. One possibility is that it might be a side effect of more rigorous health and safety legislation rather than financial reasons. Overall, this is an area where potential financial savings could be generated.

Once drivers become employed consideration needs to be given as to how they are managed from a fuel efficiency point of view. This includes skills development, feedback on performance and possibly rewarding performance that exceeds a certain target. Vehicle operators were questioned about these issues and their responses are shown in the following tables.

Table 3-54 Do you provide feedback on fuel consumption to drivers?

SUB-SECTOR	DO YOU PROVIDE FEEDBACK			
	Don't know	No	Yes	Total
Bus & Coach		4	4	8
Company Car / SUV		35	15	50
Contractors	2	35	25	62
Goods Service		23	30	53
Heavy Vehicle	1	8	24	33
Light Van / Ute		50	26	76
Light Vehicle		6	5	11
Taxi			2	2
Total	3	161	131	295

The overall percentage at 44.4 (131/295) is less than half and indicate an area for improvement. Closer analysis of the figures reveals that the issue is sub-sector sensitive with heavy vehicle operators (72.7%) providing feedback to more than twice that of the light van (34.2%) and company car / ute operators (40.3%). This

could be due to the size of the fuel bill and the rate of fuel consumption along with fuel costs being a higher proportion of overall business operating costs

Along with assessing the fuel efficient driving skills of new drivers it is important to have a programme for improving the skills of the present driving force. When asked if they had such a programme for improving driver's skills in the areas of safety and fuel efficiency only a minority 41.9% (124/296) had such a programme.

Table 3-55 Continuing programme for driver's skill development.

SUB-SECTOR	CONTINUING SKILLS DEVELOPMENT PROGRAMME			
	Don't know	No	Yes	Total
Bus & Coach		3	6	9
Company Car / SUV		39	12	51
Contractors	1	40	21	62
Goods Service		22	31	53
Heavy Vehicle		8	25	33
Light Van / Ute		52	23	75
Light Vehicle		6	5	11
Taxi		1	1	2
Total	1	171	124	296

Whilst the overall figure is low closer examination reveals yet again that the issue is sub-sector sensitive with bus and coach, heavy vehicle and goods services all being above 50% and the rest equal to or below that figure.

A challenge for management is to sustain any improvements in driving style and this is normally done through the monitoring of fuel consumption at the driver level, but as has already been mentioned the level and type of monitoring conducted might not be suitable for achieving such sustainability. Whilst there are a range of techniques for sustaining improvements in driving style one of interest to drivers is that of some sort of reward system, which if applied correctly can also work as a driver retention mechanism, which can be useful in times of driver shortage. Therefore, vehicle operators were asked if they rewarded drivers for conserving fuel and their responses are shown in Table 3-22.

Table 3-56 Do you reward drivers for conserving fuel?

SUB-SECTOR	DO YOU REWARD		
	No	Yes	Total
Bus & Coach	8	1	9
Company Car / SUV	50	1	51
Contractors	56	7	63
Goods Service	47	6	53
Heavy Vehicle	23	10	33
Light Van / Ute	73	3	76
Light Vehicle	11		11
Taxi	2		2
Total	270	28	298

With low number of companies that assess a driver's fuel efficiency skills prior to employment and the small number who have a continuing programme of skills development it is hardly surprising that only 9.4% reward drivers for conserving fuel. Closer examination of the figures reveals that it is the heavy vehicle operators who are the most progressive in this area and might be due to the larger fuel consumption of their vehicles and proportion of overall operating costs that fuel represents.

Research has found that in other countries developing a driver's skills in the areas of safety and fuel efficiency can generate improvements in fuel consumption ranging from 5% to 13%⁵. This appears to be a key area that has not been picked up by the transport industry in general although it is something that appears sub-sector sensitive. The areas investigated in this part of the research have identified some potential for better assessment of drivers, further skills development once they are employed, the provision of feedback on their performance and possibly linking it to a reward scheme of some sort.

Having identified things that management can do to improve fuel efficiency the next stage of the analysis will examine what management perceive to be the obstacles.

OBSTACLES TO FUEL EFFICIENCY

For a company to be fuel efficient it needs not only to have the correct resources in place it also needs to generate a fuel efficiency culture. The development of such a culture can be supported through having monitoring systems and driver development packages in place and a communication channel that delivers authoritative and independent advice. However, many companies have been in business for a number of years and obstacles arise which work against the introduction and implementation of fuel efficiency measures. Some of these obstacles are due to historical reasons such as being different to the way that things have always been done, others are due to lack of knowledge on what can be done and what others have done. In order to understand the strength of these obstacles respondents were asked to rate obstacles to fuel efficiency.

In total seven operators replied that they had no obstacles. One from the bus and coach; none from the company car / SUV; one from the contractors; one from the goods service; one from the heavy vehicle; two from the light van / ute; one from the light vehicle and none from the taxi sub-sector.

The three main obstacles that were identified through previous research were:

- Lack of time;
- Lack of knowledge of fuel saving techniques and methods and
- Lack of availability of unbiased information.

⁵ This range of figures is drawn from the SAFED Impact Assessment 2007 produced by the UK Government and savings of 3% - 31% which averaged to 13% Coyle M. Basic Steps To Improving Fuel Efficiency, One day conference on improving vehicle fuel efficiency and reducing vehicle impact. University of Huddersfield April 1999, p4. and Savings of 1.7% to 34%. Boocock J (2001), Reducing costs through driver development. Presented at: 'Save it' the road to fuel economy. The National Motorcycle Museum. 27th February.

These were placed into the survey questionnaire along with a fifth category of 'Other(s)' to enable respondents to put forward other obstacles. Additionally each of the five categories was to be rated in importance from 1 to 5, with one being the most important. The ratings were then weighted as shown below.

Level of importance	Weighting
1	5
2	4
3	3
4	2
5	1

Thirteen respondents used the category 'Other(s)' of which seven were clear statements and are shown below:

- Company doesn't think about being fuel efficient
- Could be helpful
- Employment contracts' person is entitled to a vehicle
- Haven't thought about it
- Lack of interest
- Lack of money
- No way around it

The advantage of using a rating system is that enables respondents to indicate the seriousness of a problem. The fact that there was a negligible amount of issues identified under the heading of 'Other(s)' suggests that the background research correctly identified the major obstacles as being time, lack of knowledge of fuel saving techniques and methods and the lack of availability of unbiased information; this last one being reinforced by the earlier findings in part two of this report. It will also be seen that the vast majority of respondents rated these three variables in the top three groups most of the time

However, a caveat to this is that if respondents have not really thought about this problem a great deal then they are more likely to accept and then rate the obstacles mentioned to them rather than think of new or alternative obstacles.

Table 3-23 shows the rating of the obstacle of not having enough time. It can be seen that 84 of the 181 respondents rated this as their number one obstacle.

Table 3-57 Rating of time

SUB-SECTOR	RATING OF TIME					NUMBER OF RESPONSES
	1	2	3	4	5	
Bus & Coach		1	4			5
Company Car / SUV	10	9	5		1	25
Contractors	12	12	14			38
Goods Service	27	8	6	1		42
Heavy Vehicle	11	3	5			19
Light Van / Ute	21	14	9			44
Light Vehicle	3	2		1		6
Taxi			2			2
Total	84	49	45	2	1	181
Overall weighting	420	196	135	4	1	756

If every vehicle operator who had responded rated this as their number one problem then it would have scored 905 (181 x 5) points. Its actual score was 756 points, which indicates that it is a problem worthy of consideration with strength of 83.5% (756/905).

Applying the same analysis to the second obstacle that of a lack of knowledge of fuel saving techniques and methods it can be seen in Table 3-24 that it scored 686 points out of a possible 890 (178 x 5) giving it a strength of 77.1%. Influencing this figure is the fact that more respondents rated this as a '2' than any other group.

Table 3-58 Rating of knowledge of techniques and methods

SUB-SECTOR	RATING OF KNOWLEDGE OF TECHNIQUES AND METHODS					NUMBER OF RESPONSES
	1	2	3	4	5	
Bus & Coach	3	1	1			5
Company Car / SUV	10	7	6		2	25
Contractors	9	14	15			38
Goods Service	6	14	21			41
Heavy Vehicle	6	7	4	1		18
Light Van / Ute	8	20	14	1		43
Light Vehicle	2	3	1			6
Taxi	2					2
Total	46	66	62	2	2	178
Overall weighting	230	264	186	4	2	686

Also noticeable is that it was rated as a '3' by more operators than those who rated it as a '1' thereby reinforcing the signal that time is a more serious obstacle.

The third and final obstacle to be evaluated is that of the availability of unbiased information. Its overall rating was 650 points with only two less companies agreeing that it was an obstacle than those who agreed with lack of knowledge of fuel saving techniques and methods being an obstacle. The results of the analysis are shown in Table 3-25 where it can be seen that most operators graded it as being a '3' and giving it an overall weighting of 650.

Table 3-59 Rating of availability of unbiased information

SUB-SECTOR	RATING OF AVAILABILITY OF UNBIASED INFORMATION					NUMBER OF-RESPONSES
	1	2	3	4	5	
Bus & Coach	1	2	3	4	5	
Company Car / SUV	2	3				5
Contractors	4	7	9	3	2	25
Goods Service	13	9	13	3		38
Heavy Vehicle	9	18	12	2		41
Light Van / Ute	1	8	8			17
Light Vehicle	12	9	19	1	1	42
Taxi		1	3	2		6
		2				2
Total	41	57	64	11	3	176
Overall weighting	205	228	192	22	3	650

The strength of this obstacle at 73.9% (650/ 880) is still strong despite being rated as the third most important obstacle. Obviously if more obstacles had been considered then their overall rating figures could have been reduced. However, as was stated earlier background research suggested that these would be the three major obstacles and this could be taken as being validated to a certain degree in this specific part of the project.

To summarise the major obstacles to improving fuel efficiency are time, knowledge and availability of unbiased information. Whilst the second and third obstacles can be reduced by external or third party initiatives the resource of time is something that can only be dealt with internally by a vehicle operator.

3.5 OPERATOR SURVEY CONCLUSION

It is concluded from the analysis of the 299 operators who responded to the telephone survey that there is sufficient goodwill and interest in the commercial vehicle sector that could lead to the adoption of better practices with respect to improving fleet fuel efficiency. Current interest has been boosted by the price hikes for fuel which reached their highest levels ever in New Zealand during the survey in August 2009.

It is observed in this report that generating data and reports is meaningless unless someone is receiving and taking action based upon the information contained in a report. There appeared to be ample room for improvement in the procedures used

by operators to record fuel consumption and relate that to vehicle types, drivers, and type of work performed, in addition to the accountant's concerns to track costs. Management appears to be receptive to receiving information and guidance on how this might be achieved and government could work closely with Trade Associations to bring that about, benefiting both company and nation by reducing unnecessary fuel consumption.

It is also observed in the report that the collection and generation of fuel consumption information by itself is of little use in isolation. It has to be used. Comparisons need to be made. Very little benchmarking is conducted in the industry. Commercial sensitivity is seen as an obstacle. This could be overcome by use of "blind" benchmarking through a trusted agent such as a trade association. Government might consult with trade associations to see if this could be implemented at least in some of the sub-sectors. We comment in the other analyses in this report that

It is apparent that good drivers, from a fuel efficiency perspective, are a key ingredient to saving fuel. They, for instance, also contribute positively to improved safety by not speeding and to lower maintenance costs by not "thrashing" their vehicles. Therefore operators might consider assessing driver's abilities in terms of fuel-efficient driving techniques before employing them. Hardly any do for some good reasons related to recruitment and retention difficulties. That does not stop operators implementing driver skills enhancement programs. The areas investigated in this report have identified some potential for better assessment of drivers, further skills development once they are employed, the provision of feedback on their performance, possibly linking this to a reward scheme of some sort.

We summarised that the major obstacles to improving fuel efficiency are time, knowledge, and availability of unbiased information. The second and third obstacles can be reduced by external or third party initiatives. This could be a focus for government to explore in conjunction with the various trade associations.

4.PART FOUR ANALYSIS OF SURVEY OF 300 DRIVERS

4.1 DRIVER SURVEY SUMMARY

The sample consisted of 300 datasets, which at varying stages of the analysis was reduced in size due to nil responses. However, much of the data was analysed in sample sizes that permitted rigorous analysis.

The key findings are that drivers are positive towards developing their skills (78.4%) and the majority (70.5%), care about the fuel efficiency of their company vehicles. Unsurprisingly an even greater number (86.1%) caring about the fuel consumption of their personal vehicle. This positive attitude to fuel efficiency and skills development amongst drivers is most welcome and should be built upon by management.

It has also been found that fuel consumption information tends not to be communicated to drivers. The majority of operators collect information only a minority communicate individual or fleet performance to drivers and this is a barrier to culture change that should be removed.

Larger companies tend to collect more fuel consumption data, possibly due to the size of the annual fuel bill and their drivers care more about fuel efficiency. They also have more vehicles with in-cab displays (ICDs'), which may be due to smaller fleets purchasing second hand vehicles. Larger fleets tend to buy the new vehicles that have electronic management systems installed as standard.

With sufficient data it becomes possible to model and then implement self-financing fuel bonus systems where a driver receives a percentage of the value of the fuel that they save. Such schemes help to sustain skills development and other fuel efficiency improvements.

Where sub-sectors are identified as being the best in a certain area, they should be investigated further to determine the key motivational and influencing factors and can they as 'best practice' be transferred to any of the other sub-sectors.

4.2 DRIVER SURVEY INTRODUCTION

This report forms the fourth part of a Land Transport New Zealand (since renamed New Zealand Transport Agency) and the Ministry of Transport project 'Improving Vehicle Fuel Efficiency Monitoring'. This specific report focuses on heavy and light commercial vehicle drivers and in accordance with the contract assesses fuel-efficient driving and operator fleet management practices and company attitudes to fuel-efficient driving; monitoring of fuel-use; fuel-efficient driver training and or support, as viewed by the drivers. The survey was undertaken against a background of the highest fuel prices ever recorded in New Zealand.

300 drivers from a number of sub-sectors and a range of fleet sizes were interviewed and their responses recorded. The sub-sectors consisted of:

- Bus & Coach;
- Company Car / SUV;
- Contractors;
- Courier;
- Goods Service;
- Heavy Goods;
- Light Van / Ute;
- Light Vehicle and
- Taxi

The fleet sizes consisted of:

- Less than 5;
- 5 – 20 and
- more than 20

Table 4-1 below shows the sub-sectors and fleet sizes produced from 291 useable responses.

Table 4-1 Sub-sector and fleet size

SUB SECTOR	VEHICLES IN FLEET				Total
	Don't Know	Less than 5	5 - 20	More than 20	
Bus & Coach	6	2	9	12	29
Company Car / SUV	2	6	4	5	17
Contractors	2	1	2	3	8
Goods Service	2	11	11	4	28
Heavy Goods	11	15	34	11	71
Light Van / Ute*	6	16	16	5	43
Light Vehicle	9	17	15	13	54
Taxi	3	14	5	19	41
Total	41	82	96	72	291

- Couriers were grouped with Light Van / Ute as only two courier drivers were surveyed.

With the exception of the 'don't knows' it can be seen that each of the three fleet sizes was well represented. However, the representation of the contractors was low in comparison to the other sub-sectors.

The methodology applied in the analysis will now be introduced.

4.3 DRIVER SURVEY: METHODOLOGY

A sample of 300 drivers across a range of sub-sectors was interviewed at the roadside and their responses to a questionnaire (Appendix A) recorded and latter entered into a database for analysis. The principle method of investigation is to examine by sub-sector and where appropriate to cross tabulate the data.

It is a long held view that a driver who drives the same vehicle will take more care of the vehicle than a driver who switches between vehicles. There is therefore the possibility that a driver who drives the same vehicle might be more interested in fuel efficiency than one who moves between vehicles in a single shift or on some other basis and this had to be factored into the research.

The nine sub sectors (Bus & Coach; Company Car / SUV; Contractors; Courier; Goods Service; Heavy Goods; Light Van / Ute; Light Vehicle and Taxi) were chosen by members of the research team and representatives from the Ministry of Transport and Land Transport New Zealand.

Table 4-2 shows the sub-sectors and resultant sample sizes, which whilst not uniform does provide sufficiently sized samples when divided into light and heavy vehicles.

Table 4-2 Sample size by sub-sector

SUB SECTOR	DRIVERS
Bus & Coach	29
Company Car / SUV	17
Contractors	8
Goods Service	29
Heavy Goods	73
Light Van / Ute	44
Light Vehicle	58
Taxi	42
Total	300

Note: There were two drivers from courier companies interviewed and one sub-sector was recorded as a blank. To prevent any skewing of the analysis these three drivers were allocated to the light vehicle group.

The sub-sectors that combine to make up the heavy vehicles are Bus & Coach, Contractors, Goods Service and Heavy Goods, which provide a total of 139 drivers (46.33% of the sample). The remaining drivers are all classified as light vehicle drivers.

The research wanted to determine a driver's own attitude and what they perceived to be the attitude of the company to fuel efficiency. Whilst subjective, it can provide an insight into areas for further research and be considered alongside the responses of operators to other parts of this project. Additionally, where possible other attributes of a company that may influence a driver's attitude or perception will be identified.

The following sections will analyse the data to determine driver attitudes to fuel efficiency and what they perceive to be their employer's attitude. It will also seek to identify any factors that influence a driver's attitude.

4.4 DRIVER SURVEY ATTITUDES TO VEHICLES

A normal expectation is that a driver will usually drive the same vehicle and this tends to hold true, as can be seen in Table 4-3 with the exception of the bus and coach drivers, who by the nature of their work can move between vehicles on a daily basis.

Table 4-3 Do respondents normally drive this vehicle?

SUB SECTOR	NORMALLY DRIVE		TOTAL	NORMALLY DRIVE	
	NO	YES		NO%	YES%
Bus & Coach	15	14	29	51.7%	48.3%
Company Car / SUV	3	14	17	17.6%	82.4%
Contractors	1	7	8	12.5%	87.5%
Goods Service	2	27	29	6.9%	93.1%
Heavy Goods	10	63	73	13.7%	86.3%
Light Van / Ute	8	36	44	18.2%	81.8%
Light Vehicle	10	48	58	17.2%	82.8%
Taxi	3	39	42	7.1%	92.9%

With the exception of the bus and coach sub-sector the other drivers who were interviewed tended to drive their vehicle in the order of 82% to 93%. Clearly this indicates that there are two separate groups of drivers with one group consisting of the bus and coach drivers wherein less than half of them normally drive the vehicle that they were in when interviewed. When conducting powerful statistical analysis the bus and coach driver data would be considered a straggler or even an outlier and as such this would have to be taken into account in any such analysis.

Whether or not a respondent's propensity to drive the vehicle in which they were interviewed influences their attitude to fuel efficiency remains to be determined. The first stage is to identify each driver's attitude to fuel efficiency of their own vehicle and again when driving a company vehicle. This is then followed by examining the respondent's attitude to the fuel consumption of the company vehicle that they drive. Finally, the two sets of data are combined in a larger cross tabulation to identify commonality and exception. It would be expected that drivers who care about the fuel consumption of the company vehicle would also care about the fuel consumption of their own personal vehicle and that some of the drivers who do not care about the company vehicle fuel consumption may nevertheless care about the fuel consumption of their own vehicle.

Of the 300 drivers interviewed there were 287 usable responses in respect of whether or not they cared about their own personal fuel consumption as shown in Table 4-4. With regards to the question as to whether or not they cared about the fuel consumption of the company vehicle there were 285 useable responses as shown in Table 4-5. In both Table 4 and Table 5 the responses are shown in absolute terms and percentages.

Table 4-4 Do drivers care about their own personal fuel consumption?

SUB SECTOR	CARE ABOUT OWN PERSONAL FUEL CONSUMPTION			
	NO	YES	NO	YES
Bus & Coach	2	27	6.9%	93.1%
Company Car / SUV	3	14	17.6%	82.4%
Contractors	1	7	12.5%	87.5%
Goods Service	4	22	15.4%	84.6%
Heavy Goods	3	67	4.3%	95.7%
Light Van / Ute	10	34	22.7%	77.3%
Light Vehicle	9	47	16.1%	83.9%
Taxi	8	29	21.6%	78.4%
Total	40	247	13.9%	86.1%

It can be seen in Table 4-4 that a high proportion of drivers 86.1% overall do care about their own personal fuel consumption. The highest proportion being the drivers of heavy goods vehicles (95.7%) and the lowest being light van / ute drivers (77.3%).

The next stage is to determine to what extent drivers care about the fuel consumption of the company vehicle. This is revealed in Table 4-5 and as expected is lower than that of their personal vehicles.

Table 4-5 Do drivers care about the company fuel consumption?

SUB SECTOR	CARE ABOUT COMPANY FUEL CONSUMPTION			
	NO	YES	NO	YES
Bus & Coach	6	21	22.2%	77.8%
Company Car / SUV	7	10	41.2%	58.8%
Contractors	3	4	42.9%	57.1%
Goods Service	8	21	27.6%	72.4%
Heavy Goods	26	45	36.6%	63.4%
Light Van / Ute	13	26	33.3%	66.7%
Light Vehicle	11	45	19.6%	80.4%
Taxi	10	29	25.6%	74.4%
Total	84	201	29.5%	70.5%

The data in Table 4-5 shows that the overall total of those that care has fallen to 70.5% and each sub-sector has also fallen, though by differing degrees. However, the fact that 70.5% of drivers care about the fuel consumption of a company vehicle does indicate that there is a positive attitude that management could build upon to improve fuel efficiency in the company fleet. This could be done through developing driver skills in safe and fuel efficient driving and with motivational tools such as rewards for the safest and most fuel efficient drivers. Rewards could take the form of prizes, awards and fuel bonus payments.

Reviewing the relationship between the data in Table 4-4 and Table 4-5 is undertaken to check if the logical assumption that drivers who care about company fuel consumption are also those who care about the fuel consumption of their own

personal vehicles. This larger cross tabulation shown in Table 4-6 does reveal a number of blanks, which have been retained in the analysis. The blanks are caused by a respondent providing an answer to only one of the two questions.

Table 4-6 Cross tabulation of drivers views on fuel consumption

SUB SECTOR	DO YOU CARE ABOUT		TOTAL	
	Company fuel consumption	Personal fuel consumption		
		NO	YES	
Bus & Coach	NO	1	5	6
	YES		21	21
	(blank)	1	1	2
Company Car / SUV	No	2	5	7
	Yes	1	9	10
Contractors	No		3	3
	Yes	1	3	4
	(blank)		1	1
Goods Service	No	3	4	7
	Yes	1	18	19
Heavy Goods	No	2	24	26
	Yes		42	42
	(blank)	1	1	2
Light Van / Ute	No	5	8	13
	Yes	3	23	26
	(blank)	2	3	5
Light Vehicle	No	3	8	11
	Yes	5	38	43
	(blank)	1	1	2
Taxi	No	5	5	10
	Yes	3	22	25
	(blank)		2	2
Total		40	247	287

The data in Table 4-6 does support the view that drivers who care about the fuel consumption of the vehicle that they drive for their company also care about the fuel consumption of their own vehicles. However, this is not as sound an assumption as might have been expected. For example, in the light vehicle section, eight of the eleven drivers who did not care about the company vehicle fuel consumption did care about their own personal fuel consumption. Interestingly, in the same sub-sector, five of the 43 drivers who cared about the company fuel consumption did not care about their own personal fuel consumption.

Additionally, of the 287 drivers analysed in Table 4-5 only 22 (7.7%) did not care about fuel consumption whatsoever. The conclusion to be drawn from this is that the majority of drivers do care about their fuel consumption (both personal and company

vehicle) and this could be built upon to develop a fuel efficiency culture that would benefit both companies and individual drivers.

The extent to which caring about how much fuel a company vehicle consumes is influenced by whether the driver normally drives the same vehicle is explored in Table 4-7. Analysis of the data reveals that out of the 285 useable responses 84 (29.5%) did not care about the company vehicle’s fuel consumption.

Table 4-7 Influence of vehicle use on caring about fuel consumption

SUB SECTOR	NORMALLY DRIVE	DO YOU CARE			Total
		NO	YES	NO (%)	
Bus & Coach	YES	4	10		14
	NO	2	11	15.4%	13
Company Car / SUV	YES	1	2		3
	NO	6	8	42.9%	14
Contractors	YES	1			1
	NO	2	4	33.3%	6
Goods Service	YES	1	1		2
	NO	7	20	25.9%	27
Heavy Goods	YES	5	5		10
	NO	21	40	34.4%	61
Light Van / Ute	YES	6	2		8
	NO	7	24	22.6%	31
Light Vehicle	YES	3	7		10
	NO	8	38	17.4%	46
Taxi	YES	1	2		3
	NO	9	27	25.0%	36
Total		84	201		285

Further analysis of the data reveals that out of those 84 responses 62 (73.8%) were by drivers who did not normally drive the vehicle. The conclusion to be drawn from this is that it appears to reinforce the view that drivers who have dedicated vehicles are more likely to care about its fuel consumption and by logical association be more interested in and take more care of the vehicle. However, such a hypothesis would have to be tested by a more tightly focussed survey.

The drivers were asked if they knew the fuel consumption of the vehicle that they were driving and this was followed up by two questions that would determine the accuracy of their response if they replied ‘yes’. There were 289 useable responses shown Table 4-8, to the initial question.

Table 4-8 Do you know the fuel consumption of this vehicle?

SUB SECTOR	DO YOU KNOW THE FUEL CONSUMPTION			
	No	Yes	Yes (%)	Total
Bus & Coach	19	10	34%	29
Company Car / SUV	11	6	35%	17
Contractors	6	2	25%	8
Goods Service	24	5	17%	29
Heavy Goods	47	22	32%	69
Light Van / Ute	30	13	30%	43
Light Vehicle	30	25	45%	55
Taxi	16	23	59%	39
Total	183	106	37%	289

Only 37% of respondents claimed to know the fuel consumption of the vehicle they were driving which, given the fact that a much larger number care about fuel consumption, does infer a communications gap between vehicle operators and their drivers.

The follow up questions, which asked drivers who had answered 'yes' to state the fuel consumption in l/100 km or the vehicle range on one tank of fuel produced a wide range of answers. Examination of the answers suggests that only 35 (12.1%) drivers actually replied with a figure that was likely to be accurate. For example, fuel consumption figures ranged from 1l/100 km to 330l/100 km and distances on one full tank of fuel ranged from 2 kilometres to 1,000 kilometres. This again reinforces the issue of management needing to communicate fuel consumption information.

Once driver attitudes in general have been explored, the next stage is to determine the attitude of drivers to driver training which, to use more modern and appropriate language, is referred to as driver development, because people who drive for a living are unlikely to be receptive to the notion of undergoing driver training. Modern driver development programmes focus upon safety and fuel efficiency, but unless the driver has the right attitude, once the training is completed it will be ignored. Therefore, driver attitudes to skills development, needs to be explored.

4.5 DRIVER SURVEY ATTITUDES TO SKILLS DEVELOPMENT

Vehicle technology evolves due to the natural progress of technology in general and legislation led changes to emissions from the internal combustion engine. Driving techniques need to take these changes into account as well as improvements in driving skills in general. However, it is important that drivers themselves buy-into the concept of improving and updating their skills through driver development programmes. It is not unreasonable to assume that professional drivers at the individual level doubt that they need any further skills development, but that they could well think of other drivers who would benefit.

In order to establish driver views and by implication attitudes to driver development, a number of questions were asked; the responses to which will now be analysed. The 292 useable responses are shown in Table 4-9 and indicate that the majority of drivers believe that they would benefit from such skills development.

Table 4-9 Would you benefit from such skills development?

SUB SECTOR	WOULD YOU BENEFIT			
	No	Yes	Total	Yes (%)
Bus & Coach	2	27	29	93.1%
Company Car / SUV	8	8	16	50.0%
Contractors	2	5	7	71.4%
Goods Service	2	27	29	93.1%
Heavy Goods	11	59	70	84.3%
Light Van / Ute	9	35	44	79.5%
Light Vehicle	14	43	57	75.4%
Taxi	15	25	40	62.5%
Total	63	229	292	78.4%

This is a highly positive and welcome response and whilst there is a large variation between the different sub-sectors it does indicate the potential buy-in from drivers for skills development.

Before drawing conclusions from this data it is important to point out that the company car / SUV drivers that responded numbered only sixteen in total and so any single change in the responses carries a lot of weight, when viewed as a percentage – each observation has a weight of 6.25%. This also applies to the contractors where each response carries an even greater weight of 14.3%.

Heavier vehicles such as bus and coach, contractors, goods services and heavy goods will consume more fuel per kilometre than their lighter counterparts and therefore there could be greater interest in driving skills, both from an individual driver and through awareness raising in the company due to the size of their fuel bills.

The less positive response to the question by drivers of company car / SUV (50%) and taxis (62.5%) does raise questions and should be investigated further.

It is accepted that one of the most effective forms of marketing is by personal recommendation from a friend or someone who has credibility with an individual. To this end the drivers were asked if they knew of other drivers who had received any driver development to improve their safety and fuel efficiency skills. This response was then cross tabulated with the responses shown in Table 4-9 to determine if knowledge of other drivers benefiting from driver development might have influenced the results.

It can be seen in Table 4-10 that of 283 useable responses only 89 (31.4%) drivers who believed that they would benefit from driver development were aware of other drivers who had benefited. This suggests that drivers have a positive attitude to skills development and that this has not been influenced by the experience of other drivers.

Table 4-10 Are drivers influenced by other drivers?

SUB SECTOR	WOULD YOU BENEFIT	KNOWLEDGE OF OTHER DRIVERS		
		No	Yes	Total
Bus & Coach	No	1	1	2
	Yes	6	20	26
Company Car / SUV	No	7	1	8
	Yes	6	2	8
Contractors	No	2		2
	Yes	4	1	5
Goods Service	No	2		2
	Yes	16	10	26
Heavy Goods	No	9	1	10
	Yes	35	20	55
Light Van / Ute	No	7	1	8
	Yes	32	3	35
Light Vehicle	No	12	2	14
	Yes	27	15	42
Taxi	No	14	1	15
	Yes	14	11	25
Total		194	89	283

From Table 4-10 no clear pattern reveals itself by sub-sector, other than bus and coach is very high at 76.9% (20/26) and light van / ute is very low at 8.6% (3/35). Excluding the bus and coach drivers this suggests that one or more other mechanisms have resulted in the high proportion of drivers who believe that they would benefit from skills development. Other than coming from a driver's own belief system the logical assumption is that it has been brought about through something in their work environment. This could be a company communication or training package, which has raised awareness of the benefits of driving skills development.

It is reasonable to expect that most people who drive for a living (professional drivers) believe that they are "good" drivers, or even better and that drivers other than themselves would benefit from driver development. This question was then asked with the anticipation that there would be a highly positive response. The question was structured so that it asked about other professional drivers and not drivers in general. The responses are shown below in Table 4-11.

Table 4-11 Would other drivers benefit?

SUB SECTOR	WOULD OTHER DRIVERS BENEFIT			
	No	Yes	Total	Yes (%)
Bus & Coach	3	26	29	89.7%
Company Car / SUV	2	15	17	88.2%
Contractors	2	5	7	71.4%
Goods Service	1	28	29	96.6%
Heavy Goods	2	66	68	97.1%
Light Van / Ute	3	41	44	93.2%
Light Vehicle	2	54	56	96.4%
Taxi	6	33	39	84.6%
Total	21	268	289	92.7%

The high response rate from the 289 useable replies reinforces the view expressed in the previous paragraph and raises the question as to whether or not drivers who benefit from such skills development could be used to promote such training to other drivers. Table 4-12 shows that most of the drivers who believed that they would benefit, also believe that other drivers would benefit. This could open up such a promotional opportunity.

Table 4-12 Cross tabulation of benefits

SUB SECTOR	WOULD YOU BENEFIT	WOULD OTHER DRIVER BENEFIT			
		No	Yes	Total	YES/NO %
Bus & Coach	No	1	1	2	50.0%
	Yes	2	25	27	92.6%
Company Car / SUV	No	2	6	8	75.0%
	Yes		8	8	100.0%
Contractors	No	2		2	0.0%
	Yes		4	4	100.0%
Goods Service	No		2	2	100.0%
	Yes	1	26	27	96.3%
Heavy Goods	No	2	7	9	77.8%
	Yes		58	58	100.0%
Light Van / Ute	No	3	6	9	66.7%
	Yes		35	35	100.0%
Light Vehicle	No	2	11	13	84.6%
	Yes		42	42	100.0%
Taxi	No	6	7	13	53.8%
	Yes		25	25	100.0%

With the exception of the contractors, it can be seen that most of the drivers who did not believe that they would benefit from skills development believed that other drivers would.

A review of this part of the analysis indicates that the drivers have a positive attitude to skills development and that this has not been influenced by knowledge of other driver's experiences. There is a generally held view that drivers sell the concept of skills development to other drivers through their positive experiences. In this case there appears to be a conundrum in that it has not, because a majority of drivers who believed that they would benefit from skills development did not know of other drivers who had undergone such training. Therefore, other factors must be at work one of which could be a driver's employer. Employers have a major role in forming driver's perceptions to fuel efficiency and this will now be explored.

4.6 DRIVERS PERCEPTION

A driver can be influenced by the environment in which they work; an environment set and to a large degree controlled by the company. The fuel efficiency culture as perceived by the driver can be influenced for example by:

- The collection of fuel consumption data;
- The dissemination of any information;
- Driving skills development and
- Being involved in vehicle procurement decisions

People and organisations tend to respond to the measures by which they are being judged and unless fuel consumption is being monitored and reported correctly then there is unlikely to be a fuel efficiency culture within a business. This introduces the next stage in the analysis, which reviews the attributes of a company based upon the driver responses.

Fuel monitoring (data collection, analysis and reporting) is the foundation stone upon which, fuel efficiency is built. The collection and reporting of fuel consumption data itself sends a signal to everyone in the organisation that fuel management is important and this forms part of the company culture. Drivers were therefore asked if their company collected information on fuel consumption. The responses are shown in Table 4-13.

Table 4-13 Fuel consumption data collection

SUB-SECTOR	DOES COMPANY COLLECT DATA				
	Don't Know	No	Yes	Total	Yes (%)
Bus & Coach		6	23	29	79%
Company Car / SUV		4	13	17	76%
Contractors	2	3	3	8	38%
Goods Service	2	14	13	29	45%
Heavy Goods	4	20	48	72	67%
Light Van / Ute		21	23	44	52%
Light Vehicle	3	28	25	56	45%
Taxi	1	26	15	42	36%
Total	12	122	163	297	55%

Given the high cost of fuel at the time of the survey it is perhaps a little bit surprising that the overall percentage of companies that collect data is low at 55%. However,

the range from 79% (bus and coach) to 36% (taxi) suggests that there is a sub-sector specific variation. Taxi drivers usually drive their own vehicles and pay for their own fuel so it is surprising that they do not monitor their own fuel consumption. Contractors (38%) on the other hand operate a large range of equipment and can employ a large number of non-drivers so fuel costs are likely to represent a small proportion of overall business costs.

To examine this more closely, drivers were asked if their company provided them with information on the vehicle's fuel consumption. Table 4-14 shows the responses by sub-sector.

Table 4-14 Fuel consumption information provided for this vehicle?

SUB-SECTOR	INFORMATION ON THIS SPECIFIC VEHICLE				
	Don't Know	No	Yes	Total	Yes (%)
Bus & Coach		14	15	29	52%
Company Car / SUV		11	6	17	35%
Contractors	1	4	3	8	38%
Goods Service		21	7	28	25%
Heavy Goods		41	32	73	44%
Light Van / Ute		29	14	43	33%
Light Vehicle		39	14	53	26%
Taxi		34	7	41	17%
Total	1	193	98	292	34%

Again the bus and coach operators appear to be the most progressive by providing information on a specific vehicle's fuel consumption to its driver(s) with the taxi drivers being provided or providing themselves with the least information. When asked if their company provided them with information on fleet fuel consumption the number of positive response reduced further as shown in Table 4-15.

Table 4-15 Information on fleet fuel consumption

SUB-SECTOR	INFORMATION ON FLEET FUEL CONSUMPTION					
	Don't Know	If asked for	No	Yes	Total	Yes %
Bus & Coach		1	18	9	28	32%
Company Car / SUV			13	4	17	24%
Contractors	1		6	1	8	13%
Goods Service			24	4	28	14%
Heavy Goods	3		48	22	73	30%
Light Van / Ute			32	10	42	24%
Light Vehicle			42	12	54	22%
Taxi			36	5	41	12%
Total	4	1	219	67	291	23%

One reason for this is that fleet fuel consumption might be viewed as being commercially sensitive information and therefore should only be available to directors and senior management.

Making available information on fuel consumption and acting upon the information is one way in which a fuel efficiency culture can be generated within a company. The

drivers were then asked if they thought that the company should provide them with information on their specific vehicle and on fleet fuel consumption. Table 4-16 contains the responses to the first question and shows that overall 39.2% thought that it should, with 31.9% 'not bothered' and 28.8% answering 'no'.

Table 4-16 Provision of vehicle specific fuel consumption information?

SUB-SECTOR	SHOULD VEHICLE INFORMATION BE PROVIDED			
	Not bothered	No	Yes	Total
Bus & Coach	4	9	14	27
Company Car / SUV	7	5	5	17
Contractors	3	3	2	8
Goods Service	8	10	8	26
Heavy Goods	30	8	33	71
Light Van / Ute	12	14	17	43
Light Vehicle	11	19	25	55
Taxi	17	15	9	41
Total	92	83	113	288
	31.9%	28.8%	39.2%	

Although less than half of the drivers think that such information should be provided, they represent the largest of the three groups. Nevertheless the responses do appear to be sector sensitive with the bus and coach drivers being the most positive at 51.9% (14/27) and the taxi drivers being the lowest at 22% (9/41).

When asked if they should be provided with information on fleet fuel consumption the responses overall were little different as shown in Table 4-17.

Table 4-17 Provision of fleet fuel consumption information?

SUB-SECTOR	SHOULD VEHICLE INFORMATION BE PROVIDED			
	Not bothered	No	Yes	Total
Bus & Coach	3	11	13	27
Company Car / SUV	7	5	4	16
Contractors	3	3	2	8
Goods Service	8	10	8	26
Heavy Goods	31	12	29	72
Light Van / Ute	14	14	14	42
Light Vehicle	10	24	21	55
Taxi	15	12	14	41
Total	91	91	105	287
	31.7%	31.7%	36.6%	

Interestingly, sub-sector analysis reveals that the taxi drivers were more in favour of being given information on fleet fuel consumption than their own vehicle's fuel consumption, by the ratio of 14:1 to 9:1. On reflection it is more likely that vehicle operators will provide feedback on individual vehicles rather than reveal commercially sensitive information such as fleet fuel consumption. Therefore, an analysis of drivers who believe that the company should give them information on their vehicle and whether or not their company does could reveal an interesting

opportunity for operators to develop a more fuel efficient culture. Analysing 284 useable responses, it can be seen in Table 4-18 that there is such potential.

Table 4-18 Provision of fleet fuel consumption information

SUB-SECTOR	SHOULD COMPANY PROVIDE INFORMATION	DOES COMPANY PROVIDE INFORMATION FOR THIS VEHICLE				
		No	Yes	Total	No (%)	Yes (%)
Bus & Coach	No	7	2	9		
	Not bothered	4		4		
	Yes	3	11	14	21.4%	78.6%
Company Car / SUV	No	4	1	5		
	Not bothered	6	1	7		
	Yes	1	4	5	20.0%	80.0%
Contractors	No	2	1	3		
	Not bothered	2		2		
	Yes		2	2	0.0%	100.0%
Goods Service	No	9	1	10		
	Not bothered	6	2	8		
	Yes	5	3	8	62.5%	37.5%
Heavy Goods	No	7	1	8		
	Not bothered	25	5	30		
	Yes	8	25	33	24.2%	75.8%
Light Van / Ute	No	12	2	14		
	Not bothered	10	2	12		
	Yes	7	10	17	41.2%	58.8%
Light Vehicle	No	15	3	18		
	Not bothered	10		10		
	Yes	14	10	24	58.3%	41.7%
Taxi	No	13	2	15		
	Not bothered	15	2	17		
	Yes	6	3	9	66.7%	33.3%
Total		191	93	284		

It can be seen from Table 4-18 that there is a large number of drivers who think that the company should provide them with information on their vehicle performance, but they are not provided with the information. For example, eight drivers of goods service vehicles thought that they should be provided with information on their vehicle's fuel consumption, but only three (37.5%) were actually given the information, whilst five (62.5%) were not given the information.

Using the data exclusively associated with 'goods vehicles', an analysis can be conducted to determine the potential for companies who collect data to inform drivers who would like to be informed of their vehicle's fuel consumption. This is shown in Table 4-19.

Table 4-19 Potential for informing drivers who want information – goods service

SHOULD THE COMPANY PROVIDE INFORMATION	DOES THE COMPANY COLLECT FUEL CONSUMPTION DATA	DOES THE COMPANY PROVIDE INFORMATION ON THIS VEHICLE		
		No	Yes	Total
No	No	4	1	5
	Yes	5		5
Not bothered	No	4	1	5
	Yes	2	1	3
Yes	No	2		2
	Yes	2	3	5

This rather more complex table shows that of the seven drivers who believe the company should provide fuel consumption information only five companies collect the data, for which only three drivers actually receive the information. Obviously this sample size is small but it infers that 40% (2/5) of drivers think that the company should provide them with feedback on their vehicle's fuel consumption, where the company does actually collect the data. Applying this methodology to all the sub-sectors provides the following information:

- Bus & Coach 16.7%
- Company Car / SUV 20%
- Contractors 0.0%
- Goods Service 40.0%
- Heavy Goods 17.2%
- Light Van / Ute 25.0%
- Light Vehicle 42.9%
- Taxi 57.1%

It can be seen that there is a difference between the sub-sectors and because at this level of analysis the sample sizes are small, care must be taken when making inferences from the outputs. The overall analysis of driver perception suggests that there is an opportunity for operators to build upon driver interest in fuel consumption to build a fuel efficient culture.

Note: Another part of this research project (PART TWO) involved face to face interviews with vehicle operators and included an exploration of fuel monitoring within companies. The resultant analysis suggested that the monitoring that did take place was financially based and not operationally orientated.

There may be other attributes that influence a driver's perception, besides whether or not a company monitors its fuel consumption and gives feedback to drivers, on the fuel consumption of their vehicles. An examination of the remaining limited data will be undertaken next to identify if such attributes exist.

4.7 DRIVER SURVEY COMPANY ATTRIBUTES

There is the possibility that other company attributes can influence a driver's attitude to fuel efficiency. Since the driver questionnaire was limited in the range of data that could be collected and the drivers are not cross referenced with the parallel operator survey's participants, no direct driver and company comparisons can be made. There are however a number of variables that can be examined. The first of these is fleet size and whether or not it influences tendencies to collect fuel consumption data. The 240 useable responses (blanks and don't knows were removed) are shown in Table 4-20.

Table 4-20 Are larger fleets more likely to collect data?

VEHICLES IN FLEET	DOES COMPANY COLLECT DATA				
	No	Yes	Total	No (%)	Yes (%)
Less than 5	55	25	80	68.8%	31.3%
5- 20	32	61	93	34.4%	65.6%
More than 20	18	49	67	26.9%	73.1%
Total	105	135	240	43.8%	56.3%

Table 4-20 appears to show that as fleet size increases there is a greater tendency to collect fuel consumption data. This could be due to the size of the overall fuel bill. It may, however, be related to larger fleets containing more new vehicles that have in-built fuel monitoring technology, which will encourage collection of fuel consumption data.

Due to advances in engine management systems, modern vehicles have menu driven in-cab displays that can provide the driver and vehicle owner with an array of information.

Table 4-21 Do larger fleets have more ICDs'?

FLEET SIZE Vehicles in fleet	IN-CAB DISPLAY			
	No	Yes	Total	Yes (%)
Less than 5	69	13	82	15.9%
5- 20	76	20	96	20.8%
More than 20	47	23	70	32.9%
Total	192	56	248	22.6%

Table 4-21 indicates that as fleets get larger they are more likely to have vehicles with ICDs'. This might be because the larger fleets can afford to buy the newer modern vehicles and the smaller fleets buy older second hand vehicles – possibly passed on from the larger fleets. The drivers were also asked if their company had done anything to improve fuel efficiency in the last twelve months. The responses numbered by fleet size are shown below:

- Less than 5 34 (41.5%)
- 5- 20 31 (32.3%)
- More than 20 20 (27.8%)

This information shows that the smaller companies, as a proportion of the sample, are attempting more interventions to improve fuel efficiency, but without a robust monitoring system the two fundamental questions cannot be answered. These questions are:

- Does the intervention work – a mathematical question and
- If it works is it financially viable – an economic question.

This does raise the possibility that the smaller operators are wasting resources by introducing interventions without an effective system of evaluation.

To summarise, there is a possibility that the larger companies, through their size and ability to purchase more modern vehicles, could be an influential attribute that has an effect on driver perception.

4.8 DRIVER SURVEY CONCLUSION

In conclusion, the analysis has found that most drivers do care about fuel consumption – more so the fuel consumption of their personal vehicles. Also, setting aside the bus and coach sub-sector; drivers who normally drive the same vehicle, generally drivers are likely to care about fuel consumption. There is the potential for companies to develop a fuel efficiency culture by building upon the driver's interest in their fuel consumption. This could be enabled through the collection and reporting on fuel consumption at the individual vehicle level rather than giving out commercially sensitive overall fleet performance information.

To varying degrees, a majority of drivers had a positive view of skills development and unsurprisingly thought that other drivers would also benefit. Furthermore, a minority of these drivers knew of other drivers who had undergone some form of driver development. This raises an opportunity in terms of marketing because the view is normally held that drivers who have a positive experience when undergoing driver development tell other drivers about their experience and in effect sell the training. A caveat to this is that the skills development package must be of a quality that drivers buy-in to it and have no hesitation in telling other drivers about their experience and resultant improvement in driving knowledge and skill.

The bus and coach companies and their drivers appear to have a greater fuel efficiency culture than the other sub-sectors. Investigating as to why this is so could reveal attributes and other factors that might be transferable to the other sub-sectors. Similarly, investigating all areas where sub-sectors show the highest levels of fuel efficiency should likewise be investigated and where possible transferred to the other sub-sectors.

The larger the company the greater is the interest in fuel efficiency by their drivers. Also larger companies tend to monitor more than the smaller operators. This might be facilitated by the larger companies purchasing modern vehicles, which the smaller companies cannot afford.

Overall, the key factors are that the majority of drivers do care about fuel consumption and believe that they personally would benefit from skills development.

These two factors offer great opportunities to advance fuel efficient driving behaviour.

Not Government Policy

5. APPENDIX A: KEY INFLUENCER INTERVIEW STRUCTURE

Please enter your details below.

Name: _____

Job Title: _____

Company: _____

Address: _____

SECTOR _____

Tel: _____ Fax: _____ Email: _____

I DO or DO NOT wish to be included in the prize draw.

Everyone who completes the questionnaire will, if they wish, have their details entered in a prize draw and we will donate \$500 to a registered charity of their choice.

1. What do you believe to be the major issues facing vehicle operators? Please list them and allocate a level of importance by awarding points that total 100. An example is shown in Table 1 below.

Table 1 Issues and importance

ISSUE	RELEVANT IMPORTANCE
Driver shortage	50
Fuel costs	40
Road user charge <i>where applicable</i>	10

Prompts: Fuel, Insurance, Licences, Loan repayments, Overheads, Repair & maintenance, Replacement allowance, Tyres, Wages

A. Specifically, in relation to both fuel consumption monitoring and fuel efficiency.

2. Do you think that the sector has a fuel efficiency culture?

Please circle YES NO

Please elaborate on your answer.

3. Do you think that operators' use or are likely to use an internal benchmarking system?

Use Please circle YES NO
Likely to use Please circle YES NO

Please elaborate on your answer.

Do you think that the sector has a 'green' agenda? **If 'yes' ignore the next question.**

Please circle YES NO

Please elaborate on your answer.

4. Do you think that the sector will have to adopt a 'green' agenda?

Please circle YES NO

Please elaborate on your answer.

5. How good – in general - is fuel consumption monitoring in the sector?

Very good Good Average Poor Very poor

Please elaborate on your answer.

6. How good – in general - is fuel efficiency in the sector?

Very good Good Average Poor Very poor

Please elaborate on your answer.

7. Do you think that operators would be interested in receiving information on how to improve their fuel consumption monitoring? *Please circle*

Very interested interested possibly interested
not particularly interested not interested at all

Please elaborate on your answer.

10. Please rate the following obstacles to fuel monitoring in order of importance, with '1' being the most important.

Table 3 Ranking of obstacles to fuel monitoring

OBSTACLE	Rating 1-5
Do not have any obstacles	
Time	
Knowledge of fuel monitoring techniques and methods.	
Availability of unbiased information	
Other (Please state)	

Please add any pertinent comments

11. Are you aware of any operators in the sector who have to guarantee the fuel consumption of their vehicles on a contract? Please circle YES
NO

12. How do you think any assistance should be targeted and what form should the assistance take?

If the respondent cannot think of any, then a prompt may be required and the fact that the prompt was required must be recorded. Forms of assistance could include:

Best practice case studies Best practice guides Monitoring software
Operational specific advice (comprises of one or more visits to the operator by a specialist advisor) Other (please state)

Preferred suppliers of these would be:

Government Trade or Transport Association Vehicle
Dealership Private Consultancy Other (please state)

13. Do you think that the information currently available about the fuel consumption of new and existing models of vehicles' is both **appropriate** (provides information on the important factors) and **adequate** (gives enough information on the appropriate factors)? Please circle your response.

Appropriate	YES	NO
Adequate	YES	NO

14. What is your assessment of the quality of presently available fuel consumption information in general within the sector? Please circle your response

Very good Good Average Below average Poor

15. What do you believe will be the major influences on fuel efficiency in the future:

Short Term

Medium Term

Long Term

16. What are your views on the use of alternative fuels in the sector?

17. Which technologies for example, computerised routing and scheduling, electronic engine management systems, telematics, aerodynamics, materials, live condition monitoring, hybrid engine systems and automatic gearboxes do you believe will improve fuel efficiency in the:

Short term

Medium term

Long term

18. How important is training for fuel efficiency and at what levels is it needed?

19. How should training be delivered?

20. Is there anything that you would like to add (continue on a separate sheet if necessary)?

6.APPENDIX B: OPERATOR INTERVIEW

In setting up interviews, ask respondents if they wish to have a copy of the questions in advance and if the answer is YES then fax them the questionnaire stripped of the prompts

Please enter your details below.

Name: _____

Job Title: _____

Company: _____

Address: _____

Tel: _____ Fax: _____ Email: _____

Everyone who completes the questionnaire will, if they wish, have their details entered in a prize draw and we will donate \$500 to a registered charity of their choice.

I DO or DO NOT wish to be included in the prize draw.

Interviewed by _____

Sub Sector: *Please circle*

Heavy Vehicle Goods Service Bus & Coach Contractors

Light vehicle Taxi Light Van/Ute Company Car/SUV
Courier

TO BE COMPLETED AT THE END OF THE INTERVIEW

Has this operator been identified as a possible case study or best practice operator?

Please circle

YES

NO

1. What percentage of your vehicles are owned and what percentage are leased/rented? Owned _____%
Leased/Rented _____%

Please rate the costs in Table 1 below for their scale of importance, with '1' being most important and '5' least important.

Table 2 Rating of costs

COST CENTRE	Rating Scale
	1 to 5
Overheads	
Insurance	
Licences	
Loan repayments	
Fuel	
Repair and maintenance	
Replacement allowance	
R U C <i>if applicable</i>	
Tyres	
Wages	

2. Do you have a company policy on: Please circle
- | | | | |
|---|-----|----|----|
| Health and Safety | YES | NO | DK |
| Driving Policy including speeding | YES | NO | DK |
| Regular Vehicle Inspection Checks and Maintenance | YES | NO | DK |

3. Do you have someone who is responsible for the fuel efficiency of the vehicles
Please circle YES NO and if 'yes' what is their position or job title in the company? _____

4. Does your company monitor its fuel use? Please circle YES NO
DK

5. What was the total distance travelled by all your vehicles in the last financial year? _____Kms **If this is an estimate please indicate.**

6. How many litres of fuel did your vehicle fleet consume in the last financial year?
_____Litres **If this is an estimate please indicate**

7. What percentage of fuel do you purchase for placing in your own storage tank on your own premises and what percentage do you purchase through fuel cards? Own tank _____% Fuel Cards _____% **If this is an estimate please indicate**

8. Do you produce or receive fuel reports? *Please circle* YES NO DON'T KNOW and if 'YES' please indicate below, by circling all that apply.

SOURCE			
Produce your own from your own storage tank	YES	NO	DK
Reports produced by fuel card company	YES	NO	DK
Other – please state.	YES	NO	DK

TYPE OF REPORT			
Fuel consumption reported by individual vehicle	YES	NO	DK
Fuel consumption reported by individual driver	YES	NO	DK
Fuel consumption reported by groups of vehicles	YES	NO	DK
Fuel consumption reported by a fleet average.	YES	NO	DK

Skip to question 12 if all the above are NO or DK

9. How often do you check the accuracy of your fuel reports? *Please circle.*
 Don't check (ignore next question) Random Daily Weekly
 Monthly Quarterly Twice a year Annually

10. What problems, if any, have you found with the accuracy of the reports?
Please describe.
 None

If the respondent cannot think of any then a prompt may be required by the team member conducting the survey and the fact that the prompt was required must be recorded. Prompts will include:

Incorrect odometer numbers incorrect litres

11. How important is fuel consumption management to you? *Please circle*
 very important important average with other
 costs not particularly important unimportant

12. Do you take fuel consumption into account when acquiring a vehicle?
e.g. replacement or leasing

Please circle YES NO

13. Do you compare your fuel consumption against external benchmarks or other fleet information? *Please circle* YES NO
if YES give details:

14. Do any of your vehicles have in-cab displays that indicate to the driver the rate of fuel consumption? *Please circle* YES NO
if YES give details:

15. Do you provide feedback to drivers on fuel consumption?
Please circle YES NO

16. Do you formally assess a driver's fuel efficient driving ability before employing them?
Please circle YES NO

17. Do you have a continuing programme for improving drivers' skills in the areas of safety and fuel efficiency? *Please circle* YES NO

18. Do you reward your drivers for conserving fuel?
Please circle YES NO

19. Have you taken any actions in the last two years specifically to improve vehicle fuel efficiency?
Please circle YES NO

If the respondent cannot think of any, then a prompt may be required by the team member conducting the survey and the fact that the prompt was required must be recorded.

Prompts: improving aerodynamics improving drivers fuel efficiency skills
improving routing and scheduling improving vehicle specification
improving tyre management and specification improving engine

efficiency improving transmission efficiency improving maintenance
 improving fuel consumption monitoring reducing unladen weight

If 'yes' then proceed to next question otherwise miss the next question.

20. Please list in Table 2 any actions that you have taken in the last two years and tick the appropriate box as to whether or not they were successful. If you have not taken any action please leave the table blank.

Table 2 actions and effects

ACTION TAKEN	UNSUCCESSFUL	SUCCESSFUL	IMPROVEMENT %

21. Using Table 3 please rate the following obstacles to fuel efficiency in terms of importance, with '1' being most important and '5' being least important.

Table 3 Rating of obstacles to fuel efficiency

OBSTACLE	Importance
	1 to 5
Do not have any obstacles (tick)	Skip question
Lack of Time	
Lack of knowledge of fuel saving techniques and methods.	
Lack of availability of unbiased information	
Other(s) (Please state)	

22. Would you be interested in receiving information on how to **improve your fuel consumption monitoring**? *Please circle* Very interested
 interested possibly interested not particularly interested not
 interested at all

23. Would you be interested in receiving information on how to **become more fuel efficient**? *Please circle* Very interested interested
 possibly interested not particularly interested not interested at
 all

24. What would be your preferred method of receiving information on improving fuel monitoring and fuel efficiency?

Please circle Hard copy through the post
 Electronically via the internet
 Personal contact

25. Where would you go to obtain information on fuel efficiency? Please indicate
 Do not know

Prompt:

Would not bother Trade or Transport Association Transport press
 Other vehicle operators Government organisation
 Vehicle manufacturer/Distributor Other (Please state)

26. Who do you think should provide information on fuel efficiency? Please rank the following in Table 4 below in order of importance, with '1' being the most important

Table 4 Ranking of sources

SOURCE	RANK
Trade or Transport Association	
Transport press	
Other vehicle operators	
Vehicle manufacturer/Distributor	
Government organisation; please state which one	
Other please state	

27. In what aspect would you like any fuel efficiency assistance to be targeted, and in what form might that assistance take, and who might supply that assistance?

If the respondent cannot think of any, then a prompt may be required by the team member conducting the interview and the fact that the prompt was required must be recorded. Forms of assistance could include:

Best practice case studies Best practice guides Monitoring software
 Operational specific advice (comprises of one or more visits to the operator by a specialist advisor) Other (please state)

Preferred suppliers of these would be:

Government Trade or Transport Association Vehicle Dealership
 Private Consultancy Other (please state)

28. Do you think that the information currently available about the fuel consumption of new and existing models of vehicles that you operate is both **appropriate** (provides information on the important factors) and **adequate** (gives enough information on the appropriate factors)? Please circle your response.

Appropriate	YES	NO	DK
Adequate	YES	NO	DK

29. What is your assessment of the quality of presently available fuel consumption information in general within the sector? Please circle your response

Very good Good Average Below average Poor

30. How would you like to see such information evaluated, structured and presented?

If the respondent cannot think of any, then a prompt may be required by the team member conducting the survey and the fact that the prompt was required must be recorded. Suggestions could include:

Individual vehicle group individual driver other (please state) vehicle make vehicle type vehicle

31. Do you currently use alternative fuels (LNG, CNG, LPG, Bio - as separates or dual fuel)?

Please circle YES NO

Please explain why

32. Have you considered using alternative fuels??

Please circle YES NO

Please explain why

33. Do your customers demand that you have a 'sustainable' operation?

Please circle YES NO

34. Have you conducted or are you planning to conduct an environmental audit?

Please circle YES NO

If 'yes' how long ago was it and will it be a regular event
_____.

35. Do you have access to the internet? *Please circle* YES NO

We also have a spreadsheet for producing highly accurate fuel consumption data.

Would you like us to send you one with instructions?

If yes please provide an email address:

36. In the case of freight transport do you transport your own goods (raw materials or finished products) or other companies' goods?

Please circle Own Others Both

37. Is there anything that you would like to add (continue on a separate sheet if necessary)?

7.APPENDIX C OPERATOR SURVEY

Introduction: Hello I am xxxx working for Imise Consulting & Kissling Consulting and we are conducting a short **confidential** survey on behalf of Land Transport New Zealand and the Ministry of Transport, which is aimed at collecting information on fuel efficiency issues within the industry. Please could you spare ten minutes to go through the questionnaire with me or if I email or fax you the questionnaire would you complete it and email or fax it back to me? Your responses will be treated with complete confidentiality and you will not be identifiable in any outputs produced from the research.

Everyone who completes the questionnaire will, if they wish, have their details entered in a prize draw and we will donate \$500 to a registered charity of their choice.

We also have a spreadsheet for producing highly accurate fuel consumption data would you like us to email you a copy?

Please circle YES NO

If the answers to any question is not known write 'DK' in the response area.

Please enter your details below.

Name: _____

Job Title: _____

Company: _____

No. of Heavy vehicles _____

No. of Light vehicles _____

Address: _____

Tel: _____ Fax: _____ Email: _____

I DO or DO NOT wish to be included in the prize draw.

Survey conducted by _____

Sub Sector: *Please circle*

Heavy Vehicle Goods Service Bus & Coach Contractors

Light vehicle Taxi Light Van/Ute Company Car/SUV
Courier

In the case of freight transport do you transport your own goods (raw materials or finished products) or other companies' goods?

Please circle Own Others Both

1. What percentage of your vehicles are owned and what percentage are leased/rented? Owned _____% Leased/Rented _____%

2. Do you have someone who is responsible for the fuel efficiency of the vehicles

Please circle YES NO and if 'yes' what is their position or job title in the company? _____

3. Does your company monitor its fuel use? Please circle YES NO

4. What was the total distance travelled by all your vehicles in the last financial year? _____Kms If this is an estimate please indicate.

5. How many litres of fuel did your vehicle fleet consume in the last financial year? _____Litres If this is an estimate please indicate

6. What percentage of fuel do you purchase for placing in your own storage tank on your own premises and what percentage do you purchase through fuel cards? Own tank _____% Fuel Cards _____% If this is an estimate please indicate

7. Do you produce or receive fuel reports? Please circle YES NO DON'T KNOW and if 'YES' please indicate below, by circling all that apply.

SOURCE			
Produce your own from your own storage tank	YES	NO	DK
Reports produced by fuel card company	YES	NO	DK
Other – please state.	YES	NO	DK

TYPE OF REPORT			
Fuel consumption reported by individual vehicle	YES	NO	DK
Fuel consumption reported by individual driver	YES	NO	DK
Fuel consumption reported by groups of vehicles	YES	NO	DK
Fuel consumption reported by a fleet average.	YES	NO	DK

8. How often do you check the accuracy of your fuel reports? *Please circle.*
- | | | | |
|------------------------------------|-----------|--------------|----------|
| Don't check (ignore next question) | Random | Daily | Weekly |
| Monthly | Quarterly | Twice a year | Annually |
9. What problems, if any, have you found with the accuracy of the reports?
Please describe.
- None

If the respondent cannot think of any then a prompt may be required by the team member conducting the survey and the fact that the prompt was required must be recorded. Prompts will include:

Incorrect odometer numbers incorrect litres

10. How important is fuel consumption management to you? *Please circle*
- | | | | | |
|----------------|-------------|--------------------------|-----|--------------|
| very important | important | average with other costs | not | particularly |
| important | unimportant | | | |
11. Do you take fuel consumption into account when acquiring a vehicle?
e.g. replacement or leasing
- Please circle* YES NO
12. Do you compare your fuel consumption against external benchmarks or other fleet information?
if YES give details:
- Please circle* YES NO
13. Do any of your vehicles have in-cab displays that indicate to the driver the rate of fuel consumption?
if YES give details:
- Please circle* YES NO
14. Do you provide feedback to drivers on fuel consumption?
- Please circle* YES NO
15. Do you formally assess a driver's fuel efficient driving ability before employing them?
- Please circle* YES NO
16. Do you have a continuing programme for improving drivers' skills in the areas of safety and fuel efficiency?
if YES give details:
- Please circle* YES NO

17. Do you reward your drivers for conserving fuel?

Please circle

YES

NO

18. Have you taken any actions in the last two years specifically to improve vehicle fuel efficiency?

Please circle

YES

NO

If the respondent cannot think of any, then a prompt may be required by the team member conducting the survey and the fact that the prompt was required must be recorded.

Prompts: improving aerodynamics improving drivers fuel efficiency skills
 improving routing and scheduling improving vehicle specification
 improving tyre management and specification improving engine efficiency
 improving transmission efficiency improving maintenance
 improving fuel consumption monitoring reducing unladen weight

19. Using Table 1 please rate the following obstacles to fuel efficiency in terms of importance, with '1' being most important and '5' being least important.

Table 1 Rating of obstacles to fuel efficiency

OBSTACLE	Importance
	1 to 5
Do not have any obstacles (tick)	Skip question
Lack of Time	
Lack of knowledge of fuel saving techniques and methods.	
Lack of availability of unbiased information	
Other(s) (Please state)	

20. Would you be interested in receiving information on how to **improve your fuel consumption monitoring**? *Please circle* Very interested interested possibly interested not particularly interested not interested at all

21. Would you be interested in receiving information on how to **become more fuel efficient**? *Please circle* Very interested interested possibly interested not particularly interested not interested at all

22. Where would you go to obtain information on fuel efficiency? Please indicate
Do not know

Prompt:

Would not bother Trade or Transport Association Transport press
Other vehicle operators Government organisation
Vehicle manufacturer/Distributor Other (Please state)

23. What would be your preferred method of receiving information on improving fuel monitoring and fuel efficiency?

Please circle Hard copy through the post Electronically via
the internet Personal contact

24. Who do you think should provide information on fuel efficiency? Please rank the following in Table 2 below in order of importance, with '1' being the most important

Table 2 Ranking of sources

SOURCE	RANK
Trade or Transport Association	
Transport press	
Other vehicle operators	
Vehicle manufacturer/Distributor	
Government organisation; please state which one	
Other please state	

25. In what aspect would you like any fuel efficiency assistance to be targeted, and in what form might that assistance take, and who might supply that assistance?

If the respondent cannot think of any, then a prompt may be required by the team member conducting the interview and the fact that the prompt was required must be recorded. Forms of assistance could include:

Best practice case studies Best practice guides Monitoring software
Operational specific advice (comprises of one or more visits to the operator by a specialist advisor) Other (please state)

Continued next page

Preferred suppliers of these would be:

Government Trade or Transport Association Vehicle Dealership
Private Consultancy Other (please state)

26. Do you think that the information currently available about the fuel consumption of new and existing models of vehicles that you operate is both **appropriate** (provides information on the important factors) and **adequate** (gives enough information on the appropriate factors)? Please circle your response.

Appropriate	YES	NO	DK
Adequate	YES	NO	DK

27. What is your assessment of the quality of presently available fuel consumption information in general within the sector? Please circle your response

Very good Good Average Below average Poor

28. How would you like to see such information evaluated, structured and presented?

If the respondent cannot think of any, then a prompt may be required by the team member conducting the survey and the fact that the prompt was required must be recorded. Suggestions could include:

Individual vehicle individual driver vehicle make vehicle type vehicle group

29. Do you have access to the internet? *Please circle* YES NO

30. Is there anything that you would like to add (continue on a separate sheet if necessary)?

8. APPENDIX D DRIVER SURVEY

Introduction: Hello I am xxxx working for Imise Consulting & Kissling Consulting and we are conducting a short survey on behalf of Land Transport New Zealand and the Ministry of Transport which is aimed at collecting information on fuel efficiency issues within the industry. Please could you spare ten minutes to go through the questionnaire with me. Everyone who completes the questionnaire will, if they wish, have their details entered in a prize draw and we will donate \$500 to a registered charity of their choice.

Note this applies to operators and drivers

Please enter your details below.

Name: _____

Company: _____

Address: _____

Tel: _____ Fax: _____ Email: _____

I DO or DO NOT wish to be included in the prize draw.

If the answer to a question is not known write 'DK' in the response area. This is important in ascertaining attitudinal elements.

Vehicle registration: _____ Vehicle Type: _____

Survey reference number _____

Sub Sector: *Please circle*

Heavy Vehicle Goods Service Bus & Coach Contractors

Light vehicle Taxi Light Van/Ute Company Car/SUV

Courier

1. Do you normally drive this vehicle? *Please circle* YES NO DK
2. How many vehicles in the company fleet? Less than 5 5-20 more than 20
DK
3. Do you know the fuel consumption of this vehicle? *Please circle* YES NO
If 'YES' what is it? _____L/100kms, **or**
how many litres does your tank hold _____ and
how far can you go on one tank _____km
4. Does your company collect information on the fuel consumption of vehicles?
Please circle YES NO DK
5. Do you care about how much fuel this vehicle consumes? *Please circle*
YES NO
6. Does your company provide you with information on this vehicle's fuel
consumption? *Please circle* YES NO DK
7. Does your company provide you with information on fleet fuel consumption?
Please circle YES NO DK
8. Do you think that the company should provide you with information on your
vehicle's fuel consumption? *Please circle* YES NO NOT
BOTHERED
9. Do you think that the company should provide you with information on fleet fuel
consumption? *Please circle* YES NO NOT BOTHERED
10. Do you have your own personal vehicle? For example, a car or van?
Please circle YES NO
11. Do you care about how much fuel your own personal vehicle consumes?
Please circle YES NO

12. Has your company ever given you any driver training to improve fuel efficiency or safety? *Please circle as appropriate.*

Fuel efficiency Safety Neither

13. Do you know of any drivers who have received any driver training to improve their safety and fuel efficiency? *Please circle as appropriate.* YES NO
If YES give details

14. Do you think that you could benefit from such skills development? *Please circle as appropriate.* YES NO

15. Do you think that other drivers who drive as part of their job could benefit from such skills development? *Please circle as appropriate.* YES NO

16. Does your vehicle have instrumentation in the cab other than a fuel gauge that shows you the instantaneous or average fuel consumption? *Please circle as appropriate.*

YES NO DK

17. Has your company done anything to improve fuel efficiency in the last twelve months? *Please circle as appropriate.* YES NO
DK

If yes, take notes on what the driver mentions.

18. Is there anything that you would like to add?

9. APPENDIX E OTHER FORMS OF ASSISTANCE

Alternative Fuel
Brochures
Brochures and Internet
Brochures and Internet, mostly because they use the website of google to search
Brochures or a package from the vehicle dealerships
Brochures sent via post
Brochures, Coloured to make it attractive and interesting
Could help. But don't really know
Could use or useful
Direct contact
Email info
email, available information on websites
General information
Google
Google (website)
Information site
Internally
Internet
Internet - Easy Access
Internet - Easy access and more up to date
Internet (purchasing), Intranet (personal)
Internet (the best way)
Internet, which is more successful
Internet/Website
Internet/Website
Land transport should provide it
Magazines
Magazines (car). Trade vehicles
Motortrade, advertisements
Not really. Don't know
Not relevant. One way is to see how fuel efficient the vehicle is
Salesman & Reps
Spreadsheet
Spreadsheet or other information emailed out
TV Advertising
Website
Website - Easier to access
Website - easy access
Website - Google
Website - Most convenient
Website (just like the Mitsubishi site)
Website and brochures
Website internet
Website or emailed information
Website/Internet
Written advice