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**The Legal Framework for Energy Efficiency in Road Transport:  
A Critique of Legislation, Regulation, and Policy  
in New Zealand**

A thesis  
submitted in fulfilment  
of the requirements for the degree  
of  
**Master of Laws**  
at  
**The University of Waikato**  
by  
**KIMBERLEY JORDAN**



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*

2012



# Abstract

Energy efficiency provides a feasible way by which transport emissions can be reduced, air quality can be improved, and security of supply can be increased. In light of energy security and climate change, improving efficiency should be relatively high on the Government's agenda, also because it can contribute to economic efficiency.

This thesis compares the legal framework in New Zealand with the regulatory approach of the United States, the European Union, Japan, and Australia. The discussion shows that the legislative framework in New Zealand gives a disjointed and complicated approach to strategic planning which has resulted in a lack of cohesion which requires future reform. However, the proposed amendments to the primary legislation that affects planning in transport will not be helpful in improving energy efficiency, and research shows the overall focus of central government is not consistent with international thinking. Further, the targets for energy efficiency in transport are weak and require nothing more than business as usual. Even though policies to promote energy efficiency exist, the isolated instruments chosen have limited results. Overall, the regulatory and policy approach by central government gives a piecemeal and unsatisfactory outcome. The approach by some local governments however, shows a commitment to improve energy conservation.

To show internationally that New Zealand is committed to reducing our GHG emissions, reform is needed. New Zealand needs regulation to reduce the average age of the vehicle fleet and to encourage more efficient vehicles. This should consist of vehicle standards, a charge on vehicle CO<sub>2</sub> emissions, and improved information measures. These above measures need to be integrated. Further policy instruments are needed to encourage the use of alternative fuels, electric vehicles, and eco-driving. Perhaps most importantly, what is needed is a philosophical shift by Government, who needs to lead by example and to view energy efficiency as a priority rather than a desired outcome.

## *Acknowledgements*

First, my deepest gratitude is expressed to my supervising Professor, Barry Barton. Not only for selecting me to receive the study award that has partly funded this paper, but also for his patience, guidance and wisdom.

I would also like to express my thanks to Professor Gerry Carrington of Otago University, for helping me gain a deeper understanding of this topic and for his invaluable comments on my draft. Also thanks to Dr Janet Stephenson and Dr Rebecca Ford of Otago University for taking the time to meet with me and share their thoughts on this topic.

I would like to acknowledge Elizabeth Yeaman from the Energy Efficiency and Conservation Authority, Anna Larsen from Government Procurement, and Nick Brown from the Ministry of Transport, for taking the time to meet with me. Thanks also to Phil Consedine and Kerryn Merriman from the City Transportation team of Hamilton City Council.

Lastly, but certainly not least, thank you to my children Bethany and Kael, who provide the constant encouragement and balance that I need in my life. It is my hope the environment we leave you will be better than what it is now.

## *Table of Contents*

Acknowledgements .....	ii
Table of Contents .....	iii
List of Abbreviations .....	ix
List of Tables .....	x
List of Figures .....	x
Introduction .....	1
I An Overview of Energy Efficiency in Road Transport .....	3
A What is Energy Efficiency in Road Transport and Why Do We Need It? .....	3
B Obstacles to Energy Efficiency .....	4
1 Psychological and behavioural barriers .....	4
2 Market barriers .....	6
3 Institutional barriers .....	7
4 Infrastructure as a barrier .....	7
C An Economic Perspective .....	7
D Options for Improving Energy Efficiency in Road Transport .....	9
1 Technology .....	9
2 Regulation .....	13
3 The role for social psychology and behavioural economics .....	21
E The New Zealand Vehicle Fleet .....	21
II The Role of Regulation and Policy .....	24
A Theory of Regulation .....	24
1 Defining regulation .....	25
2 Justifications for regulation .....	26
3 The forms of regulation .....	26
4 The relationship between regulation and policy .....	31
B Theory of Policy .....	33
1 Defining policy .....	33
2 Policy instruments .....	33
III The Legislative Framework .....	35

A	The Land Transport Management Act 2003 .....	35
1	National land transport strategy .....	37
2	Government policy statement .....	45
3	Regional land transport strategy.....	47
4	Regional land transport programme .....	47
5	New Zealand Transport Agency .....	49
6	Land Transport Management Amendment Bill 2012.....	50
B	The Energy Efficiency and Conservation Act 2000.....	51
1	The National Energy Efficiency and Conservation Strategy .....	51
2	The Energy Efficiency and Conservation Authority .....	57
C	The Climate Change Response Act 2002 .....	59
D	The Land Transport Act 1998.....	60
E	The Resource Management Act 1991 .....	61
F	The Environment Act 1986.....	65
G	The Income Tax Act 2007 .....	68
H	Summary.....	69
IV	The Regulatory Response .....	71
A	Environmental Standards.....	71
1	Vehicle standards .....	71
2	Fuel quality standards.....	77
B	Information Measures.....	78
1	Fuel economy labelling .....	78
2	Online information .....	80
C	Fiscal Measures.....	81
1	The emissions trading scheme .....	81
D	Summary.....	87
V	The Policy Response .....	89
A	Biofuels.....	90
B	Electric Vehicles .....	93
C	Fleet Best Practice.....	97
D	Public Transport.....	98

VI	A Comparative Discussion .....	101
A	Comparing Vehicle Efficiency Regulation between Jurisdictions .....	101
B	Vehicle Fleet Composition.....	102
C	The Regulatory Approach of the United States of America .....	104
1	Vehicle and fuel standards. ....	104
(a)	Fuel economy standards.....	104
(b)	GHG emission standards.....	106
(c)	Tyre pressure monitoring standard .....	106
(d)	Fuel standards.....	107
2	Information Measures .....	107
(a)	Fuel economy and environment labelling .....	107
(b)	Tyre labelling .....	108
3	Fiscal Incentives .....	108
4	Other measures .....	109
5	Summary .....	112
D	The Regulatory Approach of the European Union .....	112
1	Vehicle and fuel standards and regulations.....	112
(a)	CO <sub>2</sub> emission standards .....	112
(b)	Tyre standards .....	114
(c)	Tyre pressure monitoring system regulation .....	115
(d)	Gear shift indicator regulation.....	115
(e)	Air conditioning standards .....	115
(f)	Biofuels directive .....	116
2	Consumer information measures .....	117
(a)	Fuel economy and CO <sub>2</sub> emissions labelling.....	117
(b)	Tyre information labelling .....	119
3	Fiscal measures .....	120
4	Other measures .....	121
5	Summary .....	121
E	The Regulatory Approach in Japan .....	122
1	Vehicle and fuel standards .....	122
(a)	Fuel efficiency standards .....	122
(b)	Fuel standards.....	124



2	Consumer information measures.....	125
(a)	Fuel efficiency.....	125
(b)	Tyre labelling.....	126
3	Fiscal policies.....	126
4	Other measures.....	127
5	Summary.....	128
F	The Regulatory Approach in Australia.....	128
1	Vehicle and fuel standards.....	128
(a)	Fuel efficiency and CO <sub>2</sub> emission standards.....	128
(b)	Fuel standards.....	130
2	Consumer information measures.....	131
(a)	Fuel consumption and GHG emission labelling.....	131
(b)	Online vehicle guide.....	132
3	Fiscal incentives.....	132
4	Summary.....	133
G	Summary.....	134
VII	Wider Concepts of Energy Efficiency.....	135
A	Transport Demand Management.....	137
1	The role of urban design.....	138
2	Parking as the integration between transportation and land-use.....	146
3	Alternative travel options.....	148
4	Increasing vehicle occupancy.....	149
B	Institutions of Transport Demand Management.....	150
1	Transport management associations.....	150
2	Employers and other organisations.....	151
3	Local Government.....	152
C	Summary.....	152
VIII	Is New Zealand on the Right Road?.....	153
A	Regulating Vehicle Fuel Economy and CO <sub>2</sub> Emissions.....	154
1	Fuel economy and GHG emission standards.....	154
2	Fiscal instruments to encourage energy efficiency.....	154
3	Information measures.....	155

B	Improving Driver Behaviour.....	156
C	Improving the Efficiency of the Fleet.....	157
D	Improving Institutional Barriers.....	159
E	Improving the Carbon Intensity of Fuels.....	160
F	Promoting Energy Conservation.....	161
G	Summary.....	161
IX	Conclusion.....	162
	Appendix.....	164
A	Examples of Vehicle Efficiency Labels.....	164
B	Examples of Tyre Information Labels.....	167
	Bibliography.....	169
A	Table of Legislation.....	169
1	Australia.....	169
2	European Union.....	169
(a)	Regulations.....	169
(b)	Directives.....	169
3	Japan.....	170
4	New Zealand.....	170
5	United Kingdom.....	171
6	United States of America.....	171
B	Table of Cases.....	171
1	New Zealand.....	171
2	United States of America.....	171
C	Subordinate Legislation.....	172
1	Australia.....	172
(a)	Regulations.....	172
(b)	Statutory instruments and Strategies.....	172
2	New Zealand.....	172
(a)	Regulations, rules and bylaws.....	172
(b)	Statutory Instruments and other Strategies.....	172
3	United States.....	173
D	Bills of Parliament.....	173

1	Australia.....	173
2	New Zealand .....	173
E	Parliamentary Material .....	174
1	European Union .....	174
2	New Zealand .....	174
3	United States .....	174
F	International Materials.....	175
1	Treaties .....	175
2	Standards .....	175
G	Secondary Materials .....	175
H	Internet Materials .....	183
I	Websites.....	184

## *List of Abbreviations*

CAE	Centre for Advanced Engineering, New Zealand
CCRA	Climate Change Response Act 2002
CNG	Compressed natural gas
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
EDG	Economic Development Group of the MBIE
EECA	Energy Efficiency and Conservation Authority
EPA	United States Environmental Protection Agency
ETS	Emission trading scheme
EV	Electric vehicle
FY	Fiscal year
GHG	Greenhouse gas
GPS	Government policy statement
IEA	International Energy Agency
LCA	Life-cycle analysis
LGA	Local Government Act 2002
LPG	Liquefied petroleum gas
LTA	Land Transport Act 1998
LTMA	Land Transport Management Act
LTMF	Land transport management fund
MBIE	Ministry of Business, Innovation & Employment
MED	Ministry of Economic Development
METI	Ministry of Economy, Trade and Industry, Japan
MfE	Ministry for the Environment
MLIT	Ministry of Land, Infrastructure and Transportation, Japan.
MoT	Ministry of Transport
MS	Member State of the European Union
MY	Vehicle model year
NHTSA	United States National Highway Traffic Safety Administration
NLTS	National land transport strategy
N <sub>2</sub> O	Nitrous oxide
NOX	Nitrogen oxide
NZEECS	New Zealand Energy Efficiency and Conservation Strategy
NZES	New Zealand Energy Strategy
NPS	National policy statement

NZTA	New Zealand Transport Agency
NZTS	New Zealand transport strategy
PHEV	Plug-in hybrid electric vehicle
RLTS	Regional land transport strategy
RLTP	Regional land transport programme
RMA	Resource Management Act 1991
RoNS	Roads of national significance
RPS	Regional policy statement
RUC	Road user charge
SUV	Sport utility vehicle
TDM	Transport demand management
TPMS	Tyre pressure monitoring system
UNFCCC	United Nations Framework Convention on Climate Change
VKT	Vehicle kilometers travelled

### *List of Tables*

Table 1	Current emission standards for vehicles in New Zealand .....	74
Table 2	Allocation of land transport funding .....	99

### *List of Figures*

Figure 1	Standardised comparison of fuel economy standards .....	101
Figure 2	Standardised comparison of GHG standards .....	102

## *Introduction*

The transport sector is the largest consumer of New Zealand's total final consumption of energy, with road transport being the primary user.<sup>1</sup> Because the amount of energy, or fuel, consumed by a motor vehicle directly relates to the level of carbon dioxide (CO<sub>2</sub>) emitted, transport accounts for 40.6 per cent of New Zealand's CO<sub>2</sub> emissions. This puts transport emissions ahead of electricity and heat (21.6 per cent), manufacturing and construction (14.3 per cent), and industrial processes (10.2 per cent).<sup>2</sup> In terms of greenhouse gases (GHGs), transport contributes 20 per cent of New Zealand's overall GHG emissions, with road transport being responsible for 91 per cent. Energy efficiency is considered "a key ingredient in breaking the traditionally accepted link between economic growth and increased energy use".<sup>3</sup> It is the easiest, cheapest and most available way of meeting our environmental needs by improving the outcome for our climate, air quality, and security of supply.

This thesis provides a critique of the current legislative, regulatory and policy framework in New Zealand surrounding energy efficiency in the road transport sector. First, an overview of energy efficiency in transport is provided in Chapter I, which discusses what energy efficiency is, how it can be achieved, and the obstacles it faces. The following Chapter discusses the theory behind regulation and policy, and explains how regulation and policy can be used to achieve energy efficiency. Chapter III provides a discussion on the specific legislative provisions that affect energy efficiency in transport, and the institutional framework. This includes the strategic planning requirements and other ways that energy efficiency can be influenced by our legislation. One of the challenges this has presented is that our legislation is bitty, and there is a lack of case law. In spite of this, there is a clear story that emerges. A snapshot of the current regulatory framework is

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<sup>1</sup> International Energy Agency *Energy Policies of IEA Countries: New Zealand 2010 review* (IEA, Paris, 2010) at 17 and 47.

<sup>2</sup> World Resources Institute, "Climate Analysis Indicator Tool" <[www.cait.wri.org](http://www.cait.wri.org)> See also Ministry of Economic Development, *Greenhouse Gas Emissions 2011* (2011).

<sup>3</sup> Parliamentary Commissioner for the Environment *Getting more for less: A review of progress on energy efficiency and renewable energy initiatives in New Zealand – Summary* (2000) at 2.

provided in Chapter IV, and this is followed by a discussion in Chapter V on the different policies that the Government is using to advance energy efficiency. Chapter VI provides an analysis of the regulatory approaches by the United States, the European Union, Japan, and Australia. This provides a platform from which our current legal framework can be compared and critiqued. Energy efficiency is also affected by measures that we shall call energy conservation, which includes measures known as traffic demand management; this forms the topic for Chapter VII. From what we will learn from the above discussion it becomes clear that New Zealand's legal framework requires further work, and it is the purpose of the final Chapter to provide recommendations as to further regulatory measures that would bring New Zealand up to speed with what is happening in other countries, and that would advance improvements in energy efficiency.

The focus of this thesis is on the legal framework affecting the end-use of road transport energy in the light-duty and heavy-duty vehicle fleet. This thesis aims to critique the current law, saying what it is, and what it should be.

## *I An Overview of Energy Efficiency in Road Transport*

### ***A What is Energy Efficiency in Road Transport and Why Do We Need It?***

The International Energy Agency (IEA) defines energy efficiency as “more services for the same energy input, or the same services for less energy input”.<sup>1</sup> In New Zealand, the Energy Efficiency and Conservation Act 2000 defines it as “a change to energy use that results in an increase in net benefits per unit of energy”.<sup>2</sup> When considering energy efficiency in transport, however, the definition offered by the Centre for Advanced Engineering should be preferred as it includes all costs, and is “the provision of energy services at lower total economic, environmental and social costs”.<sup>3</sup> Thus we have different types of efficiency that contribute to an overall efficiency of energy: technical efficiency of vehicles and fuel, including carbon efficiency (or intensity), economic efficiency, and environmental efficiency. In transport, this means getting more kilometres per litre, by increasing vehicle and fuel efficiency through technological developments and promoting eco-driving. Not only does this give improved energy efficiency but also it results in less emissions and an improved environmental efficiency. Just as there are different types of efficiency, there are different ways of measuring it, including energy intensity, well-to-wheels assessment – or life-cycle analysis (LCA) – or fuel economy and CO<sub>2</sub> emissions (which is measured in litres per kilometre or grams of CO<sub>2</sub> per kilometre).<sup>4</sup>

A useful way of explaining energy efficiency in transport is the road transport energy paradigm, which is expressed as  $E_{\text{road transport}} = (\text{vehicle fuel efficiency}) \times (\text{vehicle travel}) \times (\text{the vehicle population})$ .<sup>5</sup> This shows the relationship with

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<sup>1</sup> International Energy Agency “Glossary” <www.iea.org>.

<sup>2</sup> Energy Efficiency and Conservation Act 2000, s 3.

<sup>3</sup> Centre for Advance Engineering *Energy Efficiency: A Guide to Current and Emerging Technologies, Volume 1 Transportation and Buildings* (CAE, University of Canterbury, Christchurch, 1996) at 3.

<sup>4</sup> Energy intensity is the total primary energy use per unit of gross domestic product, and is used to measure the efficiency of the economy. Carbon intensity measures the efficiency of fuels, as does LCAs. See F Creutzig et al “Climate policies for road transport revisited (I): Evaluation of the current framework” (2011) 39:5 Energy Policy 2396.

<sup>5</sup> International Energy Agency *Transport Energy Efficiency* (IEA, Paris, 2009) at 9.



measures that, for the purposes of this paper, will be called energy conservation. Energy conservation is reducing energy demand, rather than using energy more efficiently in delivering a given service.<sup>6</sup> Energy conservation is achieved by reducing vehicle travel and includes choices regarding the use of public transport, traffic management, and urban planning, thus leading to an overall improvement in energy intensity.

The reasons why we need to pursue energy efficiency have undergone an evolution in the past four decades. Following the oil embargo in the 1970s energy efficiency was pursued to ensure the supply of oil, however when we look at the statistics mentioned above it becomes clear that climate change is now a primary concern, although security of supply is still a consideration. Climate change poses a very real threat, and science tells us that if we continue with our current level of GHG emissions we face further degradation of our environment, species will face extinction, and ecosystems will be irreversibly damaged.<sup>7</sup> A further reason to improve efficiency is to improve the quality of our air; research shows that more New Zealanders are dying from traffic-related air pollution than from road accidents.<sup>8</sup> Energy efficiency in road transport provides a feasible, economic, politically acceptable, and effective way to reduce GHG emissions and reliance on oil, and to improve air quality.

## ***B Obstacles to Energy Efficiency***

### *1 Psychological and behavioural barriers*

One of the most obvious and ubiquitous barriers to energy efficiency are the beliefs and behaviours of people, and their resistance to change. Gifford discusses

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<sup>6</sup> L Ryan and N Campbell *Spreading the Net: The Multiple Benefits of Energy Efficiency Improvements* (2<sup>nd</sup> ed) (IEA, Paris, 2012) at 10.

<sup>7</sup> N Stern *The Economics of Climate Change: The Stern Review* (Cambridge University Press, New York, 2007).

<sup>8</sup> See G Kuschel and others *Updated Health and Air Pollution in New Zealand Study Volume 1: Summary Report* (March 2012) at 14, 29; Fisher and others *Health Effects Due to Motor Vehicle Air Pollution in New Zealand* (Ministry of Transport, 2002); See also <[www.transport.govt.nz/research/Road-Toll/](http://www.transport.govt.nz/research/Road-Toll/)>.

the psychological barriers that specifically limit climate change mitigation and adaptation.<sup>9</sup> He claims that there are seven general areas:

- limited cognition (e.g. ignorance, environmental numbness, uncertainty, perceived lack of control over the outcome);
- ideologies (e.g. worldviews such as capitalism, belief that God or mother nature will not forsake, misplaced trust in technology);
- comparisons with others (e.g. social norms, perceived inequity);
- sunk costs (e.g. financial investments, habit, conflicting values, goals and aspirations);
- discredence (e.g. mistrust, perceived inadequacy of programmes, denial);
- perceived risks (e.g. functional, physical, financial, social, and temporal risks); and
- limited behaviour (e.g. token gestures, the rebound effect).

The rebound effect which Gifford mentions is where increased efficiency encourages more use, which has been one criticism made of energy efficiency.<sup>10</sup>

Gifford further suggests that a collection of these barriers leads to a general amotivation, or reluctance and apathy towards climate change mitigation.<sup>11</sup> While some of these barriers can be addressed by conventional forms of regulation, de-centred forms of regulation are also needed which provide information to consumers. Gifford claims there is an important role for psychologists and social scientists if many of the barriers are going to be overcome.<sup>12</sup> Certainly, an important role is to inform policy makers of how best to frame law to address these barriers.<sup>13</sup>

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<sup>9</sup> R Gifford “The Dragons of Inaction: Psychological Barriers That Limit Climate Change Mitigation and Adaption” (2011) *American Psychologist*, May-June 2011.

<sup>10</sup> See L Brookes “Energy fallacies revisited” (2000) 28 *Energy Policy* 355; H Herring “Energy Efficiency: A Critical View” (2006) 31 *Energy* 10. But see H Geller and S Attali *The Experience with Energy Efficiency Policies and Programmes in IEA Countries* (IEA, Paris, 2005).

<sup>11</sup> Gifford, above n 9, at 297.

<sup>12</sup> At 298.

<sup>13</sup> See J Stephenson and others “Energy Cultures: A framework for understanding energy behaviours” (2010) 38 *Energy Policy* 6120; R Lawson and J Williams “Understanding Energy Cultures” (paper presented to the Australia and New Zealand Academy of Marketing, Adelaide, December 2012). Although their work focuses on house-hold energy use, their model could be applied to transport. Future work of the Energy Cultures programme, from the Centre for the Study of Agriculture, Food and Environment (CSAFE) at Otago University, will focus on transport and will provide valuable information for policy makers.

## 2 Market barriers

There is a generally accepted economic analysis of barriers to energy efficiency, and those relevant to transport include:

- risk— where investment has a higher technical or financial risk;
- imperfect information— where effective decisions are not being made because of lack of information;
- access to capital— where investors can not raise enough capital to purchase efficient vehicles;
- split-incentives— where the benefit does not accrue to the investor, or procurement agency; and
- bounded rationality— where individuals do not make decisions that economic models would assume because of time constraints, attention, and the ability to process information.<sup>14</sup>

This last point is particularly relevant to transport, with one study claiming that even cup-holders are valued more than fuel economy.<sup>15</sup> A further barrier that Golove and Eto explain which is relevant to transport is where the market structure is flawed, such as product supply decisions.<sup>16</sup> This can be seen with the availability of electric vehicles (EVs) for sale in New Zealand.

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<sup>14</sup> S Sorrell, E O'Malley, J Schleich and S Scott *The Economics of Energy Efficiency* (Edward Elgar, United Kingdom, 2004) at 10. See also R Howarth "Discount Rates and Energy Efficiency Gap"; M Brown "Obstacles to Energy Efficiency" ; and A Jaffe, R Newell and R Stavins "Economics of Energy Efficiency" in *Encyclopedia of Energy* (Elsevier, Oxford, 2004); J Kahn *The Economic Approach to Environmental & Natural Resources* (3<sup>rd</sup> ed) (Thomson South-Western, Ohio, 2005) Chapter 2 'Economic Efficiency and Markets: How the invisible hand works'.

<sup>15</sup> T Turrentine and K Kurani "Car buyers and fuel economy?" (2007) 35 *Energy Policy* 1213 at 1214.

<sup>16</sup> W Golove and J Eto *Market Barriers to Energy Efficiency: A Critical Appraisal of the Rationale for Public Policies to Promote Energy Efficiency* (Energy and Environment Division, University of California, 1996) at 11, 12.

### *3 Institutional barriers*

The lack of leadership from central government is an institutional barrier, where not enough importance is being placed on energy efficiency as a means to address environmental issues. Indeed, environmental issues appear to have the back seat when it comes to priorities, with economic growth coming first. This is evidenced in the strategic planning documents of government, and is expressed in policies and regulation. It is a shame that there is a reluctance to recognise that economic growth and environmental sustainability are not competing priorities but are complementary. The disjointed and multi-agency approach to energy efficiency also hinders progress.

A further institutional barrier is that with improved vehicle efficiency there is reduced revenue from fuel excise tax. This produces a policy tension between efficiency and revenue. Although this issue poses a significant problem, it is not an insurmountable one. This matter is one that we shall return to.

### *4 Infrastructure as a barrier*

Providing the infrastructure for new technologies can be a barrier to their introduction. This is a consideration for fuel providers when offering alternative fuels. This has also been perceived as a barrier to the introduction to EVs.

## ***C An Economic Perspective***

Price elasticity of demand is an important consideration because this determines how responsive demand is to price. If demand is relatively inelastic price increases will not affect demand. According to Tietenberg and Lewis:<sup>17</sup>

... the price elasticity of demand for oil depends on the opportunities for conservation, as well as on the availability of substitutes ... smaller, more

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<sup>17</sup> T Tietenberg and L Lewis *Environmental & Natural Resource Economics* (8<sup>th</sup> ed) (Pearson, Boston, 2009) at 163.

efficient automobiles reduce the demand of gasoline needed to travel a given distance. The larger the set of these opportunities and the smaller the cash outlays required to exploit them, the more price elastic the demand. This suggests that demand will be more price elastic in the long run (when sufficient time has passed to allow adjustments) than in the short run.

This should be compared to Cordes-Holland's view, who claims that "[t]here is evidence that fuel purchasing decisions are price inelastic, both in the short and long term, in that demand for fuel does not lessen when prices are greater."<sup>18</sup> The correctness of his claim needs to be questioned however, which may be true for smaller incremental changes in price, but is not consistent with other evidence. According to a Government report, "short-run and medium-run elasticities are statistically significant" and "petrol prices have a discernible impact on petrol consumption".<sup>19</sup> This would certainly explain the reduced demand for petrol in New Zealand over the last five years.<sup>20</sup>

A further consideration is the income elasticity of demand, which is important because it shows the connection between the demand for oil and the growth in the economy. Tietenberg claims where prices are constant and income is growing there should be a growth in demand for oil, suggesting that where there is a high elasticity the demand for oil is more sensitive to growth or recessions in the economy.<sup>21</sup> This is important when considering what choice of regulatory measures should be implemented.

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<sup>18</sup> O Cordes-Holland "Climate change, light-duty motor vehicles and the Stern Review: Environmental law and policy measures to reduce passenger vehicle CO2 emissions" (2007) 24 EPLJ 382 at 395.

<sup>19</sup> D Kennedy and I Wallis *Impacts of Fuel Price Changes on New Zealand Transport* (Land Transport New Zealand Research Report 331, 2007) at 10.

<sup>20</sup> Ministry of Economic Development *New Zealand Energy Data File* "Energy Balances" (2012).

<sup>21</sup> See Tietenberg and Lewis, above n 17, at 164.

## *D Options for Improving Energy Efficiency in Road Transport*

There is considerable literature available on technological and policy options which would increase energy efficiency in transport. The emerging themes are that technological advancement is rapidly needed, strong Government leadership and regulatory response is required, and consumers must become aware of the consequences of their decisions and make sustainable choices.

### *1 Technology*

A comprehensive analysis of vehicle technology is provided by Kobayashi et al, who claim there are two broad categories: improving the conversion of fuel energy into useful work; and reducing the load on the vehicle and thereby reducing the work needed to run it.<sup>22</sup> A further element of vehicle technology that assists energy efficiency is the ability of vehicle instruments to provide feedback to the driver on the efficiency of their driving. One example is the use of Gear Shift Indicators which are now mandatory in some European vehicles. A further example is in the Toyota Prius, which provides direct information to the driver on a screen which displays the current fuel efficiency in litres per 100 kilometres. Providing feedback to a driver is an important mechanism to influence behaviour and similar technology is available in applications for smart phones. To try and encourage smoother driving, one application records changes in acceleration and provides feedback to a driver on how efficiently he or she is driving.<sup>23</sup>

Technological advances in fuel also provide opportunities for energy efficiency and include reducing the carbon intensity of conventional fuels, thus improving the environmental efficiency. An essential consideration in assessing the efficiency of any fuel is its life-cycle analysis (LCA) and any effects from production. This is where the rationale for improving energy efficiency must be borne in mind, and that increased efficiency should also result in less emissions.

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<sup>22</sup> See S Kobayashi, S Plotkin and S Ribeiro “Energy efficiency technologies for road vehicles” (2009) 2 Energy Efficiency 125 at 127. See also C Ngo and J Natowitz *Our Energy Future: Resources, Alternatives, and the Environment* (John Wiley & Sons, New Jersey, 2009) at 333, 334.

<sup>23</sup> One example is the Apple ‘greenMeter’.

Before we look at new fuel technologies, a discussion on existing alternatives to petrol seems necessary. One easy response is to increase the use of diesel. Diesel engines are more energy efficient than petrol engines by 15-25 per cent,<sup>24</sup> and emit less CO<sub>2</sub>. However, diesel engines are not as environmentally efficient and produce more nitrogen oxide, carbon monoxide, and particle matter.<sup>25</sup>

Another option is Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG). During the late 1970s and early 1980s New Zealand was a leading nation in implementing alternative fuel programmes in an effort to increase our self-sufficiency and economic position. The LPG promotion scheme provided installation of conversions at virtually zero cost through government subsidies, and LPG was also promoted by excluding it from increases in fuel excise taxes.<sup>26</sup> Although the on-road efficiency improvement is only marginal, when the full LCA is considered the savings are noticeable, with CNG creating 20 per cent and LPG 14 per cent less emissions than petrol.<sup>27</sup> As the CAE observe, the environmental advantages of CNG and LPG have been undervalued and if an appropriate pricing mechanism were in place a resurgence could occur.<sup>28</sup>

EVs appear as new technology but in fact they have been around since as early as the late 1800s and once dominated the market. But with improvements to the roading network their range became limited, the price of oil dropped and, thanks to Henry Ford's mass production of the internal combustion engine, electricity powered vehicles became undesirable. Electric trams were once popular as a form of public transport and in the early 1900s all main centres had electric tram lines. These were done away with around the 1950s in all centres apart from Wellington, which still operates a trolleybus system for public transport. An important point to consider with EVs is the LCA of the energy used. If the electricity is generated from fossil fuels the emissions are effectively moved

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<sup>24</sup> Kobayashi, Plotkin and Ribeiro, above n 22, at 127.

<sup>25</sup> C Ngo and J Natowitz *Our Energy Future: Resources, Alternatives, and the Environment* (John Wiley & Sons, New Jersey, 2009) at 336.

<sup>26</sup> See Liquefied Petroleum Gas Association of New Zealand "Another tax break for auto LPG" Gasline 44, (June 2007) at 4. See also A J Ellis "Changing Efficiencies in Petroleum Energy Use in New Zealand" (New Zealand Petroleum Conference Proceedings, 1994) at 71.

<sup>27</sup> Centre for Advanced Engineering, above n 3, at 389.

<sup>28</sup> At 390.

upstream. This is where EVs pose a valid option in New Zealand due to our aim of having 90 per cent renewable production of electricity.<sup>29</sup> According to de Pont, “[o]n a whole-life-cycle basis, using average power, battery electric vehicles produce about 40–45% of the GHG emissions of a petrol equivalent. At the tailpipe, they produce zero emissions.”<sup>30</sup>

Advances in fuel technology include blending existing fuels with biofuels to create ethanol-blended fuel, which can in some circumstances be used in place of conventional fuel with no change in vehicle technology. In Brazil for example, ethanol blends are the norm, and flex-fuel vehicles are becoming increasingly popular. In the United States, manufacturers have pledged to make 50 per cent of their vehicles flex-fuel from 2012.<sup>31</sup> Biofuels are not a new technology and in fact “the first diesel-powered car used vegetable oil as a fuel, and the Ford Model T was designed to run on ethanol”.<sup>32</sup>

There are three different types of biofuels. First generation biofuels are bioethanol, biodiesel, vegetable oil, and biogas.<sup>33</sup> Issues of sustainability arise with first generation biofuels however because the land on which the feedstocks are grown is in competition with land for food production, and in some countries rainforests are being destroyed to enable the growing of these food stocks. Second and third generation biofuels are known as ‘advanced biofuels’ and they can offer a more sustainable option. Second-generation biofuels can be produced from non-food sources, including waste,<sup>34</sup> and are therefore considered sustainable, but the LCA must be considered. de Pont claims that some second generation biofuels create more GHG emissions through their production.<sup>35</sup> Third generation biofuels include oilgae, or algae fuel, which is a biodiesel using algae as a feedstock. Biopropanol and biobutanol are also third generation fuels and it

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<sup>29</sup> In accordance with the *Government Policy Statement on Renewable Electricity Generation*, issued under the Resource Management Act 1991.

<sup>30</sup> J de Pont *Low-Emission Fuel-Efficient Light Vehicles* (NZ Transport Agency Research Report 391, 2009) at 8.

<sup>31</sup> This includes Ford, Chrysler and General Motors. See <[www.ethanolrfa.org/pages/e-85](http://www.ethanolrfa.org/pages/e-85)>.

<sup>32</sup> de Pont, above n 30, at 50.

<sup>33</sup> United Nations Environment Programme *Towards Sustainable Production and Use of Resources: Assessing Biofuels* (2009) at 25.

<sup>34</sup> At 25.

<sup>35</sup> de Pont, above n 30, at 105.



is claimed that “[a]s a transport fuel, butanol has properties closer to gasoline than bioethanol”.<sup>36</sup> Therefore, third generation biofuels offer a good alternative to conventional fuels.

Different well-to-wheel assessments have created debate over the sustainability of biofuels, for example, the production of biofuel creates significant quantities of by-product. According to Ngo & Ngatowitz, on average, for every ton of biofuel produced there are two tons of by-product.<sup>37</sup> If this is not taken into account then the efficiency will be flawed. This has also been discussed in a report by the United Nations Environment Programme which claims that:<sup>38</sup>

Besides GHG emissions, other impacts such as eutrophication and acidification need to be considered. The available knowledge from life-cycle-assessments, however, seems limited, despite the fact that for those issues many biofuels cause higher environmental pressures than fossil fuels. From a representative sample of LCA studies on biofuels, less than one third presented results for acidification and eutrophication, and only a few for toxicity potential (either human toxicity or eco-toxicity, or both), summer smog, ozone depletion or abiotic resource depletion potential, and none on biodiversity.

Even when this is taken into account Ngo & Ngatowitz still consider that “[a]ll well-to-wheel evaluations indicate that biofuels can reduce greenhouse gas emissions. Estimates range from 30-94% reductions compared to petroleum fuels”.<sup>39</sup>

Further advances in fuel technology include fuel cells, hydrogen, and hybrid technologies using these fuels. Ngo & Natowitz say that hybrid technologies using hydrogen with gasoline or natural gas show considerable promise.<sup>40</sup> The effectiveness of using hydrogen as a fuel is questionable however because of the

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<sup>36</sup> United Nations Environment Programme, above n 33, at 25.

<sup>37</sup> Ngo and Natowitz, above n 25, at 170.

<sup>38</sup> United Nations Environment Programme, above n 33, at 17.

<sup>39</sup> Ngo and Natowitz, above n 25, at 171.

<sup>40</sup> At 444.

life cycle of producing the hydrogen. When hydrogen is produced from fossil fuel, which is the cheapest option, the CO<sub>2</sub> is effectively moved from the end-use to production and can be equivalent to the amount of emissions from a large petrol powered vehicle.<sup>41</sup> This therefore reduces our reliance on oil, but does not mitigate the environmental effects. It should be noted that hydrogen can be produced by other means, such as by the use of nuclear power or renewable energies.

## 2 Regulation

It is sometimes assumed that energy efficiency will be met by increased technologies alone and not through legal, regulatory or policy change.<sup>42</sup> To be sure, energy efficiency is being increased with technology but it is doubtful that it is occurring at the pace which is needed to ensure that the effects of climate change can be mitigated. To improve energy efficiency we can use conventional regulation to reduce market barriers and to impose environmental standards for fuel and vehicles, to provide fiscal incentives to influence behaviour, and we can address market barriers and failures that face consumers by imposing decentred forms of regulation to ensure full information is provided to consumers. We will come to these different forms of regulation shortly.

The International Energy Agency has made specific policy recommendations to increase energy efficiency in transport. These include taking action on: fuel efficient tyres; mandatory fuel efficiency standards for light-duty vehicles; fuel economy of heavy-duty vehicles; and eco-driving.<sup>43</sup> In a different study, the Agency emphasized that any gains in efficiency are not offset by trends towards heavier, larger and faster cars. To ameliorate this, the Agency suggests

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<sup>41</sup> At 449.

<sup>42</sup> H Geller and S Attali *The Experience with Energy Efficiency Policies and Programmes in IEA Countries* (IEA, Paris, 2005) at 9.

<sup>43</sup> International Energy Agency *Energy Policies of IEA Countries: New Zealand 2010 Review* (IEA, Paris, 2010) at 52. These recommendations were included as part of the G8 Gleneagles Action Plan that was developed by the IEA in 2007.

complementing fuel economy standards with CO<sub>2</sub> based vehicle registration fees.<sup>44</sup>

Fuel efficiency standards have been considered “a key component of a policy package that stimulates the use of technology to improve fuel economy”.<sup>45</sup> Options for fuel economy standards include setting a minimum fuel economy standard that each vehicle must attain, similar to Minimum Energy Performance Standards (MEPS) that appliances must meet, although this option has been considered to be not particularly effective.<sup>46</sup> Alternatively, a percentage reduction over the whole fleet or sales-weighted standard provides another option. Finally, an attribute-based standard is an option where the allowed level of CO<sub>2</sub> emissions depends on either the vehicle’s weight or footprint (wheelbase x width). It is claimed that a footprint-based standard is better than weight, and the Joint Research Centre say:<sup>47</sup>

This is because weight-based standards may reduce the appeal of reducing weight to improve fuel economy, and with a poorly designed standard an incentive to add weight rather than cut emissions might result. Footprint-based standards avoid such problems to a large extent as footprint is more difficult to change without affecting vehicle characteristics that consumers value highly.

An et al claim that attribute-based mandatory standards based on the fleet average, along with classification of vehicles by likely use rather than merely on weight, are the ‘state-of-the-art’ in vehicle efficiency standards, because they allow manufacturers to offer a broad range of products. Also, regulation is trending

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<sup>44</sup> International Energy Agency *Transport, Energy and CO<sub>2</sub>: Moving Towards Sustainability* (IEA, Paris, 2009) at 35.

<sup>45</sup> International Transport Forum “Conclusions and Key Findings” Workshop 1 Advances in energy efficient transport technologies (Leipzig, 28 May 2008) <[www.internationaltransportforum.org/Topics/Workshops/WS1Conclusions.pdf](http://www.internationaltransportforum.org/Topics/Workshops/WS1Conclusions.pdf)>.

<sup>46</sup> See Cabinet Business Committee *Climate Change Policy: Options for Controlling Vehicle Entry – Fuel Economy Standards* CBC Min (06) 17/8 at 8.

<sup>47</sup> Joint Transport Research Centre *The Cost and Effectiveness of Policies to Reduce Vehicle Emissions Discussion Paper No. 2008-9: Summary and Conclusions* (OECD / ITF, 2008) at 4.

towards CO<sub>2</sub> emissions rather than fuel.<sup>48</sup> Although regulation is trending towards CO<sub>2</sub> standards, the IEA promote regulating fuel economy rather than CO<sub>2</sub> emissions, which may be explained by the fact that regulating fuel economy provides a more accurate result because of improved carbon intensity when alternative fuels are used. Although fuel economy regulations may be a more costly way to improve fuel efficiency, they do provide a means that is more politically feasible than increasing fuel taxes to achieve the same result.<sup>49</sup>

One point that Koboyashi et al raise is there is a discrepancy of 10-20 per cent between fuel economy measured and that actually achieved by drivers.<sup>50</sup> They claim that this is because the measured tests do not account for real driving patterns and the use of accessories or extreme climate conditions. This emphasizes the need to couple any vehicle efficiency measures with increasing the information available to consumers and encouraging eco-driving.

A further recommendation by the IEA is that policies are needed to provide effective pricing of fuels and emissions.<sup>51</sup> This supports the view of Stern, who claims that any policy aimed at mitigating climate change must include the element of carbon pricing.<sup>52</sup> Effective pricing is fundamental and, as Banister and Button claim, one example of effective use of taxation in New Zealand has been reducing the fuel duty for unleaded petrol. They claim that the lower price increased sales and clearly acted as an incentive.<sup>53</sup> The same can be said for the situation in the European Union where a lower tax rate on diesel has led to an increase in the purchase of diesel-fuelled vehicles.<sup>54</sup> Barton also considers that the

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<sup>48</sup> F An, R Early, L Green-Weiskel *Global Overview on Fuel Efficiency and Motor Vehicle Emission Standards: Policy Options and Perspectives for International Cooperation* CSD19/2011/BP3 (2011) at 15.

<sup>49</sup> Joint Transport Research Centre, above n 47, at 3.

<sup>50</sup> Koboyashi, Plotkin and Ribeiro, above n 22, at 127.

<sup>51</sup> International Energy Agency *Transport, Energy and CO<sub>2</sub>: Moving Towards Sustainability*, above n 44, at 12.

<sup>52</sup> See Stern, above n 7.

<sup>53</sup> D Banister and K Button (eds) *Transport, the Environment and Sustainable Development* (London, E & FN Spon, 1993) at 122.

<sup>54</sup> See Cordes-Holland, above n 18, at 394.

appropriate response to align the public interest with private incentives is through the price system.<sup>55</sup>

One option is to impose a carbon tax on fuel, or to include fuel into a mechanism such as the emissions trading scheme (ETS), which effectively is a tax. Approximately 40 per cent of the cost of a litre of petrol in New Zealand is made up of fuel excise (a fixed charge of 61.13 cents), GST (15 per cent), plus the ETS contribution (around three cents).<sup>56</sup> We shall learn that this tax rate is quite low, compared to the tax rate paid by other G7 countries. The advantages are that taxing fuel encourages eco-driving as fuel costs are directly related to driving style, drivers are encouraged to reduce the load on the vehicle; it also encourages the purchase of smaller more efficient vehicles. But it needs to be implemented with other economic instruments. One point that Santos et al make is that:<sup>57</sup>

If environmental taxes are to be both politically attractive and economically effective, they must be clearly distinguished from other taxes or charges, set at levels determined by acceptable methods of computing the cost of damage done, and applied uniformly to all sources of the same damage.

This point raised by Santos is an important one, and needs to be considered in terms of New Zealand's ETS.

Another way of pricing carbon is to charge vehicles, through vehicle registration and licensing fees. Bradbrook discusses the use of a differential sales tax, or feebates, which offer consumers rebates for efficient vehicles and a high sales tax on fuel consumptive vehicles on a sliding scale at the point of sale.<sup>58</sup> The feebate system has been utilised in the Netherlands where after a one year trial

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<sup>55</sup> B Barton "The Law of Energy Efficiency" in D Zillman, C Redgwell, Y Omorogbe, L Barrera-Hernandez (eds) *Beyond the Carbon Economy: Energy Law in Transition* (Oxford University Press, Oxford, 2008) at 62.

<sup>56</sup> See <[www.aa.co.nz/motoring/owning-a-car/petrolwatch/how-petrol-prices-are-calculated/](http://www.aa.co.nz/motoring/owning-a-car/petrolwatch/how-petrol-prices-are-calculated/)>; <[z.co.nz](http://z.co.nz)>.

<sup>57</sup> G Santos, L Rojey and D Newbery *The environmental benefits from road pricing* (Department of Applied Economics, Cambridge, England, 2000).

<sup>58</sup> See A Bradbrook and A Wawryk "Legislative Implementation of Financial Mechanisms to Improve Motor Vehicle Fuel Efficiency" (1998) 22 Melbourne University Law Review 537.

which resulted in double the amount of low CO<sub>2</sub> emitting vehicles being purchased, it was introduced permanently.<sup>59</sup> In New Zealand, it is arguable the vehicle registration system already encourages energy efficiency by charging vehicles at a higher rate depending on the size of the engine. The Land Transport (Motor Vehicle Registration and Licensing) Regulations 2011 provide a graduated charging system for passenger vehicles carrying up to nine persons, ranging from \$74 for a vehicle of less than 1,300 cubic centimeters total piston displacement up to \$232 for engines greater than 4,000 cubic centimeters total piston displacement.<sup>60</sup> However the fee is a one-off charge that applies when registering the vehicle for the first time in New Zealand and therefore is not a cost that consumers have to pay for actively.

Other options include taxes on older vehicles and charges through annual vehicle registrations based on either the vehicle's carbon footprint, or its size. One of the advantages of this option is that it would include used vehicles and those sold through private sales, and as it is an annual charge, it would not be as easily written off as a capital cost. What would be important is that the charges would be adequate to influence behaviour. For example, in the United Kingdom "[t]he difference between Vehicle Excise Duty paid for the most and least polluting cars is only UK£95 for diesels, UK£100 for petrol vehicles, and UK£105 for alternative fuelled cars".<sup>61</sup> It is hardly surprising then that "[s]tudies indicate that these taxes have had little impact on consumer behaviour".<sup>62</sup> In New Zealand, an annual vehicle licensing fee is charged on a vehicle for use on the road. In accordance with Part 2, Schedule 5 of the Land Transport (Motor Vehicle Registration and Licensing) Regulations 2011 the annual licence fee for a motor vehicle is \$43.50. The regulations prescribe that the fees payable are land transport revenue for the purposes of the Land Transport Management Act 2003.<sup>63</sup>

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<sup>59</sup> Cordes-Holland, above n 18, at 393.

<sup>60</sup> See Land Transport (Motor Vehicle Registration and Licensing) Regulations 2011, SR 2011/79, Schedule 5 Part 1. For the sake of completeness, vehicles with a total piston displacement of 1,300 – 2,600 cubic centimeters are charged \$112.00, vehicles with a total piston displacement of 2,600 – 4,000 cubic centimeters are charged \$139.00, current as at July 2012.

<sup>61</sup> At 393.

<sup>62</sup> At 393.

<sup>63</sup> Land Transport (Vehicle Registration and Licensing) Regulations 2011, r 63 (3).

However, for petrol powered vehicles the total fee payable to the New Zealand Transport Agency (NZTA) is \$287.50. Included in this cost are administration fees, the fee to fund safety standards as prescribed in the regulations, GST, and ACC levies of \$198.46.<sup>64</sup> This implies that a further fee to cover carbon emissions could be charged and collected by the NZTA as an annual fee if legislation was enacted. Considering that the NZTA is the agency responsible for the database which holds information on a vehicle's carbon emissions and the licence label identifies the make, model and year, a licence fee including an emissions charge may not be so difficult to implement. As mentioned above, licensing fees based on vehicle CO<sub>2</sub> emissions are used overseas and have proven successful. This option would require new legislation and an amendment to the current vehicle licensing or registration system. It should be noted that the 1993 Energy Efficiency Strategy identified fees and rebates for new vehicles based on fuel efficiency as a potential measure to be further investigated.<sup>65</sup> Clearly, this has never been implemented.

The vehicle licensing system in New Zealand is currently under review and Cabinet policy decisions are expected in December 2012.<sup>66</sup> The reform could offer an excellent opportunity to improve not only the efficiency of the system but also the efficiency of the vehicle fleet. It is disappointing, therefore, that introducing a fee based on CO<sub>2</sub> emissions is not within the scope of the reform.<sup>67</sup> The reason given for this is that New Zealand uses the ETS to charge for emissions from vehicles.<sup>68</sup>

One point to consider is that the revenue generated by licensing and registration fees is specifically set aside for the national land transport fund (NLTF) to fund the roading network. The purpose of the NLTF is not to improve the efficiency of the fleet or to provide a charge on CO<sub>2</sub> emissions. Thus, if a CO<sub>2</sub>

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<sup>64</sup> Telephone conversation with NZTA call centre (5 July 2012).

<sup>65</sup> See Parliamentary Commissioner for the Environment *Getting More for Less: A Review of Progress on Energy Efficiency and Renewable Energy Initiatives in New Zealand* (Wellington, 2000) at 26.

<sup>66</sup> See <[www.transport.govt.nz/ourwork/land/vehicelicensingreform/](http://www.transport.govt.nz/ourwork/land/vehicelicensingreform/)>.

<sup>67</sup> Ministry of Transport and New Zealand Transport Agency *Vehicle Licensing Reform Terms of Reference: Policy Development and Implementation Planning Phase* (April 2012) at 2.

<sup>68</sup> Email from M Willberg, Project Manager- Vehicle Licensing Reform, to the author regarding annual vehicle licensing (11 July 2012).

emissions charge was introduced into the licensing fees, any revenue should be used to improve the efficiency of the fleet. The revenue could be used to fund scrappage schemes and alternative-fuelled vehicle funds. Scrappage schemes aim to remove older vehicles from the fleet, and in 2009 the Ministry of Transport ran the 'Recycle your Ride' scrappage trials in Christchurch and Wellington, following a pilot scheme in Auckland. The purpose of the trials was to support research on the best way to encourage the removal of older vehicles from the fleet. Although the schemes were considered worthwhile, they were not cost-effective and are therefore not being offered any longer. Alternative-fuelled vehicle funds could offer subsidies or other incentives for consumers, and could work with the scrappage scheme. This would also address the market barrier of access to capital.

The Road User Charges (RUC) system offers another way by which Government could place a price on emissions. The RUC system is designed to recover the cost of road maintenance through charging a weight and distance-based charge that is determined by the number of axles and the maximum laden weight of the vehicle. The Road User Charges Act 2012 defines a RUC vehicle as having its motive power not wholly derived from petrol.<sup>69</sup> But if RUCs were charged on all vehicles, with a corresponding reduction in fuel excise on petrol, RUCs could encourage reduced vehicle kilometres travelled and smaller vehicles because they provide a charge on the actual distance travelled, and on the weight of the vehicle. This would be more equitable for all road users as it will pay for usage based on the actual effect on the roading system and not on how efficient the vehicle is. This issue arises because hybrid vehicles (and EVs until July 2020) are excluded from the RUC system but pay considerably less fuel excise tax than drivers of conventional vehicles because of increased efficiency. If RUC were applied to all vehicles it would also address the institutional barrier of reduced funding for the NLTF because of improved efficiency of the fleet, as the charge will be directly related to the distance the vehicle is travelling instead of how much fuel it is using. However, the negative side of applying RUCs to all

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<sup>69</sup> Road User Charges Act 2012, s 5.



vehicles is that there would be increased costs with compliance, collection, enforcement, there is the issue of evasion, and it is also claimed that “RUCs work against economic efficiency”.<sup>70</sup> Allen considers that a more ideal system to charge for the use of roads would be fuel taxes and spreading the cost over licensing fees, although this view was held in 1991 and before the issue of EVs became a concern.<sup>71</sup> Re-evaluating licensing fees should be explored, however, as they may provide a valid option for improving the efficiency of the vehicle fleet by encouraging smaller vehicles.

It must be mentioned that the current RUC system needs to be amended because it fails to provide adequate weight increments and therefore also fails to provide an incentive for small fuel-efficient diesel vehicles. As de Pont says:<sup>72</sup>

... small, fuel-efficient diesel-powered cars are disadvantaged relative to similar petrol-powered cars, while large, less fuel-efficient diesel cars (such as SUVs) are advantaged relative to their petrol-powered equivalents ... compared to the fuel excise duty on petrol vehicles, the current RUC schedule effectively discourages small, fuel-efficient diesel cars and encourages large, less fuel-efficient diesel cars and SUVs.

This point is an important one when considering the equity of charging different road users. Certainly drivers of smaller diesel vehicles should not be disadvantaged and be paying more for road maintenance and infrastructure than a vehicle of the same size but powered by petrol. One thing to be borne in mind is that no single policy will work and an integrated approach is needed.

Another way regulation can improve energy efficiency is through information measures. So that consumers can be aware of the consequences of their decisions and be encouraged to make sustainable choices, information needs to be provided. Decentred forms of regulation that provide information to consumers on vehicle,

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<sup>70</sup> R Allen *Road User Charges: Principles of Road Pricing and their Application to New Zealand* (McInnes Group New Zealand, 1991) at 52.

<sup>71</sup> See Allen, above n 70.

<sup>72</sup> J de Pont *Low-Emission Fuel-Efficient Light Vehicles* NZ Transport Agency Research Report 391 (NZTA, Wellington, 2009) at 102.

fuel, and tyre efficiency are paramount to improve the efficiency of the fleet. Information on eco-driving is equally as important.

### *3 The role for social psychology and behavioural economics*

Since social psychology and behavioural economics provide explanations to some of the barriers to energy efficiency, it makes sense that they can also teach us a lot about how policy making can be made more effective and gain greater acceptance from the public. Cornforth writes an interesting article that looks into how social psychology and behavioural economics can assist environmental policy making by understanding how decisions are affected by framing, habits, cognitive biases, and risk perception and interpretation.<sup>73</sup> She suggests ways that policy should be framed or directed to minimise certain behaviours. One example she uses is that “telling people that conserving energy will *save* them \$X per year is significantly less effective than telling them that not conserving electricity will lose them \$X per year”.<sup>74</sup> Cornforth suggests that environmental policy needs to be framed in terms of avoiding losses, rather than gaining benefits. In regards to changing habits she claims that visual clues can be most helpful, as can providing feedback to encourage the desired behaviour. This would certainly be the case with trying to encourage eco-driving through driver feedback mechanisms, which has been discussed above. A further point Cornforth makes is that “increased information leads to higher levels of knowledge, but not necessarily to behaviour change”.<sup>75</sup> Thus, policy should focus on the way that information is framed and should address actual and perceived barriers to behaviour change.

#### ***E The New Zealand Vehicle Fleet***

New Zealand imports 95.54 per cent of used cars and 86.28 per cent of commercial vehicles from Japan. Most new passenger vehicles entering New

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<sup>73</sup> A Cornforth “Behaviour Change: Insights for Environmental Policy Making from Social Psychology and Behavioural Economics” (2009) 3 Policy Quarterly 21.

<sup>74</sup> At 22.

<sup>75</sup> At 27.

Zealand also come from Japan (69.29 per cent) but almost a quarter come from 'other' countries. The new commercial fleet is mostly imported from 'other' countries (64.9 per cent) with just over a quarter imported from Japan (29.61 per cent).<sup>76</sup> It is likely the number of vehicles imported from China and Korea is large, considering they were among the largest car manufacturers in the world in 2010.<sup>77</sup> Thus, because we do not have a vehicle manufacturing industry in New Zealand, our vehicle regulatory system relies on vehicle standards from the exporting country and compliance with air quality emission standards as part of our vehicle certification requirements.

A further factor that distinguishes the New Zealand fleet is the age of vehicles. According to the Ministry of Transport:<sup>78</sup>

The average age of the vehicles in New Zealand's light fleet ... is high by international standards. The average age of our light vehicles is 12.8 years old ... the average age of used imported vehicles – which make up almost half of the light vehicle fleet – has reached 14.4 years old.

This gives New Zealand the oldest fleet out of all fleets we will look at. This data relates to information in 2010 however and therefore before the amendment to the Vehicle Exhaust Emission Rule in 2012 came into effect. Current data according to the statistician for the Imported Motor Vehicle Industry Association gives the average age of an imported vehicle in 2012 as 8.2 years.<sup>79</sup>

The New Zealand light vehicle fleet is predominantly powered by petrol, with only 15.7 per cent fuelled by diesel.<sup>80</sup> With a small exception the heavy-duty fleet is powered by diesel. This places us behind the European Union and even

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<sup>76</sup> New Zealand Transport Agency *New Zealand Motor Vehicle Registration Statistics 2010* (January 2011) at 8, 22.

<sup>77</sup> International Organisation of Motor Vehicle Manufacturers  
<[www.oica.net/category/production-statistics/](http://www.oica.net/category/production-statistics/)>.

<sup>78</sup> Ministry of Transport *The New Zealand Vehicle Fleet: Annual Fleet Statistics 2010* (March 2011) at 2.

<sup>79</sup> Interview with John Nichols, IMVIA Statistician, (the author, personal communication, 17 May 2012).

<sup>80</sup> Ministry of Transport *The New Zealand Vehicle Fleet: Annual Fleet Statistics 2010*, above n 78, at 48.

Australia for the percentage of diesel vehicles in the fleet.<sup>81</sup> Increasing the proportion of diesel and alternative-fuelled vehicles would improve the efficiency of the fleet, and it would also benefit the local biofuel industry.

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<sup>81</sup> See Department of Infrastructure and Transport *Light Vehicle CO<sub>2</sub> Emission Standards for Australia: Key Issues- Discussion Paper* (2011).

## *II The Role of Regulation and Policy.*

A theoretical understanding of the role of regulation and policy provides a platform from which the legitimacy and effectiveness of government action can be critiqued. Theory explains the different types of instruments available, in what circumstances they are best used, and their effectiveness. But as we shall see, what theory tells us and what happens in reality are often different.

### *A Theory of Regulation*

Broadly, “[r]egulatory theory is concerned with how various forms of regulation, including law, govern social interaction”.<sup>1</sup> Regulation itself is forward-looking and focuses on management of an activity. It can be developed by Government or by regulatory agencies. The distinction between Government and agencies is important as it not only removes a matter from political control, but it is also important in matters of technical complexity. As Barton elucidates, at the most basic level we use regulation to alter behaviour.<sup>2</sup> An important consideration is the larger context of regulation within the political environment and government policies about regulation. In the 1980s the shift to a de-regulated or decentred approach to managing public goods or societal behaviour reflected the ideology of ‘rolling back the state’ and the neo-liberal movement. Today, Government policy requires better and less regulation in an effort to improve our economic position.<sup>3</sup>

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<sup>1</sup> H Charlesworth and C Chinkin “Regulatory Frameworks in International Law” in Parker, C and others (eds) *Regulating Law* (Oxford University Press, Oxford, 2004) at 250.

<sup>2</sup> B Barton and others *Regulating Energy and Natural Resources* (Oxford University Press, Oxford, 2006) in particular, Barton’s Chapter “The Theoretical Context of Law”.

<sup>3</sup> See *Government Statement on Regulation*, released by Hon Bill English and Hon Rodney Hide (17 August 2009).

## *1 Defining regulation*

Efforts at defining regulation are many and varied but the definition offered by Black has been met with approval by Barton et al who consider her definition the most useful. Black defines regulation as:<sup>4</sup>

... the sustained and focused attempt to alter the behavior of others according to defined standards or purposes with the intention of producing a broadly identified outcome or outcomes, which may involve mechanisms of standard-setting, information-gathering and behavior-modification.

Black further explains this by clarifying that:<sup>5</sup>

... ‘culture’ or the ‘market’ do not regulate, though their influence may be significant in affecting the regulatory process. Regulation is thus understood here to be the intentional, goal-directed, problem-solving attempts at ordering undertaken by both state and non-state actors.

A question which Black poses is whether regulation is ‘less than law’. From a functional perspective this may be true as regulation performs one of the functions of law, but Black argues regulation may be more than law when a decentred conception of regulation is invoked. She claims:<sup>6</sup>

The relationship between law and regulation is in short as shifting and complex as the conceptualizations ascribed to each. Most conceptualizations of regulation, however, even those that see regulation as simply legal rules, are challenging for unitary conceptions of law, and indeed for law’s understanding of itself.

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<sup>4</sup> J Black “Critical Reflections on Regulation” (2002) 27 Australian Journal of Legal Philosophy 1, 26.

<sup>5</sup> J Black “Regulatory Conversations” (2002) 29 Journal of Law & Society 163 at 170.

<sup>6</sup> J Black “Critical Reflections on Regulation” above n 4, at 33.

## 2 *Justifications for regulation*

One of the justifications for regulation is provided by economic analysis, which claims that in situations of market failure intervention is justified to correct market forces to maintain an efficient market. But as Barton discusses, this provides an explanation which first fails to consider any legal, political or social analysis. He further considers that it fails to consider the role of law and regulation which can be necessary to construct and control markets.<sup>7</sup> This is true, as one of the fundamental reasons for law is to order society. Protecting societal values is one area that Black identifies and she argues that access to justice and the achievement of social justice should also be the goals of regulation.<sup>8</sup> Part of this social justice includes social equity and the importance of the role of regulation to redistribute and manage risk. This is particularly important for environmental concerns where it is often not the polluter that pays. In regards to transport, regulation is justified on the basis that the cost of an externality – GHG emissions – needs to be internalised and thus economic analysis provides a clear justification for regulation.

## 3 *The forms of regulation*

There are many ways that regulation can be implemented and Barton neatly categorises them. He says:<sup>9</sup>

Broadly speaking, we can identify three kinds of regulation; conventional regulation, market-based alternatives, and de-centred regulation. Market-based systems include competitive energy markets, and markets in novel rights such as tradable emission certificates. Decentred regulation involves a range of strategies such as self-regulation, information measures, and voluntary measures.

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<sup>7</sup> See Barton and others(eds) *Regulating Energy and Natural Resources* , above n 2.

<sup>8</sup> J Black “Critical Reflections on Regulation” above n 4, at 10.

<sup>9</sup> B Barton “The Law of Energy Efficiency” in D Zillman and others (eds) *Beyond the Carbon Economy: Energy Law in Transition* (Oxford University Press, Oxford, 2008) at 79.

We will learn that regulating energy efficiency in transport will require all three types of regulation.

Conventional regulation involves the traditional concept of ‘command and control’. It is “regulation by the state through the use of legal rules backed by (often criminal) sanctions”.<sup>10</sup> Environmental standards are one of the most common forms of conventional regulation and they involve establishing uniform requirements on broad categories to achieve a specific environmental goal.<sup>11</sup> They include technology or performance based standards, product standards, ambient standards and such like. The advantage is that they are unambiguous, making enforcement easy, and they are most effective in situations where the ‘polluter’ is identifiable such as single point source pollution – or motor vehicles.<sup>12</sup> One of the obvious criticisms is the vulnerability to political manipulation. There is also the risk of increased administrative bureaucracy and the promulgation of law. Another criticism of conventional regulation is that it provides no incentives to the manufacturer or polluter to exceed the standard.<sup>13</sup>

The result is that the onus is always on government to apply stricter standards, a sometimes difficult political process which assumes governments have detailed knowledge of the most appropriate standards for different industries...The inability to encourage firms to go ‘beyond compliance’, through a process of continuous improvement and cultural change, is one of the most serious failings of command and control in its traditional forms.

In light of these criticisms there is serious doubt about the role of conventional regulation in addressing environmental concerns, with some authors claiming it “ha[s] reached the limit of [its] effectiveness in arresting environmental

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<sup>10</sup> J Black “Critical Reflections on Regulation” above n 4, at 2.

<sup>11</sup> See N Gunningham & P Grabosky *Smart Regulation: Designing Environmental Policy* (Clarendon Press, Oxford, 1998) at 39, 40.

<sup>12</sup> At 43, 44.

<sup>13</sup> At 45.



degradation”.<sup>14</sup> What is certain, is that conventional regulation is most effective when used with other forms of regulation.

Decentred regulation captures a range of measures and indeed challenges what lawyers would consider regulation at all. Black considers that “[i]n decentred analyses, regulation ‘happens’ in the absence of formal legal sanction – it is the product of interactions, not of the exercise of the formal, constitutionally recognised authority of government”.<sup>15</sup> Decentred regulation includes self-regulation, but it has been claimed that this can lead to weak standards, ineffective enforcement and punishment that is “secret and mild”.<sup>16</sup> One view is that self-regulation is:<sup>17</sup>

... frequently an attempt to deceive the public into believing in the responsibility of an irresponsible industry. Sometimes it is a strategy to give the government an excuse for not doing its job.

This negative view hints at the reality that self-regulation generally serves industry and private interests over, and at the expense of, the public. Given this, self-regulation is best used when activated by external institutions, which in reality may be better termed as co-regulation.<sup>18</sup> Black points out that self-regulation is best suited where the regulated are well intentioned, well informed, have the organisational and economic resources available, and where the regulated are relatively few.<sup>19</sup> One example of where this type of regulation has been used successfully is Japan, which we will learn about shortly.

Another form of decentred regulation noted above is the use of information measures and this is particularly pertinent to energy efficiency in transport. Information measures include educational instruments and mechanisms such as product certification and award schemes. This form of regulation is seen as

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<sup>14</sup> At 47.

<sup>15</sup> J Black “Critical Reflections on Regulation”, above n 4, at 8.

<sup>16</sup> Gunningham & Grabosky, above n 11, at 53.

<sup>17</sup> J Braithwaite ‘Responsive Business Regulatory Institutions’ cited in N Gunningham & P Grabosky *Smart Regulation: Designing Environmental Policy* (Clarendon Press, Oxford, 1998) 53.

<sup>18</sup> Gunningham & Grabosky, above n 11, at 55.

<sup>19</sup> J Black *Rules and Regulators* (Clarendon Press, Oxford, 1997) 40.

essential to change attitudes and behaviour of consumers and as a supplement to other forms of regulation. Not only can education and information measures be designed to meet industry needs, they have a key function of internalising environmental awareness into corporate decision-making.<sup>20</sup> Product certification schemes can run the risk of providing misleading information and to ensure their effectiveness it is important that full information is given. Another information measure is the use of awards to raise awareness of environmentally efficient products. Gunningham and Grabosky claim that “public enunciation of virtuous conduct may have greater impact than the public denunciation of harmful behaviour”.<sup>21</sup> Whether this is so is beyond this discussion, but publically identifying companies that do not perform well environmentally has been shown to increase performance levels. One example of this is in Japan where manufacturers are publically ‘shamed’ as a means to improve their behaviour. On their own, information measures are unlikely to be an effective regulatory instrument, however they are essential to use as a complement to conventional regulation.<sup>22</sup>

Economic instruments play a major part in environmental regulation and range from instruments defining property rights or market creation, to taxes, charges, and measures such as funds and loans. Market creation provides a platform where tradable rights can be bought and sold. Enter the Emissions Trading Scheme. The advantage is that industry is thought to be in a better position than government or agencies to identify and specify appropriate action. Industry is encouraged to be innovative in creating ways of reducing pollution and selling permits at a profit, and firms who can reduce pollution at little cost can sell their permits to other firms to whom it is more costly to abate their pollution, thereby equalling out the market. The obvious disadvantage is that firms may alternatively hoard their permits and uncompetitive behaviour may arise. There

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<sup>20</sup> Gunningham & Grabosky, above n 11, at 61.

<sup>21</sup> At 66.

<sup>22</sup> At 427, 430.

are also difficulties in determining issues of equity with allocating permits initially, and monitoring and enforcement. In light of this:<sup>23</sup>

... market creation may be restricted to applications where the use of permits can be easily monitored and verified, and where there are good trading prospects. In these circumstances, well designed schemes have the capacity to deliver substantially reduced pollution loads and a substantially lower cost to industry.

Trading schemes have proved to be effective, however the issue with New Zealand's ETS and its use for transport emissions, is that there is no trading and the charge is effectively a tax. The ETS will be discussed in more detail in Chapter IV. This brings us to discuss the alternative fiscal instruments, which are to create a price on the consumption or production of the resource as a way to internalise externalities, by way of a tax or charge. According to economic theory this will impose less cost on industry than conventional regulation. Due to the non-prescriptive nature of this form of regulation, it encourages greater innovation and provides an incentive to achieve this by reduced cost for greater efficiency. It also enforces the 'polluter pays' or user-pays principle which is more equitable than imposing a cost on the greater community. While this appears a good option:<sup>24</sup>

It is important to recognise, however, that many tax and charge schemes that have been implemented across the globe are, in reality, revenue raising devices, not serious environmental policy instruments. That is, the size of the price signal to polluters is well below that required to achieve a given environmental objective. In fairness, it may be politically possible only to introduce taxes and charges at low levels, essentially as symbolic measures, and increase them over time until they provide an effective price-based signal to the market.

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<sup>23</sup> At 74.

<sup>24</sup> At 76.

This raises one of the main criticisms of taxes and charges, which is the difficulty in setting the correct level to achieve the desired result. There is the risk that costs may simply be transferred to the end-user where the price is relatively inelastic, which could arguably be the case for a good such as fuel. There is also the risk that industry and consumers will not respond rationally. The political nature of taxes can not be under estimated, and Ogus claims this is one of the reasons that they are not implemented as often as they could be. He writes:<sup>25</sup>

... the very effectiveness of corrective taxes in constraining socially undesirable behaviour renders them unattractive to those industries which would be most affected; and these same industries are typically powerful pressure groups that can exert a profound influence on policymaking.

Bottomley and Bronitt have termed another form of regulation called ‘regulation without rules’ which includes utilising architecture and land use to influence human behaviour.<sup>26</sup> This certainly stretches the limits with what one would generally consider as regulation, but it is used, and successfully. In New Zealand local government use this form of regulation with varying degrees of success in trying to encourage people to make energy efficient decisions and we will see this is an important aspect of increasing energy efficiency and energy conservation in the transport sector.

#### *4 The relationship between regulation and policy*

Regulation and legislation are the means through which government policy decisions are given formal legal authority, and are some of the tools available to government to implement their policy direction.<sup>27</sup> Regulation is an expression of policy and can be understood as a result of the policy process.

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<sup>25</sup> A Ogus “Corrective Taxes and Financial Impositions as Regulatory Instruments” (1998) 61:6 *Modern Law Review* 767, 769.

<sup>26</sup> S Bottomley & S Bronitt *Law in Context* (3<sup>rd</sup> ed) (The Federation Press, Sydney, 2006) at 317

<sup>27</sup> See R Shaw and C Eichbaum *Public Policy in New Zealand: Institutions, Processes and Outcomes* (3<sup>rd</sup> ed) (Pearson, Auckland, 2011).

Regulation provides rules which must be followed and sanctions for non-compliance, but policy can be similar to legal principles as it does not always necessitate a certain outcome but favours a particular decision. Policies have a dimension of weight and therefore can be overridden when weighed against other principles, and have, as Hart calls it, a ‘non-conclusive’ character.<sup>28</sup> They can therefore be thought of as not binding on a decision-maker but must be seen to be considered in determining an outcome. As will be seen in the following discussion this is one of the difficulties facing policies on energy efficiency: they are weighed against other government policies which unfortunately appear to have more importance. Although the policies exist, instruments are needed to give the policy weight. Without such instruments it is almost more of a notion of goodwill showing that these concerns are thought of, although they are not quite as important as other policies.

Policies are easier to implement than regulations and one aspect that Barton discusses is the political success of policies. In discussing energy efficiency policies he says that while taxes and levies are difficult to implement politically, efficiency standards and other energy efficiency measures remain feasible.<sup>29</sup> He considers that “[l]abelling, information, and training measures are ‘soft policies’ which tend to be more effective if combined with financial incentives, voluntary agreements, or regulations.”<sup>30</sup>

One interesting point made by Rubin is that policy development has now displaced the common law as a primary means to regulate social behaviour and this ‘modern legislation’ has resulted in regulatory agencies displacing the courts.<sup>31</sup> This view certainly draws attention to the development in regulatory styles and the move to what can be called a decentred form of regulation while illustrating the fine line between regulation and policy.

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<sup>28</sup> HLA Hart *The Concept of Law* (Clarendon Press, Oxford, 1994) at 261.

<sup>29</sup> Barton “The Law of Energy Efficiency”, above n 9, at 72.

<sup>30</sup> At 72.

<sup>31</sup> See E Rubin “Law and Legislation in the Administrative State” (1989) 89:3 *Columbia Law Review* 369.

## ***B Theory of Policy***

### *1 Defining policy*

A broad definition is provided by traditional legal theory which tells us that “policies are propositions that describe goals” which generally lead to an improvement in an economic, political, or a social feature of the community.<sup>32</sup> Policy is a response to a public issue or problem and is normative in nature – that is, it says what things should be.<sup>33</sup> Scott says that policy is “an evolutionary process that links a number of decisions together in pursuit of particular goals” and that policies “also include the frameworks of laws and regulations that govern the behaviour of private individuals and groups”.<sup>34</sup> Policy arises and evolves in a variety of ways and can be initiated from a variety of actors, including: interest groups and citizens; employer and employee groups; judges through judicial review; officials and advisors, and members of Parliament or ministers.

### *2 Policy instruments*

Policy instruments are the means used to achieve policy objectives, and choosing the right one can influence the success or failure of the policy.<sup>35</sup> Althaus et al claim there are four types:<sup>36</sup>

- i) Advocacy— using information programmes to educate and persuade;
- ii) Money— utilising spending and taxes to achieve government objectives;
- iii) Government action— through delivery of public sector services;  
and

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<sup>32</sup> R Dworkin *Taking Rights Seriously* (Duckworth, London, 1977) at 90, 22.

<sup>33</sup> See Shaw and Eichbaum, above n 27, Chapter 1.

<sup>34</sup> C Scott “Theories and Conceptions” in R Miller (ed) *New Zealand Government and Politics* (Oxford University Press, Auckland, 2001) at 399.

<sup>35</sup> See C Althaus, P Bridgman and G Davis *The Australian Policy Handbook* (4<sup>th</sup> ed) (Allen & Unwin, NSW, 2007) Chapter 6.

<sup>36</sup> See Althaus, Bridgman and Davis, above n 35, Chapter 6.

- iv) Law— using legislation, regulation, by-laws and other statutory instruments.

Within these policy instruments the role of Government varies and, like regulation, can be either low, mixed, or a high level of involvement. We will learn that energy efficiency in transport utilises each of these types of instruments. However an important point that Althaus make is that multiple policy instruments may be needed. This is certainly the case in transport where an approach that uses a combination of the different types of policy is needed.

Weimer and Vining discuss generic policy solutions to address specific economic rationales for intervention.<sup>37</sup> They claim that to address market failures regarding externalities the primary response should be to use incentives and rules, and that a market mechanism should be a secondary solution. They also say that although these are the ideal solutions they are not necessarily the most often used,<sup>38</sup> which is the case for GHG emissions in New Zealand.

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<sup>37</sup> D Weimer and A Vining *Policy Analysis: Concepts and Practice* (4<sup>th</sup> ed) (Pearson Prentice Hall, New Jersey, 2005) at 260.

<sup>38</sup> At 260

### *III The Legislative Framework*

The legislative framework that underpins energy efficiency in transport provides a variety of strategies for planning which set the direction for transport over the coming years. It will be seen that the requirement to provide for energy efficiency arises principally from our international obligations.

#### *A The Land Transport Management Act 2003*

The Land Transport Management Act 2003 (LTMA) provides the legislative background for strategic planning and funding in transport through setting requirements for the National Land Transport Strategy (NLTS), the Government Policy Statement (GPS), and regional strategies and programmes. The Act also establishes the New Zealand Transport Agency (NZTA) as the Crown entity responsible for managing funding and the regulatory requirements of transport. Although the Act does not mention energy efficiency, the stated purpose is to aim to achieve, inter alia, an integrated and sustainable land transport system that contributes to protecting and promoting public health and ensuring environmental sustainability.<sup>1</sup> One could rightly infer that this includes the concept of energy efficiency. The obligation to take into account the National Energy Efficiency and Conservation Strategy also places an obligation to consider energy efficiency in transport. But before we discuss the planning and funding framework it is necessary to introduce the Ministry of Transport (MoT).

The MoT is the Government's principal transport policy adviser. There are a few work programmes, or policy areas, that address matters relevant to energy efficiency, and the first of these is the climate change and energy work programme. This programme is the Government's closest thing to an energy efficiency programme for transport and although it does not explicitly recognise these projects as relating to energy efficiency, the objective is the same. The programme covers contributions to the emission trading scheme, biofuels, electric

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<sup>1</sup> Land Transport Management Act 2003, s 3.



vehicles, the fleet best practice programme, and work on fuel economy by initiatives with the NZTA. The second work programme focuses on air quality by addressing vehicle emissions through the Vehicle Exhaust Emissions Rule 2007. These individual programmes will be discussed in more detail shortly as they constitute the regulatory and policy approach of Government.

The MoT's *Statement of Intent 2012—2015* shows a clear direction for the next three years and states the Ministry will focus on the following outcomes:<sup>2</sup>

- better quality transport regulation and frameworks
- more open and efficient transport markets
- improved planning and investment in infrastructure and services
- fewer transport incidents and other harms
- improved government transport agencies' performance
- improved preparedness for, and management of, shocks and major events.

Clearly, improving the efficiency of the fleet is not a goal for the MoT and it is in fact seen as a challenge because of the impact that improved efficiency and alternative fuels will have on revenue levels, and therefore the ability to improve investment in infrastructure.<sup>3</sup> The *Statement of Intent 2012—2015* also says:<sup>4</sup>

To maximise our effectiveness at international transport forums, we will develop a New Zealand strategy for transport engagement with the ... International Transport Forum ... This will provide a strong voice for New Zealand's preferred positions and minimise any negative impacts from the decisions taken by these institutions.

This statement could be seen as an intention to make allowances for New Zealand to depart from international practice if it is not in the Ministry's interests.

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<sup>2</sup> Ministry of Transport *Statement of Intent 2012—2015* (F.5 SOI 2012) at 5.

<sup>3</sup> At 5.

<sup>4</sup> At 11.

Considering the MoT is the lead agency for delivering the New Zealand Energy Efficiency and Conservation Strategy's goals for transport, the *Statement of Intent* shows a disappointing direction.

### *1 National land transport strategy*

The first strategy under the LTMA that we shall discuss is the NLTS. Pursuant to section 66, the Minister of Transport may issue a NLTS that “enables the Minister to provide guidance to the land transport sector on the Crown’s outcomes and objectives in relation to land transport in New Zealand.” The strategy must set out the Crown’s outcomes and objectives in relation to land transport in New Zealand over a period of at least 30 financial years and the measurable targets to achieve those outcomes and objectives, and any other details that the Minister considers relevant.<sup>5</sup> The LTMA requires the aim of the strategy to contribute to the purpose of the Act, which is to achieve an affordable, integrated, safe, responsive, and sustainable land transport system while contributing to the following objectives:<sup>6</sup>

- a). assisting economic development:
- b). assisting safety and personal security:
- c). improving access and mobility:
- d). protecting and promoting public health:
- e). ensuring environmental sustainability.

The strategy must also take into account any national energy efficiency and conservation strategy and any relevant national policy statement under the Resource Management Act 1991 (RMA). The NLTS may seem the obvious place one would expect to find any government policies on energy efficiency in the transport sector, but as we will see this is not the case.

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<sup>5</sup> Land Transport Management Act 2003, s 69.

<sup>6</sup> Section 68. This is also the purpose of the Act as stated in s 3.

Before we discuss the current transport strategy, the previous documents that set the direction for transport will be reviewed. It will be seen that even though energy efficiency is recognised, effective policy instruments have not been forthcoming. Peculiarly, since the concept of a NLTS was introduced into legislation in 1993, no such statutory document has been produced. But this is not for want of trying. In 1994 the Government proposed implementing a strategy and the third policy objective (after safety and infrastructure) was energy efficiency/ environment. It stated:<sup>7</sup>

Energy efficiency and environmental aspects of the land transport sector have taken a back seat for many years in terms of including their effects in any decision making processes ... The time has come when we can no longer treat environment and energy efficiency issues as an add on extra in land transport planning.

This recognition looked promising for improvements in energy efficiency in transport. The specific energy efficiency objectives suggested that the vehicle fleet be “energy efficient and environmentally friendly at a level that is internationally acceptable” and that the transport sector “play its part in meeting New Zealand’s commitment to reducing CO<sub>2</sub> levels emissions to 20 per cent below their 1990 levels by the year 2000”.<sup>8</sup> One of the targets was that “by the year 2001 X % of the vehicle fleet is using unleaded fuel”, a further target specific to energy efficiency was that “by the year 2001 X % of the vehicle fleet produces emissions of less than X %”.<sup>9</sup> While these targets mention emission levels and air quality (and two other targets related to noise from transport) they do not specifically address how CO<sub>2</sub> emission levels will be reduced. Curiously, the *Land Transport Strategies and Network Funding* document said that the NLTS would be issued as a Regulation under the Land Transport Rules as set out in the Land Transport Act 1993.<sup>10</sup> This not only seems odd in terms of the legitimacy of

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<sup>7</sup> Ministry of Transport *Land Transport Strategies and Network Funding* (1994) at 16.

<sup>8</sup> At 17.

<sup>9</sup> At 17.

<sup>10</sup> At 18.

making it a regulation, but the LTA 1993 provided under section 29 that the minister may implement a NLTS.

In September 1997 the Government got so far as issuing a *NLTS Draft Discussion Document* with a target date for completion being May 1998. The Draft NLTS's vision statement for the transport sector was "a land transport system that meets the demands of people, business and communities at reasonable cost".<sup>11</sup> Reasonable cost was defined as being "where the value of the cost to the nation is exceeded by the value of the resulting benefits to the nation".<sup>12</sup> The Draft had four key objectives of improving: economic efficiency and funding; access to transport; safety; and environmental effects. The objective of improving environmental effects focused on sustainable management and referred to the RMA. The Draft stated "[t]he policy role of land transport is to complement the RM Act to achieve an integrated approach to sustainable management".<sup>13</sup> The document further said that an appropriate role may be to "consider the development and implementation of efficient mechanisms for achieving environmental outcomes where the RMA may not be efficient, such as technical vehicle emission standards ... [and] develop and implement efficient pricing mechanisms".<sup>14</sup> A specific policy objective in the Draft was to develop comprehensive policy measures to evaluate and improve vehicle fleet efficiency. The target to achieve this was completion within four years and implementation within six years after the NLTS was published in the Gazette. Some of the recommendations regarding the development of a NLTS were that a strategy would provide greater planning certainty for regional and district authorities and agencies involved in land transport in central government and would ensure coordinated regional strategies while avoiding duplication of effort.<sup>15</sup> An NLTS would certainly have provided these advantages and it is unfortunate that the Draft never made it past the consultative process.

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<sup>11</sup> Ministry of Transport *National Land Transport Strategy Draft – Discussion Document* (September 1997) at i.

<sup>12</sup> At i.

<sup>13</sup> At 12.

<sup>14</sup> At 12.

<sup>15</sup> Transport Strategy Group Recommendations, *Development of: National Land Transport Strategy* (July 1997).

At the time the *NLTS Draft—Discussion Document* was published the MoT also published a Background Information Document which put the NLTS in context with other policy efforts of Government.<sup>16</sup> The *NLTS Draft—Background Information* document explained that the Draft NLTS will be complemented by the Environment 2010 Strategy, and recognised New Zealand’s commitment to the environment as coming from our international obligations under Agenda 21, the Rio Convention and the Montreal Protocol. The Environment 2010 Strategy was developed by the Ministry for the Environment (MfE) and contained its own goals for transport, which included improving the fuel efficiency of the transport fleet and reducing transport emissions.<sup>17</sup> The Background Information document also stated that the Vehicle Fleet Emissions Control Strategy was being developed to analyse the particular policy options and recommend appropriate policy responses. According to the document, options included fuel standards, catalytic converters, vehicle emission testing, new technology vehicles and changing travel behaviour patterns. This work was to be undertaken by the Ministry of Transport and in part, eventuated as its air quality programme – which we shall return to shortly. Curiously, another strategy that existed but that was not mentioned in the Background Information Document, despite including goals for transport, was the *Energy Efficiency Strategy 1994—1997* of the Energy Efficiency and Conservation Authority. Despite the considerable resources and effort that was spent on developing the Draft NLTS, in late 1998 the Government decided “the national strategy was not required and that the goals could be better met by a national transport statement and then, by road reform proposals”.<sup>18</sup>

Yet in 2002 the *New Zealand Transport Strategy* (NZTS) was released by the MoT. The vision was for economic development, social cohesion, and environmental improvements to be progressed in parallel, and that transport decisions were to reflect the wider government commitment to sustainability.<sup>19</sup> The 2002 Strategy included the objective of improved public health, which

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<sup>16</sup> Ministry of Transport *National Land Transport Strategy Draft – Background Information* (September 1997).

<sup>17</sup> Ministry for the Environment *Environment 2010 Strategy* (September 1995) at 43.

<sup>18</sup> Parliamentary Commissioner for the Environment *Getting More from Less: A Review of Progress on Energy Efficiency and Renewable Energy Initiatives in New Zealand* (2000) at 29.

<sup>19</sup> Ministry of Transport *New Zealand Transport Strategy* (2002) at 4.

recognised “the ‘invisible’ road toll from vehicle emissions as being on a similar scale as the toll from road accidents”.<sup>20</sup> Further initiatives were to include requirements that all vehicles be tuned, roadside testing of vehicle emissions, and that vehicle emissions should be tested as part of the warrant and certificate of fitness process.<sup>21</sup> The objective of environmental sustainability recognised the role of the *National Energy Efficiency and Conservation Strategy* to improve environmental outcomes.

In 2008 the NZTS was replaced, and the new strategy expanded on the prior one and provided a long term direction to 2040. The NZTS 2008 is the closest strategy yet to become an NLTS, as it provided specific and measurable targets of how each of the objectives would be met. Pertinent to energy efficiency were the targets under the objective of environmental sustainability which included: halving per capita GHG emissions from domestic transport by 2040; becoming one of the first countries worldwide to use electric vehicles; reducing the kilometres travelled by single occupancy vehicles in major urban areas on weekdays by ten percent per capita by 2015 (compared to 2007 levels) and reducing the average CO<sub>2</sub> emissions per kilometre of new and used vehicles entering the fleet to 170 g CO<sub>2</sub>/km by 2015 with corresponding reduction in litres per kilometre. Under the objective of improving access and mobility were the targets of increasing the use of public transport by seven per cent of all trips, and increasing walking and cycling by thirty per cent of all trips in urban areas by 2040. The objective of protecting and promoting public health included the target of addressing air quality and reducing the number of people exposed to air pollution where the impact of transport emissions are significant.<sup>22</sup>

Overall, the 2008 Strategy had a strong environmental flavour and would have prima facie met the requirements under the LTMA. However, before any strategy becomes a statutory document under the LTMA it must be notified and interested persons must be allowed to make a submission on it; and there must be consultation with any persons, representative groups, government department,

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<sup>20</sup> At 37.

<sup>21</sup> At 38.

<sup>22</sup> Ministry of Transport *The New Zealand Transport Strategy 2008* (2008) at 5,6.

local authorities or Crown entities the Minister sees fit.<sup>23</sup> Once the NLTS is completed the strategy must then be made publically available and its effect is that the Ministry, Agency and Commissioner must then take it into account when exercising their powers or performing their functions and duties.<sup>24</sup> There is also the further obligation that it must be reviewed, amended or replaced at least once every six financial years.<sup>25</sup> Perhaps these requirements provide the answer as to why no NLTS is in place.

The 2008 Strategy has since been replaced with '*Connecting New Zealand: A Summary of the Government's Policy Direction for Transport*' which is now the key policy document issued by the MoT and better reflects the values of the incoming National Government. It was released in August 2011 and gets its policy direction from other documents such as the *National Infrastructure Plan*, *Government Policy Statement on Land Transport Funding 2012/2013- 2021/2022*, and *Safer Journeys: New Zealand's Road Safety Strategy 2010-2020*. The stated overall objective is:<sup>26</sup>

... an effective, efficient, safe, secure, accessible, and resilient transport system that supports the growth of our country's economy, in order to deliver greater prosperity, security and opportunities for all New Zealanders.

One point of difference from the previous document is the vision for transport, which was stated as "an affordable, integrated, safe, responsive and sustainable transport system",<sup>27</sup> echoing the purpose of the LTMA. Instead, the 2011 Strategy has adopted the use of the word 'resilient' over sustainable, which unfortunately does not mean resilient in an environmental sense, but "covers the capacity of public, private, and civic sectors to: withstand disruption; absorb disturbance; act effectively in a crisis; adapt to changing conditions, including

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<sup>23</sup> Land Transport Management Act 2003, s 70.

<sup>24</sup> Sections 71, 72.

<sup>25</sup> Section 67.

<sup>26</sup> Ministry of Transport *Connecting New Zealand: A summary of the government's policy direction for transport* (August 2011) at 3.

<sup>27</sup> Ministry of Transport *The New Zealand Transport Strategy 2008* (2008) at 5.

climate change; grow over time”.<sup>28</sup> Even though climate change is mentioned here it is in the capacity of adaptation to its effects, not mitigating them. The main thrust of the National Government’s direction is economic growth.

Another difference between the two documents is that the NZTS 2008 had clear, measurable transport targets. In comparison, the current document provides a broad covering of matters that need to be addressed, statistics, and what can be expected for the transport sector, but how this will be achieved is vague. For example, key Government actions include investing money, completing Roads of National Significance (RoNS), getting greater value for money from the NZTA, and continued reductions in CO<sub>2</sub> emissions over time.<sup>29</sup> The document acknowledges that land transport is responsible for a large proportion of the GHG emissions from the energy sector and states that “[t]he government wants an energy efficient transport system, and will focus on improving vehicle fuel efficiency”.<sup>30</sup> It further states the Government will also improve modal choice in the main urban areas, will encourage the uptake of more efficient vehicles and fuel technologies and other efficiencies in the freight sector, and will improve freight corridors.<sup>31</sup> How they will achieve this however, is not clear.

*Connecting New Zealand* recognises the need to improve the efficiency of transport networks, and sees this as one of the challenges for transport, yet the key areas of focus are economic growth and productivity, value for money, and road safety. This focus on safety seems misplaced when one considers the statistics mentioned earlier: that more deaths are being caused from emissions than accidents. Curiously, the MoT claims that the impact of higher fuel prices provides the justification for improving the efficiency of the supply chain, including efficiency of transport activities and fuel consumption, yet it sees investing in rail as the solution.<sup>32</sup> Efficiency appears to be in economic and production terms only, and although energy efficiency would contribute to many goals, even safety, it is not a key focus of the Government. Energy efficiency

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<sup>28</sup> Ministry of Transport *Connecting New Zealand*, above n 26, at 7.

<sup>29</sup> Ministry of Transport *Connecting New Zealand*, above n 26.

<sup>30</sup> At 30.

<sup>31</sup> At 32.

<sup>32</sup> At 17.



(and conservation) could contribute to the key areas of focus by improving economic growth and productivity through reducing congestion thereby improving the profit margin of businesses, which would also be improved by eco-driving practices of fleets. Safety is also affected by energy efficiency because eco-driving practices inherently promote safety through anticipated driver behaviour, reduced speeds, and less aggressive driving practices. It is unfortunate that *Connecting New Zealand* generally refers to efficiency in economic terms and not in a broader sense that encapsulates a technical and environmental efficiency of energy.

Where *Connecting New Zealand* is explicit is in the amount of funding going into transport. It proudly states the amounts the Government is investing: approximately \$300 million per year on subsidies for public transport, \$540 million per year for road safety, and \$900 million per year for RoNS. Investment in walking and cycling is “concentrated on fewer, more targeted activities, for example, in model communities, rather than spreading the funding across a greater number of activities”,<sup>33</sup> and peculiarly the document is silent on how much is being invested in this area.

The legislative history provides an interesting account on the development of strategic planning in transport. To begin with, the Land Transport Act 1993 enabled the Minister to complete a NLTS, but the Act provided no mandatory requirements for what was to be included in the strategy, although it suggested the strategy ‘may’ include statements of the Crown’s goals, policy objectives and measurable targets to achieve them. Obligations such as allowing for submissions and consultation were also in the Act. The other key difference is that under the 1993 Act the strategy may be amended or revoked and was to remain current for ten years or any lesser time specified in the strategy.<sup>34</sup> These obligations remained under the Land Transport Act 1998 but were repealed by the LTMA 2003. As mentioned above, the Minister ‘must’ include certain things in the strategy and it must also now be reviewed every six years (and may be amended or replaced) and cover a period of at least 30 years. The requirements to consult

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<sup>33</sup> At 30.

<sup>34</sup> Land Transport Act 1993, s 29.

and allow submissions and the procedure for completion remained. As can be seen, the planning obligations are now quite onerous and require a long-term view for transport. While this may be considered desirable to achieve a long-term vision, it could be argued that the costs involved in such a process and the uncertainty of future requirements of the transport system pose questions about the wisdom of requiring such a long-term vision. To be sure, the technological advances and future state of the environment are key factors which should influence any policy direction, yet their uncertainty suggests that shorter-term planning would allow for any changes to be taken into consideration with greater effectiveness. However what must be considered is the broader context in what policy decisions in transport are now made. Indeed, the slight change in purpose of the LTMA 2003 away from sustainability may explain the long-term vision.

What history shows us is that there is a decline in commitment to specific measurable targets to improve energy efficiency, and a shift towards economic growth over sustainability. As demonstrated by the legislation and policy documents, sustainability does not in fact appear to be a key concern for planning in transport any longer. This has now been delegated to other agencies, contributing to the fractured and ineffective approach by central government. Overall, *Connecting New Zealand* does not make a convincing case for energy efficiency being a consideration in the transport sector. Indeed, the New Zealand Energy Efficiency and Conservation Strategy (NZE ECS) does not even get a mention under the list of policy documents that the Strategy gains its direction from. The document unfortunately only recognises efficiency in economic terms and not those of energy. Any reference to energy efficiency only appears to be a token gesture as it is not followed up with any commitment to effective policy.

## 2 *Government policy statement*

As mentioned above, *Connecting New Zealand* gets its direction from the GPS on Land Transport Funding. The GPS is a statutory document issued every three years by the Minister of Transport. The 2012/13–2021/22 GPS outlines the Government's strategic direction for transport, claiming that the goals in the National Infrastructure Plan and the Government's overarching objective will

have an added focus of energy efficiency through the New Zealand Energy Strategy (NZES) and the NZEECS. The GPS states that the NZES and NZEECS:

... will focus on improving vehicle fuel efficiency, and increasing the uptake of low carbon fuels and technologies. They will highlight the potential to reduce energy use in urban areas through walking and cycling and greater use of public transport. The strategies will place an expectation on local authorities to ensure integrated travel options through their transport and planning roles.

But, as we shall see, it can hardly be said that the NZES or NZEECS have such a focus. While this medley of strategies may explain the lack of focus of energy efficiency in *Connecting New Zealand*, the effect is that it produces a piecemeal approach from Government.

The content and focus of the GPS has been criticised and it has even been claimed that the GPS fails its own objective of delivering value for money.<sup>35</sup> Some of the reasons for the criticisms are the focus on delivering RoNS, failing to capture externalities in the benefit: costs ratio model, and the level of funding for walking, cycling and transport demand management (TDM). This focus on RoNS is one we will come back to. The relationship between the GPS and regional transport strategies has also been a reason for concern, and the New Zealand Traffic Institute assert that:<sup>36</sup>

... it is the GPS and NZTA's funding decisions that set the agenda. It is increasingly difficult to see Regional Transport Committees as relevant to influencing real decisions. This is a very poor outcome. It undermines any concept of partnership, and the fact that it is local people who know best their own place and their own communities.

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<sup>35</sup> New Zealand Traffic Institute *Submission on Government Policy Statement 2011* (27 May 2011).

<sup>36</sup> At 2.

Despite these criticisms being made in a submission to Government before the GPS became a final document, they were not addressed in the final GPS.

### *3 Regional land transport strategy*

A further strategic document that is required under the LTMA is a regional land transport strategy (RLTS), which is to be prepared by a regional land transport committee. Under the LTMA, each regional council is required to establish a regional transport committee, which includes representatives from the regional council, territorial authority, NZTA, and representatives for each of the objectives of the Act.<sup>37</sup> A RLTS is required to meet the same objectives and considerations as a NLTS, but must also take into account regional policy statements and district plans under the RMA. There is a further requirement that it avoids, to the extent reasonable in the circumstances, adverse effects on the environment.<sup>38</sup> Thus, the RLTS establishes the direction of the NLTS at a regional level.

### *4 Regional land transport programme*

The LTMA also requires the regional transport committee to prepare a regional land transport programme, a fuel tax scheme if the committee decides to, and to provide advice to the regional council, if requested, in regards to the councils transport responsibilities.<sup>39</sup> The purpose of the regional land transport programme is to prioritise activities within the programme and to assist seeking funding from the National Land Transport Fund (NLTF). Section 12 of the LTMA reads:

A regional land transport programme allows approved organisations and the Agency to recommend funding for land transport activities or combinations of activities from the national land transport fund that will contribute to—

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<sup>37</sup> Land Transport Management Act 2003, s 105.

<sup>38</sup> Section 75.

<sup>39</sup> Section 106.

- (a) a region's outcomes that are identified in the relevant regional land transport strategy; and
- (b) any outcomes, objectives and impacts identified by the Crown in any national land transport strategy or the relevant GPS.

Regional transport committees must ensure the programme contributes to the objectives of the LTMA, is consistent with the GPS, RLTS, and takes into account the NLTS, NZEECS, any national policy statement or regional policy statement under the RMA, and any regional public transport plan.<sup>40</sup> The programmes do not influence energy efficiency in transport, but express any outcomes a region may want to achieve after taking into account the NZEECS. Regional transport committees are therefore very influential in energy efficiency in transport.

While it may seem unfortunate that no NLTS is in place, it does have some advantages. One of these is that any regional strategy will not have a strong political direction from central government. Another advantage is that elected local representatives know what is best for the region and can therefore best meet its needs. Also, regional differences can be accommodated for; for example, the provision for priority traffic management will be different in Auckland than in Bluff. On the other hand, a NLTS would be desirable for a number of reasons. One reason is that it would give a consistent approach to transport across New Zealand. There is also the issue of limited specialist knowledge being available for councils and committees. One issue that arises is the situation where a regional council has its own strategy in place yet the Ministry or NZTA wishes to pursue its own objectives. One example of where this has occurred is in Nelson where the Regional Council and NZTA have been disputing how to spend funding. The Council, community, and Regional Transport Committee want to spend the funding on a proposed pedestrian and cycle boulevard yet the NZTA do not want to, as it is on the main heavy vehicle route in and out of the city.<sup>41</sup> Disputes between local government and NZTA may be inevitable, but they can

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<sup>40</sup> Section 14.

<sup>41</sup> See *New Zealand Transport Intelligence Business Week* "Stoush brewing over regional transport funding" (New Zealand, October 13th, 2011) retrieved from <[www.nztransport-logistics.co.nz/home/free-articles/stoush-brewing-over-regional-transport-funding.html](http://www.nztransport-logistics.co.nz/home/free-articles/stoush-brewing-over-regional-transport-funding.html)>.

and often do manage to work in partnership together for regional development projects. Two examples of this are the Southern Links project in the Waikato, and the Pyes Pa by-pass in Tauranga.

### 5 *New Zealand Transport Agency*

As mentioned above, the LTMA established the NZTA as a Crown entity, and its objective is to perform its functions in a way that contributes to an affordable, integrated, safe, responsive, and sustainable land transport system.<sup>42</sup> The NZTA replaced the previous Land Transport Authority and Transit New Zealand. The Agency is to promote its objective and, inter alia, manage funding of the land transport system and the regulatory requirements of transport and, on request of the Minister, provide advice, assistance and cooperate with a Government or local government agency.<sup>43</sup> This includes enforcing environmental standards, providing information on choosing safe and fuel efficient vehicles, and gathering revenue through the registration and licensing of vehicles. The environmental standards the NZTA is responsible for enforcing include the exhaust emission regulations issued under the Land Transport Act 1998. The NZTA is also jointly responsible with the Energy Efficiency and Conservation Authority for administering the 'Rightcar' and 'fuelsaver' websites which provide information on the efficiency of vehicles and ways to improve energy efficiency.

The NZTA *Statement of Intent 2011-2014* explicitly states that a desired long term outcome is a more efficient vehicle fleet. So too is a reduction in adverse environmental effects from transport. Both of these desired outcomes address energy efficiency. These desired outcomes are stated along with six other long term objectives which will predominantly be addressed by focusing on the priorities of improved freight efficiency, planning and delivering RoNS, improving the effectiveness of public transport, and improving road safety. To be fair, improving freight efficiency includes one of the objectives of improving safety and mitigating other adverse effects, such as emissions. But of the eight

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<sup>42</sup> Land Transport Management Act 2003, s 93, 94.

<sup>43</sup> Section 95.

desired long term outcomes in the *Statement of Intent* the two that would specifically address energy efficiency in transport are the only two that have “[n]o 2011-2014 strategic priority linked to this impact”.<sup>44</sup>

## 6 *Land Transport Management Amendment Bill 2012*

To reduce compliance costs and regulation a review of the LTMA has led to the Land Transport Management Amendment Bill 2012 that was introduced to Parliament in August 2012.<sup>45</sup> The key change for energy efficiency in transport, and indeed the environment, will be the new purpose of the Act, which will be “to contribute to an effective, efficient, and safe land transport system that supports the public interest”.<sup>46</sup> This removes all of the criteria mentioned above that affects energy efficiency. Efficiency appears to still be framed in economic terms only and does not seem to include externalities into the benefit: cost ratio. According to the regulatory impact statement the GPS will provide guidance and the “efficiency criterion looks to achieve the most results for the least cost”.<sup>47</sup> The term ‘public interest’ also seems problematic and ill-defined, and is not included in the interpretation section of the Bill.

Some aspects of the Bill are likely to have positive benefits such as consolidating regional land transport strategies and programmes into one Regional Land Transport Plan which will cover a period of 10 years. The GPS and NLTS will be merged into a single document called the GPS on Land Transport which will also be for a period of 10 years, instead of the 30 year period that is currently required. Streamlining the strategic planning requirements will hopefully ease the burden on local government and provide a more cohesive approach to managing transport. One area of concern is that the Bill proposes to expand the NZTA’s current ability to borrow funds for managing the cash-flow of the National Land

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<sup>44</sup> New Zealand Transport Agency *Statement of Intent 2011-2014*, above n 55, at 15.

<sup>45</sup> Cabinet Economic Growth and Infrastructure Committee *Land Transport Management Act 2003 Review: Planning and Funding* (5 August 2012) at 19. Land Transport Management Amendment Bill 2012 (46-1).

<sup>46</sup> Land Transport Management Amendment Bill 2012, cl 4.

<sup>47</sup> Regulatory Impact Statement *Improving the Land Transport Management Act* (November 2011) at 8.

Transport Programme (NLTP), to being able to borrow money to fund future land transport projects. Clearly, this will enable the Government to advance their RoNS. The Bill also proposes to make changes to the structure of regional transport committees by removing the duty to include representatives that speak for the objectives of the Act, as the objectives will no longer exist under the amendments. The Select Committee Report is due on the 11 March 2013 and according to clause 2 of the Bill the new Act will come into force on 1 April 2013.

## ***B The Energy Efficiency and Conservation Act 2000***

The Energy Efficiency and Conservation Act 2000 (EE&C Act) requires a National Energy Efficiency and Conservation Strategy (NEECS) to be in place,<sup>48</sup> establishes the Energy Efficiency and Conservation Authority (EECA), and provides for regulations to be issued that set minimum performance standards, labelling requirements, and enforcement measures.

### *1 The National Energy Efficiency and Conservation Strategy*

The New Zealand Energy Efficiency and Conservation Strategy (NZECS) was written as a companion to the New Zealand Energy Strategy (NZES), and sets out objectives to contribute to the overall NZES. It is a statutory document in accordance with the EE&C Act and has a life of five years. The current Ministry responsible for developing the NEECS is the Economic Development Group (EDG), which is part of the Ministry of Business, Innovation and Employment (MBIE). Prior to 1 June 2012 it was the Ministry of Economic Development. The EDG is the Government's key adviser on energy and its purpose is "to foster economic development and prosperity for all New Zealanders"<sup>49</sup> How energy efficiency fits with the purpose of the Ministry is under one of its policy drivers of improving the quality and reliability of key infrastructure services that support growth. The *Statement of Intent 2011-2014* says that the Ministry sees energy

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<sup>48</sup> Energy Efficiency and Conservation Act 2000, s 8.

<sup>49</sup> Ministry of Economic Development *Statement of Intent 2011– 2014* (G.46 SOI 2011) at 6.



efficiency and energy conservation as means of improving security of supply, productivity and health. The focus is on the electricity sector however, although the underlying goal is to increase overall energy intensity across all sectors. The *Statement of Intent* also says the Ministry sees working towards greater energy efficiency as continued monitoring of EECA's implementation of the 'Warm Up New Zealand' programme and refocusing and rationalising funding to help businesses improve their energy efficiency.<sup>50</sup> Clearly, there is little focus on transport.

Pursuant to section 10 (2) of the EE&C Act a strategy must state:

- (a) the Government's policies in relation to the promotion in New Zealand of energy efficiency, energy conservation, and the use of renewable sources of energy; and
- (b) the objectives to be pursued to achieve the Government's policies in relation to the promotion in New Zealand of energy efficiency, energy conservation, and the use of renewable sources of energy; and
- (c) targets to achieve those policies and objectives, being targets that are measurable, reasonable, practicable, and considered appropriate by the Minister; and
- (d) means by which those policies and objectives, and any such targets, are to be achieved.

The objective for transport is "a more energy efficient transport system, with a greater diversity of fuels and alternative energy technologies".<sup>51</sup> Although a somewhat broad goal, the Strategy does provide a specific, albeit weak, and unambitious target to attain by 2016 of improving the efficiency of the light-duty vehicle fleet from 2010 levels. Whether this target is measurable and reasonable is questionable. At least, the target is achievable, as even a business as usual approach will show an improvement from 2010 levels. The proposed means to

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<sup>50</sup> At 25, 26.

<sup>51</sup> Ministry of Economic Development *New Zealand Energy Strategy 2011-2021* (2011) and Ministry of Economic Development *New Zealand Energy Efficiency and Conservation Strategy 2011- 2016* (2011) at 19.

achieve this target is by “a mix of information, incentives, capability building, and codes and standards”.<sup>52</sup>

The Strategy states four specific policies that the Government will commit to:<sup>53</sup>

- Continue to support improvements to road and public transport, including electrifying the Auckland rail system and upgrading the Wellington rail system.
- Continue to fund transport infrastructure to support people to make energy efficient transport choices, including encouraging the use of different modes of travel, particularly in urban areas for example, walking, cycle ways and public transport systems, as well as reducing congestion on the roading system.
- Promote efficient business fleet management through provision of information and audit programmes, such as professional driver training under the Safe and Fuel Efficient Driving New Zealand (SAFED NZ) brand.
- Encourage the entry of alternative transport fuels and electric vehicles in the New Zealand market.

Although the GPS said this last policy would be a focus of the NZEECS, the Strategy is not clear on how it will be implemented. It can be assumed the Government is referring to the RUC exemptions for EVs and the grants available for biofuel producers, which will be discussed shortly. In terms of encouraging EVs into the market, it should be mentioned that the National Infrastructure Plan 2011 (which guides the policy direction of the Government) does not include any provision for enhancing the current network of available recharge stations for EVs. Whether the Government sees this as a role that fuel retailers should be taking up is uncertain, but considering the policy direction towards EVs some provision for implementing recharge stations could have been made.

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<sup>52</sup> Ministry of Economic Development *New Zealand Energy Efficiency and Conservation Strategy 2011- 2016* (2011) at 19.

<sup>53</sup> At 19.

The Strategy sees the role of local government as having an integral part in increasing the energy efficiency of transport, largely through ensuring an integration of modes and urban planning. Other objectives in the Strategy include increasing energy efficiency in the public sector and one of the policies to achieve this recognises the role that government procurement can play in purchasing and leasing energy efficient products, although there is no indication that this extends to vehicles.<sup>54</sup>

The obvious part that is missing for transport is improving the efficiency of the heavy-duty fleet. This is not on the Government agenda and in fact the Government intends on taking the opposite approach by increasing the number of vehicle kilometres travelled per network kilometre.<sup>55</sup>

When the NZEECS is compared to earlier strategies, there is a distinct difference in the level of commitment to policies and the specificity of the corresponding targets. This can be explained by the fact that the current 2011-2016 NZEECS was written by the Ministry of Economic Development, EECA was responsible for the 2007 strategy, and the Ministry for the Environment (MfE) was responsible for the first strategy in 2001.<sup>56</sup> This has resulted in quite different approaches between the strategies and a lack of consistency between them. The 2001 strategy stated a target of “[a]t least 20 percent improvement in economy-wide energy efficiency by 2012”<sup>57</sup> and had ‘key measures’ which included facilitating eco-efficient vehicles into the public and private vehicle fleets, investigating measures to improve vehicle fuel efficiency, efforts at traffic reduction, and policy development for road pricing. The second strategy set stronger and more specific ‘targets’ for transport which included:

- reducing per capita transport GHG emissions by half by 2040;
- improving the average emission performance to 170 g CO<sub>2</sub>/km for light vehicles entering the fleet by 2015;

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<sup>54</sup> At 27.

<sup>55</sup> New Zealand Transport Agency *Statement of Intent 2011-2014* (July 2011) at 15.

<sup>56</sup> Although this was the first statutory *Energy Efficiency and Conservation Strategy* a previous document titled *The Energy Efficiency Strategy 1994-1997* was developed by EECA and included the specific goal of investigating vehicle emission testing.

<sup>57</sup> Ministry for the Environment *National Energy Efficiency and Conservation Strategy: Towards a sustainable energy future* (September 2001) at 4.

- reducing single occupancy vehicle travel in major urban areas on weekdays by 10 per cent per capita when compared to 2007 levels by 2015;
- having 80 per cent of vehicles capable of using biofuel blends of 10 per cent or be electric powered by 2015;
- for New Zealand to be one of the first countries to widely use electric vehicles;
- cutting core public service average vehicle fleet emissions by 25 per cent by 2012; and
- plans in place to cut workplace travel by core public service departments by 15 per cent by 2010.<sup>58</sup>

These targets, while being ambitious, met the requirements of the Act by being measurable, reasonable, appropriate, although maybe not so practicable — at least politically. It is arguable that the 2011 NZEECS target of improving the efficiency of the light-duty vehicle fleet from 2010 levels meets the criteria of the Act and whether the means to achieve that target should in fact be stated as business as usual.

As mentioned above, the MoT is the lead agency responsible for delivering the NZEECS targets and objectives for transport, with support from the NZTA, the Ministry of Economic Development, and EECA.<sup>59</sup> These ministries are required to:<sup>60</sup>

... develop appropriate policy measures that contribute to the realisation of the NZEECS targets and objectives. Policy measures will be recorded in annual output agreements with respective ministers and in statements of intent presented to Parliament.

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<sup>58</sup> Energy Efficiency and Conservation Authority *New Zealand Energy Efficiency and Conservation Strategy: Making it Happen – Action Plan to Maximize Energy Efficiency and Renewable Energy* (October 2007) at 12.

<sup>59</sup> Ministry of Economic Development *New Zealand Energy Efficiency and Conservation Strategy 2011-2016*, above n 52, at 19.

<sup>60</sup> At 28.

So whether the responsible agencies are delivering on a more energy efficient transport system with greater diversity of fuels and alternative technologies requires a further look into their Statements of Intent. It will be recalled that the MoT's *Statement of Intent* does not show that improving the efficiency of the fleet is a goal. The NZTA's *Statement of Intent* has no strategic priority for improving fleet efficiency, and the Ministry of Economic Development's *Statement of Intent* is equally disappointing. The Minister of Energy and Resources is responsible for overseeing the delivery of NZEECS with the support of the Ministry of Economic Development and the Senior Energy Officials Group, which is comprised of representatives from identified agencies.

Because the NZEECS was written as a companion to the NZES, and because the NZES also has its own priorities for transport it will briefly be discussed, although it is not a statutory document under the EE&C Act. The NZES sets the strategic direction for the energy sector and the role energy will play in the New Zealand economy; it has an overarching goal of growing the New Zealand economy "to deliver greater prosperity, security, and opportunities for all New Zealanders".<sup>61</sup> The Strategy has four equal priorities: diverse resource development; environmental responsibility; efficient use of energy; and secure and affordable energy, and energy efficiency in transport is inherent in all of these. The priorities for transport are developing renewable energy resources such as biomass and reducing energy-related GHG emissions, and of particular importance to this discussion is the Strategy's priority for efficient use of energy. The NZES reads:<sup>62</sup>

For transport, the Government's key focus will be on creating the most efficient mix of integrated modes and travel options for New Zealanders and our visitors. To do this the Government will continue to invest in:

- Roads of National Significance, as these routes will ease severe congestion in and around our five largest metropolitan areas, and link

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<sup>61</sup> Ministry of Economic Development *New Zealand Energy Strategy 2011-2021* (2011) at 2.

<sup>62</sup> At 10.

our major sea and air ports more effectively into the State highway network.

- A rail system that enables the efficient movement of freight and complements other modes of passenger and freight transport.
- Reliable and more cost-effective public transport systems that offer benefits to attract a greater percentage of long-term users.
- Improvements to infrastructure for walking and cycling funded through the National Land Transport Fund.

While it is claimed these priorities are equal, we have seen in *Connecting New Zealand* that the money invested shows a preference towards RoNS, which is also shown in the LTMA Amendment Bill 2012. The NZES further says that to improve consumer information and inform energy choices the Government is committed in reporting price margins for petrol and diesel, and providing information through programmes run by EECA.<sup>63</sup>

## 2 *The Energy Efficiency and Conservation Authority*

EECA has been in operation since 1992 and prior to the introduction of the EE&C Act it was run as an organisation within the Ministry of Commerce by an independent board accountable to the Minister of Energy. Initially EECA could develop, implement and promote strategies for energy conservation and it was the lead agency on the development of the 1994-1997 Energy Efficiency Strategy.<sup>64</sup> This role has now been restricted however, and under the EE&C Act the Authority's functions are to: promote public awareness, technologies and practices; advise the Minister on matters pertaining to energy efficiency, energy conservation and renewable energy sources; assist the Minister in preparing and administering a strategy; arrange research and publish relevant information; monitor the state of energy efficiency, energy conservation and renewable energy

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<sup>63</sup> At 11.

<sup>64</sup> See Parliamentary Commissioner for the Environment *Getting More From Less*, above n 18, at 35.

use; and make grants, awards or loans to achieve the purpose of the Act.<sup>65</sup> The Authority's independence must be questioned however as approval from Government is generally required when developing any new programme or substantially changing an existing scheme.<sup>66</sup>

EECA is active in promoting energy efficiency in transport through its 'Energywise' tips which are advertised on television and that contain ways of reducing fuel use by reducing load and improving driving styles. EECA's websites are also full of information for individuals and businesses to improve their energy efficiency.<sup>67</sup> However energy efficiency is only promoted with the goal of saving the consumer money, and it must be questioned why the goal of environmental protection is not equally promoted. If the goal is to reduce CO<sub>2</sub> emissions perhaps promoting efficiency to achieve this should be considered, which would also uphold the Government's obligation under Article 4, 1(i) of the Kyoto Protocol, which is to raise awareness of climate change. We will learn that a characteristic of regulation from other jurisdictions is that a clear link is shown between fuel economy and its effects on climate change and air quality, and energy efficiency is promoted in order to improve these. It is unfortunate that the same connection is not made in New Zealand. A further point to consider is how energy efficiency is framed, and what we have learned from behavioural science, which tells us that consumers are more likely to change their behaviour if they are told they will lose money, instead of saving it. It is disappointing that EECA does not frame their efforts accordingly.

Funding of EECA is through Vote Energy and the MBIE is responsible for overseeing the performance of EECA, although the EECA's Board is responsible to the Minister for Energy and Resources.

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<sup>65</sup> Energy Efficiency and Conservation Act 2000, s 21.

<sup>66</sup> International Energy Agency *Energy Policies of IEA Countries: New Zealand 2010 Review* (IEA, Paris, 2010) at 49.

<sup>67</sup> EECA has the Energywise website that has information for households and an EECA Business website for information on how business can improve their efficiency, funding available and various programmes such as energy audits and training.

## *C The Climate Change Response Act 2002*

Following New Zealand's commitment to the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, the Climate Change Response Act 2002 was enacted.<sup>68</sup> The purpose of the CCRA is to enable New Zealand to meet its international obligations under the Convention and Protocol and to provide for the implementation, operation, and administration of the ETS.<sup>69</sup> Although energy efficiency is not specifically mentioned in the CCRA it is in the UNFCCC, which is included as Schedule 1 of the Act and also in the Kyoto Protocol which is included as Schedule 2.

The Convention aims to achieve "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate".<sup>70</sup> It encourages parties to, inter alia, promote technologies and practices to reduce or prevent GHG emissions in all relevant sectors, including energy, transport, industry, agriculture, forestry and waste management sectors.<sup>71</sup> A further obligation the UNFCCC places upon parties is to promote and implement educational and public awareness programmes on climate change, including public access to information on climate change and its effects.<sup>72</sup> However, the Convention on its own was insufficient to attain its goals due to the lack of binding commitments to limit emissions and a further agreement was necessary. The Kyoto Protocol commits developed countries to set binding emission targets to reduce their GHG levels, but under the principle of 'common but differentiated responsibilities' developing countries do not have to meet any targets in the first commitment period of 2008-2012.<sup>73</sup> The Protocol provides that each party, in achieving its emission target and in order to

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<sup>68</sup> United Nations Framework Convention on Climate Change (opened for signature 4 June 1992, entered into force 21 March 1994), Kyoto Protocol to the UNFCCC (adopted 11 December 1997, entered into force 16 February 2005).

<sup>69</sup> Climate Change Response Act 2002, s 3.

<sup>70</sup> United Nations Framework Convention on Climate Change, above n 68, Article 2.

<sup>71</sup> Article 4.

<sup>72</sup> Articles 4, 1(i) & 6.

<sup>73</sup> Countries are differentiated as either Annex I which are industrialised countries that were OECD members plus countries with economies in transition (EIT). Annex II countries are OECD members but not EIT countries. They are required to provide financial resources to enable developing countries to undertake emission reduction activities and to help them adapt to climate change. Non Annex I parties are developing countries.



promote sustainable development, shall implement policies and measures such as “[e]nhancement of energy efficiency in relevant sectors of the national economy” and more specifically “[m]easures to limit and/or reduce emissions of greenhouse gases...in the transport sector”.<sup>74</sup> This places clear international obligations on New Zealand to improve the efficiency of our vehicle fleet.

The essential elements of the Protocol are the reporting and verification procedures, a market-based mechanism for emissions, and a compliance system. The reporting requirements provide a concise snapshot of countries efforts at mitigating climate change. According to New Zealand’s 5<sup>th</sup> National Communication under the UNFCCC “[t]he Government’s primary policy to mitigate greenhouse gas emissions from the transport sector is to include liquid fossil fuels in the NZ ETS”.<sup>75</sup> The Communication also cites vehicle fuel economy labelling, biofuels, electric vehicles, public transport and fleet best practice as the measures by which we shall meet our obligations. Indeed, these make up the policy response from Government. As the ETS forms part of the regulatory framework it will be discussed in detail in the following chapter. Although no cases have been brought before the courts regarding the CCRA specifically, it has been an issue to consider in relation to decision making under the RMA.

#### ***D The Land Transport Act 1998***

The Land Transport Act 1998 (LTA) is the statute that regulates driving and vehicles. The LTA could enable energy efficiency in transport through section 155(a) which provides that rules may be made that set standards concerning, inter alia, a vehicle’s environmental requirements and emissions. GHG emission standards would fall under this provision and arguably, so would fuel economy standards, allowing standards to be implemented if the Government desired. We

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<sup>74</sup> Kyoto Protocol, above n 68, Article 2, 1 (a) (i), (vii).

<sup>75</sup> Ministry for the Environment *New Zealand’s 5<sup>th</sup> National Communication under the United Nations Framework Convention on Climate Change* (2009) at 65.

will come across this Act again shortly in our discussion on the regulatory response of Government.

### ***E The Resource Management Act 1991***

The RMA is the key statute that governs the use of natural and physical resources in New Zealand.<sup>76</sup> This includes land, water, air, soil, minerals, energy, plants and animals and structures.<sup>77</sup> The statute enables local government to either allow or restrict activities through district or regional plans, and for individuals to apply via the resource consent process to either use, or discharge into, land, water, soil or air. The purpose of the Act is to promote sustainable management of resources, and, pertinent to energy efficiency in transport, a decision maker is required to have particular regard to, inter alia, the efficiency of the end use of energy and the effects of climate change.<sup>78</sup>

In accordance with section 43, regulations known as National Environmental Standards may be implemented covering a broad range of matters. Specifically, standards for air quality may be implemented, the effect of which requires authorities to prepare their regional policy statements (RPS) in accordance with those regulations.<sup>79</sup> A RPS is required to provide “an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region”.<sup>80</sup> Under the RMA regional councils are required to prepare RPSs that ‘shall have regard to’ any management plans or strategies prepared under other Acts.<sup>81</sup> While this would not include *Connecting New Zealand* as it is not a statutory document, it would include the NZEECS. To assist a regional council in achieving the purpose of the Act, it may prepare a regional plan which must give effect to any RPS and

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<sup>76</sup> Minerals owned by the Crown (gold, silver and uranium) and petroleum are allocated and managed under statutory programmes in accordance with the Crown Minerals Act 1991.

<sup>77</sup> Resource Management Act 1991, s 2.

<sup>78</sup> Section 5, 7 (ba) (i). This requirement was inserted through The Resource Management (Energy and Climate Change) Amendment Act 2004.

<sup>79</sup> Resource Management Act 1991, s 61.

<sup>80</sup> Section 59.

<sup>81</sup> Section 61 (2)(a)(i).

give the objectives, policies and any rules to achieve this.<sup>82</sup> How this particularly applies to transport is in the development of regional plans, where regional councils are responsible for the strategic integration of infrastructure with land use.<sup>83</sup>

The Environment Court has been required to look into the legitimacy of how local government have interpreted their role in regards to these plans and policies. In *Canterbury Regional Council v Christchurch City Council* the Canterbury Regional Council (CRC) contested rezoning, claiming that:<sup>84</sup>

... the contested zonings will (singly or, worse, together) cause the following adverse effects to increase:

- vehicle trips (distances);
- vehicle emissions to air;
- dependence on motor vehicles as sole means of transport; and
- areas of versatile soils irreversibly lost

and a decrease in the ability to promote wellbeing, cycling and public transport. The CRC also alleges that the contested zonings would not achieve the objectives and policies of the City Plan, and would be inconsistent with the CRC's regional policy statement. Finally, the CRC argues that the contested zonings are not sustainable management of the City's natural and physical resources.

The CRC's RPS policy in question required the Council to:<sup>85</sup>

... promote settlement and transport patterns and built environments that will: (a) Result in increasingly effective and efficient use of resources, particularly energy.

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<sup>82</sup> Section 67.

<sup>83</sup> Section 30 (1) (gb).

<sup>84</sup> *Canterbury Regional Council v Christchurch City Council* EnvC, Christchurch, C217/2001, 6 December 2001 at [7].

<sup>85</sup> At [328].

- (b) Reduce the rate of use of non-renewable energy sources.
- (c) Minimise the adverse effects of emissions into the atmosphere resulting from the use of motor vehicles and building heating.
- (d) Incorporate energy efficient approaches to building orientation, form and design.

The Environment Court expressed its concerns about the legality of such a policy on the grounds that it relates to energy sources derived from minerals, which due to the exclusion in section 5(2)(a) of the RMA was deemed to be an irrelevant consideration.<sup>86</sup> In an interim decision the Environment Court held that a territorial authority “does not have any power under the RMA to impose direct controls on petrol, CNG, or diesel in order to reduce their rate of use” however that did not mean it could not impose restrictions “for other proper resource management reasons (e.g. to reduce pollution) that have the effect of reducing the rate of use of hydrocarbons”.<sup>87</sup>

In regards to whether a council may consider the use of refined petroleum products or whether they are excluded under section 5(2) of the RMA the court preferred the decision of *Winter v Taranaki District Council* which stated:<sup>88</sup>

... paragraphs (b) and (g) of section 7 are to be understood as not extending to require functionaries to have particular regard to the efficient use of minerals, including naturally occurring hydrocarbon gas, or to finite characteristics of them.

The correctness of the *Winter* decision was doubted in *Terrace Tower v Queenstown Lakes District Council* where the Court commented obiter that, under statutory interpretation of the definition of minerals under the Crown Minerals Act 1991, the Council did have the power to control refined petroleum products.<sup>89</sup> This decision was qualified however by the fact that due to time constraints the

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<sup>86</sup> At [244], [328].

<sup>87</sup> At [242].

<sup>88</sup> *Winter v Taranaki Regional Council* (1998) 4 ELRNZ 506; [1999] NZRMA 1 at [37].

<sup>89</sup> *Terrace Tower (NZ) Pty Ltd v Queenstown Lakes District Council* [2001] NZRMA 23 at [36].

opinion was given without full legal argument. It was on this point that the Court in *Canterbury Regional Council* departed from the *Terrace Tower* decision. After hearing evidence from an expert on automotive fuels, combustion and emissions who considered that technically petrol and diesel were “therefore a mineral excluded from the provisions of the RMA in section 5(2)(a)” the Court declined to follow *Terrace Towers*.

What must be borne in mind is that these decisions were made before the Resource Management (Energy and Climate Change) Amendment Act 2004 was enacted, which inserted the requirement for a functionary to have regard to the efficiency of the end use of energy, the effects of climate change, and the benefits of renewable energy.<sup>90</sup> The amendment also inserted a peculiar requirement on local authorities pursuant to section 70A of the RMA which states:<sup>91</sup>

... when making a rule to control the discharge into air of greenhouse gases under its functions ... a regional council must not have regard to the effects of such a discharge on climate change, except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases[.]

The same requirement is placed on authorities when considering an application for a discharge permit or coastal permit.<sup>92</sup> Not surprisingly, whether an authority *is* to have particular regard to the effects of climate change as required by section 7, or *not* to have regard to its effects as required by sections 70A and 104E has required interpretation by the courts, ending in the Supreme Court.<sup>93</sup> Nolan explains the situation by stating the Resource Management (Energy and Climate Change) Amendment Act 2004:<sup>94</sup>

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<sup>90</sup> Resource Management Act 1991, s 7 (ba)(i)(j).

<sup>91</sup> Section 70A.

<sup>92</sup> Resource Management Act 1991, s 104E.

<sup>93</sup> See *Genesis Power Ltd v Greenpeace New Zealand Inc* [2007] NZCA 569; *Greenpeace New Zealand Inc v Genesis Power Ltd* [2008] NZSC 112. See also E Willis “The Interpretation of Environmental Legislation in New Zealand” (2010) 14 NZJEL 135.

<sup>94</sup> D Nolan (ed) *Environmental and Resource Management Law* (3<sup>rd</sup> ed) (LexisNexis, Wellington, 2005) at 654.

... was designed to make it clear that regional councils did not have the mandate to control greenhouse gas emissions through resource consents and regional plans. Rather, policies to implement the Kyoto Protocol should be first implemented at a national level.

This explanation provides a simple interpretation of the purpose of the amendment, but one could ask why a regional council should not control discharges of GHGs into air? Returning to the *Canterbury Regional Council* case, the 2004 amendment puts the effects of the contested zonings within the ambit of a proper resource management reason to impose restrictions, by considering the efficiency of the end-use of energy. This raises the question whether the courts would reach their same decisions pursuant to the amendment.

Under the RMA city and district councils affect the wider concepts of energy efficiency by managing and planning land use.<sup>95</sup> They can use zoning, standards, and structure plans in the district plan to achieve this.<sup>96</sup> The specific legislative framework will be discussed in Chapter VII, as it is more appropriately defined as energy conservation.

#### ***F The Environment Act 1986***

The Environment Act 1986 established the Ministry for the Environment (MfE) and the Parliamentary Commissioner for the Environment (PCE). Under this Act the role of the Ministry is to provide advice to the Government on the environment and matters affecting it. The functions of the Ministry pertinent to transport are providing advice on pollution control and coordinating management of pollutants in the environment.<sup>97</sup> The Ministry therefore has a work programme that focuses on the atmosphere and includes programmes on climate change and air quality. Under the climate change programme the key role of the MfE is to ensure New Zealand meets its international obligations and to ensure effective

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<sup>95</sup> Resource Management Act 199, s 131.

<sup>96</sup> Tonkin and Taylor Ltd. *Incorporating Sustainable Land Transport into District Plans: Discussion Document and Best Practice Guidance* (NZTA Research Report 362, November 2008).

<sup>97</sup> In accordance with the Environment Act 1986, s 31 (c) (iii).

operation and implementation of the ETS. The Ministry is responsible for reporting to the UNFCCC on New Zealand's efforts to mitigate climate change, although the administration of the ETS is now with the Environmental Protection Authority. MfE is also responsible for administering the Government website on climate change.

The air quality, or 'clean air programme' aims at reducing vehicle emissions and improving air quality through vehicle emission and fuel quality standards. This is to support the implementation of the National Environmental Standard on Air Quality in accordance with the Resource Management Act 1991. We will learn that it is these standards that indirectly regulate fuel efficiency in New Zealand.

From 2003 until 2009 the MfE was responsible for leading and managing the Govt<sup>3</sup> programme which had two major themes: sustainable procurement and energy efficiency. The aim of the programme was "to change behaviour and practices within government agencies by increasing capability and knowledge, identifying best practice and promoting practical solutions and tools".<sup>98</sup> It required Govt<sup>3</sup> agencies and industry to work together "to reduce the environmental impacts of government operations within New Zealand, such as waste generation, energy consumption, transport, building and procurement."<sup>99</sup> Pursuant to this programme the MED created the Sustainable Government Procurement Project that required agencies to prepare travel plans to reduce vehicle kilometres travelled (VKT) and that any vehicles procured must meet Euro 4, or equivalent, emission standards.<sup>100</sup> In terms of emission standards, the Euro 4 was the new standard that applied in New Zealand to new model vehicles manufactured after 1 January 2008, and that continues to apply to new vehicles until 2015. This was advanced as part of the Carbon Neutral Public Service policy that aimed to have six core government agencies carbon neutral by 2012, but the programme was discontinued in March 2009.

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<sup>98</sup> <[www.mfe.govt.nz/issues/sustainable-industry/govt3/index.html](http://www.mfe.govt.nz/issues/sustainable-industry/govt3/index.html)>.

<sup>99</sup> <[www.mfe.govt.nz/issues/sustainable-industry/govt3/index.html](http://www.mfe.govt.nz/issues/sustainable-industry/govt3/index.html)>.

<sup>100</sup> See Ministry of Economic Development *Sustainable Government Procurement Project Category Reviews: standards, guidelines, and targets for core public service departments* (First revision, August 2008).

Currently there is no programme or specific policy that requires government procurement of fuel efficient vehicles generally, or as a proportion of the fleet. Under the government scheme for procurement, agencies are expected to take the Total Cost of Ownership (TCO) into account when purchasing vehicles. The TCO model takes into account the environmental performance through the inclusion of the fuel consumption over the life of the vehicle.<sup>101</sup> But due to the average timeframe vehicles are owned by the agencies EVs or hybrid vehicles are the more expensive option because the pay-back period exceeds the time of ownership.<sup>102</sup> It is unfortunate that the TCO model is used instead of a total lifetime costs model, or one that more specifically targets energy efficiency similar to that used in the European Union, which considers total lifetime energy consumption.

The Environment Act gives the PCE a wide authority to investigate and report on matters relating to the environment, including the system of agencies and processes established by the Government, the effectiveness of planning and management by public authorities, matters before the House and any other matter the PCE considers warrants investigation.<sup>103</sup> As an officer of Parliament the PCE is accountable to the House of Representatives and enjoys the same level of immunity and privilege as a District Court Judge.<sup>104</sup> In February 2000 the PCE released *Getting More From Less: A Review of Progress on Energy Efficiency and Renewable Energy Initiatives in New Zealand* which gave a concise account on energy efficiency in New Zealand and made specific recommendations to relevant ministers. One of the key findings of the report was that “there is a clear need to review and fully address transport energy efficiency issues”.<sup>105</sup> The PCE further concluded that “the linkages between transport management, environmental effects, climate change and energy efficiency do not appear to have been

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<sup>101</sup> See Ministry of Economic Development *Passenger Vehicles: All-of-Government Buyers Guide: a guide for government agencies* (Edition 6: November 2011).

<sup>102</sup> See <[www.business.govt.nz](http://www.business.govt.nz)>.

<sup>103</sup> Environment Act 1986, s 16.

<sup>104</sup> Environment Act 1986, ss 4, 16.

<sup>105</sup> Parliamentary Commissioner for the Environment *Getting More From Less*, above n 18, at 98.



adequately recognised or addressed in current policy proposals”.<sup>106</sup> In discussing policy development the PCE said:<sup>107</sup>

Energy efficiency and related demand management issues should have been discussed as part of an appropriate electricity market and transport framework not as an additional benefit that might arise as a consequence of other measures.

This cogent analysis still accurately reflects the current situation. More recently, the PCE’s submission on the draft New Zealand Energy Strategy recommended “that the Government should take a more active leadership role to promote policies that compliment the Emissions Trading Scheme, and contribute towards the global effort of fighting climate change”.<sup>108</sup> It is unfortunate these recommendations by the PCE have not been acted on.

### ***G The Income Tax Act 2007***

Within the wider concepts of energy efficiency it can be argued that the legislative provisions regarding Fringe Benefit Tax (FBT) discourage energy efficient choices by consumers through excluding car parks given to an employee but including travel allowances for public transport. The Income Tax Act 2007 specifically includes subsidised transport as a fringe benefit under section CX 9. Under section CX 23 a benefit is not a fringe benefit if the benefit is provided to the employee by the employer and is used or consumed by the employee on the premises of the employer or a company that is part of the same group of companies as the employer.<sup>109</sup> Following Public Ruling BR Pub 99/6 ‘car park’ is excluded from the definition of fringe benefit and the employer is not liable for FBT, provided that the employer owns or leases the property and there is an

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<sup>106</sup> At 99.

<sup>107</sup> At 89.

<sup>108</sup> J Wright *Feedback to the Ministry of Economic Development on the New Zealand Energy Strategy* (Parliamentary Commissioner for the Environment, Wellington, 2010) at 2.

<sup>109</sup> Income Tax Act 2007, s CX 23.

exclusive right to occupy the property and a legal estate or interest in that property.<sup>110</sup> In 2003 the Government proposed amending the legislation “to include, as a listed fringe benefit, employer-provided car parks that are used for private purposes or available for the private use of an employee”,<sup>111</sup> although the proposed amendment never been made into legislation. Future reform has been indicated however, and a Bill is expected to be introduced in November 2012 that will change the rules regarding FBT.<sup>112</sup> The new rules will focus on car parks in the Auckland and Wellington central business districts as this is where the benefit is the greatest, and will replace the distinction in section CX 23 that a benefit used on the premises of the employer is not a fringe benefit.

One option which could enable employers to encourage more efficient transport options is to offer prizes to carpooling participants. But this has its limitations too; any prize that an employee receives that does not exceed \$300 per quarter is exempt from FBT, and the maximum amount an employer may be exempt from is \$22,500 per year.<sup>113</sup>

## *H Summary*

The history of strategic planning in transport shows a recognised need for energy efficiency but this has been followed by a dilution of efficiency targets in successive strategies. The variety of planning strategies that are required by the legislation give a result that is not cohesive or effective. Furthermore, the institutional framework that is provided by the legislation gives a fragmented approach. Arguably, the development of strategies and policy on energy efficiency would fit better under the purpose of the MfE, rather than the EDG. The legislative framework provides a good starting point, but further work is

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<sup>110</sup> Tax Information Bulletin, Volume 11, No “Car parks provided by employers – Fringe Benefit Tax exemption Public Ruling” – BR Pub 99/6. (8 September 1999) See Brookers Commentary <[www.brookersonline.co.nz](http://www.brookersonline.co.nz)>.

<sup>111</sup> Inland Revenue Department *Streamlining the Taxation of Fringe Benefits: Government Discussion Document* (2003) at para 7.25.

<sup>112</sup> P Dunne, Minister of Revenue “Dunne: decisions on salary trade-offs follow consultation” (press release, 3 October 2012).

<sup>113</sup> See Inland Revenue *Fringe Benefit Tax Guide: A guide to working with FBT* (IR409, November 2011) at 22, 23.

required, and unfortunately the proposed reform of the LTMA and the LTA looks unlikely to be of benefit for energy efficiency. A report on social responsibility in local and central government – particularly in land transport – found that:<sup>114</sup>

... there is potential to improve environmental performance as transport continues to have significant impacts on the environment across all four key areas of pollution, resource use, biodiversity and climate change. While good regulatory management is well established in New Zealand law, there is considerable scope to reduce the environmental impacts of specific transport projects and programmes while continuing to deliver its social and economic benefits ... fully integrated decision-making and planning processes across multiple sectors are required to ensure that ‘social investment’, strengthening the ability of individuals, families and communities to improve their capacity to deal with adversity and improve their own situation over time, occurs and that economic, social, environmental, health, and cultural well-being are moved forward together. Currently, such integration of planning, particularly considering health and well-being, is not prominent in New Zealand.

If integration of planning existed this would minimise the disjointed approach resulting from the planning and institutional framework. Overall, the framework provides an appropriate way by which the Government can ‘tick the boxes’ and show that energy efficiency in transport is considered. With no single agency responsible for energy efficiency in transport there is an increased ability to ‘pass the buck’ with the result that no effective measures will be in place before the adverse effects have amounted to a significant cost which can no longer be ignored.

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<sup>114</sup> C O’Fallon *A Social Responsibility Framework for New Zealand’s Land Transport Sector: New Zealand Transport Agency Research Report 458* (NZTA, Wellington, 2011) at 63.

## *IV The Regulatory Response*

The regulatory response from Government utilises a mix of different types of regulation including conventional, market-based, and decentred forms, ranging from environmental standards and information measures to a tradable emissions market.

### *A Environmental Standards*

#### *1 Vehicle standards*

There are currently no fuel economy standards or CO<sub>2</sub> emissions standards in place for motor vehicles, although they have been considered. In January 2008 a discussion document was released by the MoT for public consultation on the introduction of a Vehicle Fuel Economy Standard (VFES) for light vehicles entering the fleet.<sup>1</sup> The document discussed the options available to try and improve fuel economy and suggested the following: remaining with the status quo; providing more education and information on how to improve fuel economy; differential first registration (the registration fee for vehicles first entering the fleet would be higher for less fuel efficient vehicles and lower for more fuel efficient vehicles); introducing a voluntary standard (industry agreeing on a voluntary standard to apply to importers); regulating a minimum fuel economy standard (prohibiting vehicles that do not meet the standard); or regulating a standard for the average fuel economy of vehicles entering the fleet (the average of vehicles imported would have to meet the standard). Of these, the preferred approach was the last option. Regulating a fuel economy standard would still provide consumers with the freedom to choose what type of vehicle they would like but would influence the market by limiting the supply of less fuel efficient vehicles. The document further discussed the means by which this could be achieved and suggested the following:

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<sup>1</sup> Ministry of Transport *Improving the Fuel Economy of Vehicles Entering the New Zealand Fleet: A discussion paper for public comment* (January 2008) at 10.

- A tradable credits scheme. This would work effectively the same as an emission trading scheme but the credits would be traded between importers of vehicles.
- Vehicle Levy Scheme. Under this option a charge would be placed on any vehicle entering the fleet that does not meet the required standard.
- Industry Code of Compliance. This would involve a voluntary and self-regulating agreement between industry and Government.

It should be noted that the discussion document proposed the standard be measured in terms of g CO<sub>2</sub>/km and not litre / km to reflect the actual results that the Government was intending to achieve.

However following a change in Government, in 2009 a cabinet paper from the Economic Growth and Infrastructure Committee reported back to Cabinet and stated that the VFES should not proceed. Apparently it “would have been complicated to implement and potentially had high compliance costs”.<sup>2</sup> It is curious to note that the cost-benefit analysis estimated that the scheme would have decreased the cost of a small fuel efficient vehicle by \$400, and increased the cost of a large four-wheel-drive vehicle by \$1,500. This raises the question of whether the cost of carbon was adequately taken into consideration. Indeed, with only minimal increases and decreases it is doubtful the regulations would have had the desired effect at all. For example, if a consumer intends on spending approximately \$30,000 on a late model, used, four-wheel-drive vehicle it is doubtful that \$1,500, or 5% of the total price, would sway their purchasing decisions. Surely, for any regulation to be effective an increase or decrease of around 20% would be required. If this were the case then the cost-benefit analysis would have provided a profit of \$60 million, making it a feasible option.

Another issue the cabinet paper raises is that following consultation on the discussion document:<sup>3</sup>

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<sup>2</sup> Cabinet Economic Growth and Infrastructure Committee *Vehicle Fuel Economy Standard-Report Back* (August 2009) at 2.

<sup>3</sup> At 2.

...the Ministers requested further consultation ... and further research on the likely costs and benefits of a regulated VFES. The proposal for a regulated VFES was therefore not considered by Cabinet, despite Minister's requests for further consultation and research, at that time.

It is disappointing that further consultation and research was not undertaken and considered by Cabinet because the paper also realised that while a voluntary trend towards smaller vehicles had been triggered by the high fuel prices at the time, "the current rate of improvement is not enough to reach the 170 g/km CO<sub>2</sub> by 2015 target set out in the NZ Energy Efficiency and Conservation Strategy".<sup>4</sup> It is also disappointing that although the rate of improvement will reach the current target in the 2011 NZEECS (which replaced the above target) it is not because of a specific commitment to improve vehicle fuel economy but because of business-as-usual and technological advancement.

Further opposition to the VFES came from Cabinet, as at that time the 'Regulatory Review Programme: Immediate Removal of Inefficient and Superfluous Regulation' was also being progressed. Because other policy responses were in place and there was a potential rise in costs for the vehicle retail sector and an increase in the age of the vehicle fleet, it was decided that a VFES was not needed.<sup>5</sup> However this last point may have been mitigated by introducing further scrappage schemes and subsidies from the profit raised by the regulations, had the cost of carbon been increased.

This lack of fuel efficiency or CO<sub>2</sub> standards leaves New Zealand in the situation where energy efficiency is indirectly regulated through emission standards, which generally correspond with fuel efficiency. The purpose of the Land Transport Rule: Vehicle Exhaust Emissions 2007<sup>6</sup> is to improve air quality, and it must be noted that the emissions covered by the standards do not include CO<sub>2</sub>. The regulations apply to light and heavy duty vehicles certified for entry into the fleet on or after 3 January 2008, and replace the previous standards. The standards apply to both new and used vehicles, with used vehicles having to meet

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<sup>4</sup> At 3.

<sup>5</sup> At 3.

<sup>6</sup> Land Transport Rule: Vehicle Exhaust Emissions 2007, SR 33001/2

the standard of their year of manufacture. The regulations also differentiate new vehicles into existing and new models. The regulations were progressively phased to improve over a number of years, with the final phase coming into force on 1 January 2012. The standards are enforced by the requirement that a vehicle inspector or inspecting organisation must not certify a vehicle under the Land Transport (Vehicle Standards Compliance) Rule 2002 if there is reason to believe the vehicle does not comply with the emission standards.<sup>7</sup> Currently, the vehicles are not tested to check they comply with the standards; the only test is that they do not visibly emit smoke. This point has been raised by non-governmental organisations, who are putting pressure on the Government to include emission testing as part of the vehicle licensing reform that is currently being undertaken. According to the Motor Industry Association, New Zealand is the only country with emission standards but no emission testing.<sup>8</sup> The NZTA is the agency responsible for administering the standards. It will be recalled from the discussion on the strategic planning documents that in 2002 the NZTS stated that further initiatives were to include vehicle testing. It is unfortunate that ten years on New Zealand still does not have emission testing of vehicles that enter our fleet, let alone of those already in it.

The table below shows the current regulations that apply to vehicles imported into New Zealand and the standards for new and existing models.<sup>9</sup> Vehicles manufactured before 1 January 1990, tractors, and motor sport vehicles are excluded from the regulations.<sup>10</sup>

Table 1 Current emission standards for vehicles in New Zealand

(Date of manufacture)	Light-duty	Heavy-duty
New Petrol, CNG, LPG (1 Jan 2012 - 1 Jan 2015)	ADR 79/02; Euro 4; Japan 05; or US 2004	ADR 80/03; Euro 5; Japan 05; or US 2004
Used Petrol, CNG, LPG	ADR 79/02; Euro 4; Japan	ADR 80/02; Euro 4; Japan

<sup>7</sup> Land Transport Rule: Vehicle Exhaust Emissions 2007, r 5.2.

<sup>8</sup> New Zealand Transport Intelligence Business Week “Pressure on Govt to introduce proper emissions tests on vehicles” (Christchurch, 8 August 2012).

<sup>9</sup> The ADR standards are the Australian Design Rules.

<sup>10</sup> Land Transport Rule: Vehicle Exhaust Emissions 2007, r 3.

(1 Jan 2012 - 1 Jan 2013)	05; or US 2004	05; or US 2004
New Diesel (1 Jan 2012 - 1 Jan 2015)	ADR 79/01; Euro 4; Japan 05; or US 2004	ADR 80/03 & ADR 30/01; Euro 5; Japan 05; or US 2007 (existing model only US 2004)
Used Diesel (1 Jan 2010 - 1 Jan 2013)	ADR 30/01 & ADR 79/01; Euro 4; Japan 05; or US 2004	ADR 30/01 & ADR 80/02; Euro 4; Japan 05; or US 2004

Source: Land Transport (Vehicle Emission) Rule 2007, Schedule 1, Part 3.

This table shows us that the standards for new and used vehicles are the same, so new vehicles entering our fleet do not even need to meet current overseas standards. For example, in the United States the current standard for light duty vehicles, light-duty trucks and medium-duty passenger vehicles applies to model years 2009 and later.<sup>11</sup> Heavy-duty vehicles must comply with 2008 standards.<sup>12</sup> Yet New Zealand only requires compliance with the standard that applies to vehicles manufactured in 2004. In the European Union the current standard that applies is the Euro 5 which entered into force in September 2009 and as of 1 Jan 2011 applies to all new vehicles that are registered or for sale. Euro 6 will apply to all new vehicles for registration or sale from 1 September 2015. Effectively, New Zealand emissions have to comply with outdated legislation from the manufacturing countries, and our standards for vehicles in 2014 are effectively ten years behind our overseas counterparts. But this may be explained because:<sup>13</sup>

The main effect of Euro 5 is to reduce the emission of particulate matter from diesel cars from 25mg/km to 5mg/km. Euro 6 ... will mainly reduce the emissions of NOx from diesel cars further, from 180mg/km to 80mg/km.

An interesting point to note is that the New Zealand standards for new heavy duty vehicles are more stringent than for the light vehicle fleet, with the Euro 5 being required for both petrol and diesel heavy duty vehicles. As can be seen, further

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<sup>11</sup> 40 CFR §86.1811-09.

<sup>12</sup> 40 CFR § 86.008-10.

<sup>13</sup> <<http://ec.europa.eu/environment/air/transport/road.htm>>.



amendments are required as the regulations only apply to used vehicles until 1 January 2013.

The draft amendment inserts some of the more recent emission standards, but still provides a significant lag time to their introduction. For example, the Euro 5 standard is proposed to apply to new diesel vehicles manufactured after 1 November 2013 and continues to apply to vehicles up to the final date shown for the amendments, which is “on or after 1 November 2016”.<sup>14</sup> We can see from the above discussion that this provides a gap of about two years between the European Union’s standards and our application of them. Another minor amendment the draft rule makes is the provision that vehicles manufactured before 1 January 1990 will be excluded from the regulations, which has been replaced and now excludes vehicles first registered or manufactured outside of New Zealand 20 years or more before its date of certification.<sup>15</sup>

The Vehicle Exhaust Emission Rule has been the subject of judicial review by the High Court, with the Imported Motor Vehicle Industry Association (IMVIA) bringing proceedings against the Minister of Transport.<sup>16</sup> The IMVIA claimed that the Minister had promised a review of the rule before the third phase took effect, but the Minister denied making that promise. The Court found in favour of the Minister and stated that:<sup>17</sup>

... no such unambiguous promise was given. The Associate Minister indicated that a review would be held, but she did not commit herself to it. Further, the only expectation that the IMVIA might have had of a three year review was that it might add a rolling age ban to the emission standard. I am unable to accept that IMVIA members did rely, or might reasonably have relied, on such review being held at all, still less on it including the implementation date.

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<sup>14</sup> New Zealand Transport Agency *Land Transport Rule: Vehicle Exhaust Emissions Amendment [2012] Rule 33001/6 Draft for public comment* (Yellow draft, June 2012) at 11, 12.

<sup>15</sup> At 6.

<sup>16</sup> *Imported Motor Vehicle Industry Association Incorporated v Minister of Transport* HC Wellington CIV-2011-485-1972, 1 December 2011.

<sup>17</sup> At [53].

The Minister had been directed by the Cabinet Business Committee to reconsider a rolling age ban which would reduce the age of the fleet after the rule had been in effect for three years. It was considered that implementing the emission standards would act as a de facto age ban, and any formal requirements would pose technical and operational difficulties.<sup>18</sup>

It is necessary to make clear that conventional regulation is not the only option available to implement environmental standards. Indeed the approach by Japan offers a good example of a standard being set by industry, and will be explained in more detail in Chapter IV.

## *2 Fuel quality standards*

Pursuant to section 35 (1) (c) of the Energy (Fuels, Levies, and References) Act 1989 the Governor-General may implement regulations prescribing standards or specifications (including environmental or sustainability standards or specifications) to which engine fuel or refined petroleum products must conform when supplied in New Zealand. The present regulations prescribe specific requirements for the chemical composition of fuels including: petrol, diesel, biodiesel, ethanol and blends of these that are for supply and for use in internal combustion engines in New Zealand.<sup>19</sup> The regulations exclude fuel for aviation, motor vehicle or power boat racing, or fuel for jet boats.

Although the legislation provides for sustainability standards none have been included, and in regards to biofuels the standards do not place any requirement on the origin of the feedstock or its sustainability. What must be considered here is that due to New Zealand's Free Trade Agreements with other countries any limit on a good because of its country of origin is prohibited, although sustainable development is a fundamental principle underlying the environmental aspects of the agreements and must be supported. Foreign trade recognises the sovereignty of states to implement their own standards, but requiring imported products to meet New Zealand's sustainability standards is acceptable; if we were to have

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<sup>18</sup> At [11].

<sup>19</sup> Engine Fuel Specifications Regulations 2011, SR 2011/352.

any.<sup>20</sup> The lack of sustainability standards was argued as one of the reasons for repealing the Biofuels Obligation, discussed below. The standards are administered by the Economic Development Group of the MBIE.

One point to note is that the regulations apply to only the above mentioned fuels therefore third or fourth generation biofuels are not included, however the regulations interpret engine fuel to include biofuel.<sup>21</sup> For advanced biofuels which are not ethanol, such as those made from algae, this could raise issues as to whether the regulations apply.

For the sake of completeness, one may note that it is the above Act that included the biofuels obligation which required a certain percentage of biofuel to be included in the fuel sold in New Zealand, but which has subsequently been repealed.

## ***B Information Measures***

### *1 Fuel economy labelling*

To improve the information available to consumers and address one of the market failures which inhibit energy efficiency, conventional forms of regulation have been introduced which require information to be made available and displayed when a vehicle is for sale. The Land Transport Rule: Fuel Consumption Information 2008 Regulation came into force 1 February 2009 and required vehicles entering the fleet that are manufactured on or after January 2000 and certified for entry into service to have fuel consumption information supplied. The aim is to enhance the availability of information available and assist the Government in creating a database of information in platforms such as the fuelsaver<sup>22</sup> and Rightcar<sup>23</sup> websites. But these regulations only require the information to be supplied when the vehicle is certified, not for the information to be displayed to the consumer.

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<sup>20</sup> See Ministry of Foreign Affairs and Trade <[www.mfat.govt.nz](http://www.mfat.govt.nz)>.

<sup>21</sup> Engine Fuel Specifications Regulations 2011, r 4, 5.

<sup>22</sup> <[www.fuelsaver.govt.nz](http://www.fuelsaver.govt.nz)>

<sup>23</sup> <[www.rightcar.govt.nz](http://www.rightcar.govt.nz)>

The requirement to display fuel economy labels arises under the Energy Efficiency (Vehicle Fuel Economy Labelling) Regulations 2007 which were issued under section 36 (1) of the EE&C Act 2000. The regulations came into force on 7 April 2008 and require motor vehicle traders to display fuel economy labelling on all vehicles on display and less than 3,500 kilograms (which includes SUVs, vans), not including motorcycles. The information required includes the make and model, the cost per year, a rating out of six stars, and the litres/kilometre. An example of the label is provided in Appendix One. Unfortunately the levels of CO<sub>2</sub> emissions that are emitted per kilometre are not included, although they are available via the Rightcar website. Considering that some consumers do not seem too swayed by fuel economy or the amount of money that they could save in the long run, an alternative such as promoting the environmental advantage of such a vehicle may provide an additional incentive to consumers. The Ministry for the Environment is responsible for administering the regulations.

One view is that the only information that should be displayed for fuel economy labelling is simply the fuel consumption for city and highway conditions. Bradbrook claims that the star system is too vague, and that including an annual fuel cost is also vague and misleading.<sup>24</sup> This opinion has merit, although a more effective labelling system would provide a measure to compare fuel economy of cars with a similar size, weight and engine size; perhaps showing a sliding scale of most efficient to least efficient. The effectiveness of fuel economy labels has been discussed by the IEA who consider that:<sup>25</sup>

In isolation, fuel economy labels may not lead to significant fuel efficiency improvements. However, fuel efficiency labels do help consumers compare vehicles, and might particularly influence choices between otherwise similar vehicles that have different fuel efficiency ratings. Furthermore, consumers may pay much more attention to fuel

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<sup>24</sup> A Bradbrook “Alternative legal measures to improve the fuel efficiency of motor vehicles” in *Compendium on Energy Conservation Legislation in Countries of the Asia and Pacific Regions* (United Nations, New York, 1999).

<sup>25</sup> International Energy Agency *Transport Energy Efficiency* (IEA, Paris, 2010) at 30.

economy labels if labelling schemes are linked with vehicle fiscal measures, as in France and Japan.

This reminds us of what we learned from regulatory theory, and that information measures are effective as a supplement to other forms of regulation. This detail that labels work well with other policies is an important one, which we shall come to in our discussion on comparative regulatory approaches. In New Zealand there is no linkage between fuel economy labels and any other policy that aims to improve the efficiency of the fleet. We will see in the following discussion that this is because New Zealand has no fiscal policy that could be linked to the fuel economy labelling scheme.

## *2 Online information*

Decentred forms of regulation that provide information to consumers include the Government websites ‘Rightcar’ and ‘fuelsaver’. The Rightcar website includes a searchable database of vehicles and provides ratings for their safety, fuel economy, air pollution and CO<sub>2</sub> emissions. It is user friendly and is searchable by make, model, or registration plate. It is disappointing however that the website states that “[t]he importance of fuel economy is simple – it saves you money” and does not emphasise that this is only one reason for its importance, along with the environmental and health benefits. The fuelsaver website specifically addresses fuel consumption and provides fuel economy ratings and information on how to increase efficiency.

EECA also provide information via its ‘energywise’ website<sup>26</sup> although the efficiency only relates to the technical efficiency of fuel and not the environmental efficiency. Once again the focus is on how much money consumers can save. With the exception of a few television advertisements by EECA that promote how much money people can save, it is up to individuals to educate themselves about the relationship between transport emissions and their effect on climate change and air quality.

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<sup>26</sup> <[www.energywise.govt.nz/fuel-economy-tool](http://www.energywise.govt.nz/fuel-economy-tool)>

## ***C Fiscal Measures***

### *1 The emissions trading scheme*

The Government's primary response to remove GHG emissions from the transport sector is the ETS,<sup>27</sup> which effectively acts as the market-based mechanism to improve the efficiency of the fleet. Emissions trade, or carbon trading, has been recognised internationally as the best way to limit GHG emissions, and is the key mechanism under the Kyoto Protocol.<sup>28</sup> Drawing from economic theory, putting a price of an externality —or the cost of GHG emissions— onto the emitter incorporates a fundamental environmental principle of 'polluter pays'. Generally an ETS is considered a cap-and-trade mechanism, whereby a cap is set to the maximum amount of emissions allowed and then a market determines the allocation of emission units by trading between those emitters covered by the scheme. But New Zealand's ETS sets no such limit, or cap, and simply allocates emission units or credits to be traded between participants covered by the ETS.<sup>29</sup> Therefore the ETS is neither a cap-and-trade scheme nor a carbon tax.

As previously mentioned, the ETS was established under the CCRA, and it is the first scheme in the world to include all sectors and all emissions, albeit in staged levels of participation. The Climate Change (Liquid Fossil Fuels) Regulations 2008 came into force 1 January 2009 and placed the obligation upstream on participants who either remove the obligation fuel for home consumption or remove it from a refinery.<sup>30</sup> This option was preferred to placing the obligation downstream, where the obligation occurs after the emission, due to the complexity and administrative difficulties that would arise from having such a

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<sup>27</sup> It is beyond the scope of this paper to discuss the ETS in detail however excellent resources include: A Cameron *Climate Change Law and Policy in New Zealand* (LexisNexis, Wellington, 2011); K Price et al *Emissions Trading Scheme* (New Zealand Law Society, CLE Intensive, October 2011); and G Bertram and S Terry *The Carbon Challenge: New Zealand's Emissions Trading Scheme* (Bridget Williams Books, Wellington, 2010).

<sup>28</sup> See J Donehower "Analyzing carbon emissions trading: A potential cost efficient mechanism to reduce carbon emissions" (2008) 38:1 Environmental Law 177. See also S Deatherage *Carbon Trading Law and Practice* (Oxford University Press, Oxford, 2011).

<sup>29</sup> See G Bertram and S Terry *The Carbon Challenge: New Zealand's Emissions Trading Scheme* (Bridget Williams Books, Wellington, 2010) at 16.

<sup>30</sup> Climate Change (Liquid Fossil Fuels) Regulations 2008, SR 2008/356, r 5.

huge number of participants. The rise in costs will then be passed on to the emitter through higher fuel costs with the expected result of lower consumption. For every tonne of emissions that the fuel will produce participants are required to surrender one unit.<sup>31</sup> The Act includes a transitional phase until 2013 which caps the cost of one tonne of CO<sub>2</sub> at \$25 and allows participants to surrender one unit for each two whole tonnes,<sup>32</sup> effectively capping carbon at \$12.50 per tonne. What this means for the average consumer is that they are annually spending approximately \$37.50 per year for their emissions.<sup>33</sup>

While it is argued that the ETS is a preferred option to a tax as it is more flexible, its effectiveness must be questioned. Bertram and Terry provide a thorough analysis of the New Zealand ETS and claim that:<sup>34</sup>

New Zealand's carbon emissions from fuel use, industrial processes and pastoral agriculture will be virtually unchanged from what they would have been anyway. Overall, gross emissions under the ETS are still expected to rise and are currently forecast to be 22 % in excess of New Zealand's Kyoto target of returning to 1990 level emissions – the benchmark for the Protocol accounts. For the Labour government's ETS, our estimate is that it would have reduced gross emissions by 1.7% or less, compared with business as usual (BAU). The former Minister for Climate Change Issues, the Hon David Parker, estimated in 2008 that it would result in a 1% reduction. Under the National government's changes to the ETS in 2009, gross emissions will be reduced by about 0.6%.

They also state that “[t]he total effect of the scheme for transport emissions is estimated to be a reduction of 0.05 % to 0.03% of total national emissions”.<sup>35</sup>

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<sup>31</sup> Climate Change Response Act 2002, s 63.

<sup>32</sup> Climate Change Response Act 2002, s 222A.

<sup>33</sup> This figure is based on information from *New Zealand Motor Vehicle Registration Statistics 2010* (NZTA, 2011) and <www.rightcar.govt.nz>. The greatest numbers of registrations were for vehicles manufactured in 2005 and the most registered car was the Toyota Corolla, therefore an estimate was made on the data for a 2005 Toyota Corolla 1.8L Sedan based on 14,000kms of driving resulting in 3.12 tonnes of CO<sub>2</sub> emissions.

<sup>34</sup> Bertram and Terry, above n 29, at 17.

<sup>35</sup> At 67.

Further, it is said the ETS fails to make polluters pay and shifts the onus onto future generations. Overall, Bertram and Terry claim that:<sup>36</sup>

... the ETS fails two crucial tests for any environmental policy: it will not efficiently address the emissions problem, and it will not be fair (and therefore will not command legitimacy with the public in the longer run).

A further point Tal makes is that:<sup>37</sup>

Empirical evidence has shown that cap and trade systems are given to political pressures which can mean that reductions by key sectors, which could reduce emissions at relatively little expense, are not pursued. Indeed, one of the key criticisms of cap and trade systems is that once allowances are allocated under a cap and trade system, GHG emission sources with sufficient allowances may not have sufficient reason to reduce emissions and critical opportunities will be foregone.

To be sure, sole reliance on cap-and-trade will lead to missed opportunities to reduce GHG emissions and it will also weaken the effectiveness of other measures by failing to provide mechanisms that can be linked to create synergy. This was mentioned above, when we discussed fuel economy standards and the lack of fiscal policies with which they could be integrated. Even in light of these criticisms the ETS has been considered “the right economic framework for building a price on carbon dioxide into our economy” although the allocation scheme will limit its effectiveness.<sup>38</sup>

If we recall what we learned from regulatory theory, the purpose of regulation is to change behaviour, so any rise in the price of fuel as a regulatory measure to improve the efficiency of the vehicle fleet, should therefore result in a reduction in demand. But we have also learned that one of the difficulties with this type of

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<sup>36</sup> At 18.

<sup>37</sup> A Tal “Tried and True: Reducing Greenhouse Gas Emissions in New Zealand Through Conventional Environmental Legislative Modalities” (2009) 12 Otago Law Review 1at 22.

<sup>38</sup> Parliamentary Commissioner for the Environment *Some Biofuels are Better than Others: Thinking Strategically about Biofuels* (2010) at 21.



regulation is setting the correct price. Rising fuel prices are commonplace, and generally associated with increased profits of fuel suppliers or a response to the global market. Fuel costs also rise due to increased excise tax, accident compensation or increased regional taxes. Information is not provided to the consumer that approximately three cents out of every litre of fuel is to cover the cost of GHG emissions.<sup>39</sup> Indeed, the cost is quite low when compared to the ACC motor vehicle account levy of 9.90 cents per litre, or GST (which is charged on top of the fuel excise effectively making it a tax on a tax) of 8 cents per litre. Comparatively, the proportion which goes into the Land Transport Fund is 50.524 cents per litre. It seems obscure that “the purpose of the scheme is to reduce the amount of greenhouse gases emitted in New Zealand ... by charging those who emit greenhouse gases”,<sup>40</sup> yet the amount that is charged is unlikely to have any effect at all. Despite the fact that consumers are not given information about the amount they are paying towards the ETS and any rise in price can be considered just one more price rise, it is doubtful that the ETS contribution will influence behaviour and encourage more efficient transport choices. According to Eusterfeldhaus & Barton “[e]ven with the introduction of the emissions trading scheme it is unlikely that the true costs of climate change are internalised in the price of electricity and fuels”.<sup>41</sup>

Perhaps consumers need to be informed of how much they are paying towards the scheme, and fuel providers should be obligated to inform consumers of the amount as a specific allocation shown on their receipt, just as we are shown the amount paid for GST. Or maybe advertising at the pump by the means of a graph showing the proportion paid towards the ETS. What is important however is to inform consumers and to provide a visual account of the cost of carbon. This point of providing a visual means for people to identify and recognise something that is invisible is an important one that Thaler and Sunstein make.<sup>42</sup> They discuss an ‘orb’ which glowed red when consumers were using lots of electricity

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<sup>39</sup> <[www.aa.co.nz/motoring/aa-torque/speaking-up/fuel-taxes-fines-charges/petrol/](http://www.aa.co.nz/motoring/aa-torque/speaking-up/fuel-taxes-fines-charges/petrol/)>

<sup>40</sup> <<http://www.climatechange.govt.nz/emissions-trading-scheme/about/basics.html>>

<sup>41</sup> M Eusterfeldhaus and B Barton “Energy Efficiency: A Comparative Analysis of the New Zealand Legal Framework” (2011) 29 *Journal of Energy & Natural Resources Law* 431 at 436.

<sup>42</sup> See R Thaler, C Sunstein *Nudge: improving decisions about health, wealth & happiness* (Penguin, London, 2009).

and the effect this had on a reduction in demand by providing a visual account of energy use. Another perspective is that informing consumers of the amount they pay towards the ETS may make any rise in price more acceptable.

Whether behaviour will be influenced by rising fuel prices is a point to consider when any response to a change in price will be influenced by the elasticity of demand of fuel, and any change in income. According to one report, prices of petrol do have a discernible impact on petrol consumption.<sup>43</sup> This report found that a ten per cent rise in price will result in a reduction in petrol consumption by 1.5 per cent within a year and a further 0.5 per cent reduction the following year.<sup>44</sup> What must be considered is that, generally, rises in price are less than ten per cent and are incremental, which begs the question of what is the optimal percentage increase that will influence behaviour? For example, will the recent increase of fuel excise of two cents per litre be sufficient to influence a change in behaviour? To be sure, the increase in fuel excise is arguably made to cover the cost of roading and not to change behaviour, but the same question can be asked for the three cents that drivers pay towards the ETS. The relationship between the elasticity of demand of fuel and increasing the cost of fuel raises an important opportunity for the introduction of biofuels, which could offer an economic and environmentally efficient option to a higher carbon price and carbon intensity. As the above discussion demonstrates this would have to be carefully balanced to avoid replacing the one for the other, if the intention was to reduce overall vehicle kilometres travelled.

It must be questioned whether the purpose of the ETS is to influence behaviour and reduce emissions, or to provide a means to purchase credits in the international market. Donehower says that:<sup>45</sup>

... emissions trading reduces the cost of meeting emissions obligations by placing a monetary value on GHG emissions and using the flexibility of

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<sup>43</sup> D Kennedy and I Wallis *Impacts of fuel price changes on New Zealand transport: Land Transport New Zealand Research Report 331* (Booz Allen Hamilton (NZ) Ltd, Wellington, 2007) at 10.

<sup>44</sup> At 8.

<sup>45</sup> Donehower, above n 28, at 181.

the market to allow participants to decide whether it is cheaper to reduce emissions or to purchase excess allowances from others.

This is an important point to bear in mind when considering New Zealand's approach, where the Government has indicated that it intends to meet its obligations by buying credits, rather than by reducing GHG emissions levels.

It should be noted that as early as 1994 a carbon tax was discussed as an option to address GHG emissions and remained the topic of discussion until 2005, when it was considered that "the proposed carbon tax would not cut emissions enough to justify its introduction".<sup>46</sup> However, the proposed carbon tax would have had essentially the same effect that the ETS has had on pricing carbon.<sup>47</sup> One advantage of a carbon tax would have been that the revenue received would be payable to the Government which could then use it to subsidise reducing the age of the fleet or low income families affected by the rise in costs. A carbon tax would not have provided as much flexibility as the ETS, but may have been a more effective regulatory tool for transport emissions. One option that is considered the most cost-effective way of reducing vehicle emissions is using a combination of a fuel tax and an attribute-based vehicle emission standard. This should be a future option for the Government, and will be discussed further in Chapter VIII.

In a policy context, if the purpose of the ETS is to reduce GHG emissions yet emissions are continuing to increase, it must be questioned whether this is the most appropriate policy response. It will be recalled from what we have learned from policy theory that, according to Weimer and Vining, a response to address a traditional market failure such as an externality should use incentives and rules as the primary policy solution, and that a market mechanism is a suitable secondary option. Theory also tells us that the choice of policy instruments is crucial to its effectiveness, and that more than one instrument may be needed. Although the Government's 5<sup>th</sup> Communication under the UNFCCC says there are other

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<sup>46</sup> David Parker, Minister for Climate Change Issues "Carbon Tax will not go ahead in 2007" (Press release, 21 December 2005).

<sup>47</sup> See Inland Revenue Department *Implementing the Carbon Tax: A Government Consultation Paper* (2005)

incentives underway to complement the ETS, they do not provide the cohesive approach that is needed. One such incentive is biofuels, yet the PCE claims that “[the ETS] will not be effective at all in assisting the domestic biofuel industry to grow”.<sup>48</sup> Other policy instruments that provide advocacy and government action are needed, such as improved consumer information and procurement and scrappage schemes. The economic instruments used should be able to be linked with the other policies, similar to what is being done in other countries, which we shall learn about in the following chapter. This lack of cohesion and implementation of multiple policy instruments gives an unsatisfactory result.

#### ***D Summary***

The regulatory approach of Government is light-handed and trusts the market to correct the imbalance that has been created. Indeed, the Government’s regulatory reform programme aims for better and less regulation and “to improve the efficiency and effectiveness of the land transport system and to remove unnecessary regulatory interventions”.<sup>49</sup> However, what is ‘necessary’ in terms of transport seems to be determined by the underlying approach to increase economic development and leaves the issue of sustainable development until it can not be addressed by token gestures any longer. It could be fair to say the Government’s response displays some of the psychological barriers that were discussed earlier. The main response thus far focuses on setting standards for industry, rather than limiting individual consumer choices. However we have no standards that specifically address fuel economy or GHG emissions, and the emission standards that are in place are not even tested. There is also a considerable lack of information available to consumers. It is all well and good to let the market function, but the market barriers discussed earlier need to be addressed. Measures addressing the lack of information, access to capital and split incentives need to be implemented. The primary regulatory measure to

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<sup>48</sup> Parliamentary Commissioner for the Environment, above n 38, at 21.

<sup>49</sup> Ministry of Transport *Connecting New Zealand: A Summary of the Government’s Policy Direction for Transport* (2011) at 30.

improve energy efficiency in the transport sector is the ETS, but as a regulatory tool to influence behaviour in this sector, the effectiveness of the ETS must be questioned. There are other fiscal options that should be explored that would provide a more cohesive and effective approach at improving the efficiency of the fleet. The ETS is a good start, but it needs to be backed up by other regulatory tools.

## V *The Policy Response*

The policy response has already been traversed, albeit in a limited extent, in the discussion on the strategic documents for transport and the institutional framework. We have learned that energy efficiency policy predominantly comes from the Government's wider policy on climate change. It is from the NZEECS and the Report of the Ministry for the Environment on New Zealand's implementation of climate change policies that we gain a clear statement of Government policy. According to the Government's 5<sup>th</sup> Communication under the UNFCCC:<sup>1</sup>

The Government's primary policy to mitigate greenhouse gas emissions from the transport sector is to include transport fuels in the NZ ETS. Other transitional incentives and research are underway to complement the scheme in the areas of new fuels and technology, improved efficiency of commercial fleets and encouraging forms of transport that are less carbon intensive.

The Communication further states that these other measures include vehicle fuel economy labelling, biofuels, electric vehicles, and 'other transport measures' including fleet best practice and public transport. The NZEECS states that efficiency will also be improved by increased quality of our transport network and the work of regional councils through land-use planning. Regional energy plans are playing an important role in creating an energy efficient transport system, so too are policies on urban design. Efficiency measures which focus on improving air quality can be found in the policies of the Ministry for the Environment that aim at reducing the age of the vehicle fleet and imposing restrictions on imports.

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<sup>1</sup> Ministry for the Environment *New Zealand's 5<sup>th</sup> National Communication under the UNFCCC* (2009) at 65.

## A *Biofuels*

According to the NZEECS the Government will encourage the entry of alternative transport fuels in the market to meet the objective of “[a] more energy efficient transport system, with a greater diversity of fuels and alternative energy technologies”.<sup>2</sup> The means to achieve this is:<sup>3</sup>

To ensure equal incentives for different types of biofuels between now and 2012, [so] the Government is providing a grant to biodiesel producers. This grant is designed to be equivalent to the petrol excise duty exemption currently in place for bioethanol. NZ\$36 million has been allocated to the grant scheme over three years, starting in July 2009.

Before we discuss the grant, it is important to remember that the efficacy of using biofuels has been doubted due to their life-cycle analysis; where some biofuels actually emit more GHG emissions than conventional fuel through their production. As mentioned above, other sustainability issues also arise. But this should not be a reason to limit the introduction of biofuels as regulation can be used to impose standards to ensure that sustainability criteria are met.

The biofuel grant provides a sales credit of 42.5 cents per litre for fatty acid methyl ester (FME) biodiesel which is manufactured in New Zealand and sold as transport fuel. The Engine Fuel Specification Regulations state “biodiesel means fatty acid methyl esters”<sup>4</sup> which therefore excludes third generation biofuels. This means that third generation and newer biofuels fail to qualify for support from the scheme. This point has been raised by the PCE who, in reviewing the regulations, referred to her report *Some Biofuels are Better than Others: Thinking Strategically about Biofuels* and recommended that the scheme be modified to

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<sup>2</sup> Ministry of Economic Development *New Zealand Energy Efficiency and Conservation Strategy 2011-2016* (2011) at 19.

<sup>3</sup> Ministry for the Environment *New Zealand’s 5<sup>th</sup> National Communication under the UNFCCC*, above n 1 at 78.

<sup>4</sup> Engine Fuel Specifications Regulations 2008, r 5 (1).

include biodiesels made from feedstocks other than FMEs.<sup>5</sup> One important point to note is that the scheme does not require that the feedstock be grown in New Zealand, which could raise sustainability issues.<sup>6</sup>

Initially the scheme was to run for three years starting in July 2009 but this has been extended until the end of June 2013. The government agency responsible for administering the grant and promoting biofuels in New Zealand is EECA. The up-take of the scheme has been limited and the allocation of funding has not been utilised. For the first year the Government allocated \$9 million, of which \$23,331 was used. The following year there was an allocation of \$12 million, although only \$804,739 was used. As at June 2012 only \$753,539 of the \$15 million allocated has been used.<sup>7</sup> The statistics show that although there remain 6 producers in the scheme, the number of those receiving grants has been steadily decreasing. The PCE provides an excellent review of the biofuel situation in New Zealand and claims “[t]he Biodiesel Grants Scheme is not as effective as it could be”,<sup>8</sup> and the scheme alone is not capable of helping innovative biofuels technologies to advance. Further, she says that public and private investment in research, development, and commercialisation is well below the OECD norm.<sup>9</sup>

Retail sale of biofuel is not yet common. Unlike other countries, New Zealand does not have a biofuel obligation that requires a percentage of fuel sold to be biofuel. But this has not always been the case. In 2008 the Energy (Fuels, Levies and References) Act 1989 was amended and a biofuel sales obligation was introduced in New Zealand. The Act required fuel suppliers to include at least 0.5 per cent biofuels in their sales, which was to steadily increase over time, with a substantial penalty of \$20 million if they failed to comply.<sup>10</sup> The Act also

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<sup>5</sup> Jan Wright, Parliamentary Commissioner for the Environment “Reviewing Aspects of the Engine Fuel Specifications Regulations 2008” Letter to Ministry of Economic Development, (18 February 2011).

<sup>6</sup> Energy Efficiency and Conservation Authority *Biodiesel Grants Scheme* (BGS D3 – June 10).

<sup>7</sup> Biodiesel Grants Scheme year 3 June 2012 stats [pdf] <[www.eeca.govt.nz/node/6059](http://www.eeca.govt.nz/node/6059)>.

<sup>8</sup> Parliamentary Commissioner for the Environment *Some Biofuels are Better than Others: Thinking Strategically about Biofuels* (29 July 2010) at 43.

<sup>9</sup> At 39.

<sup>10</sup> Energy (Fuels, Levies, and References) Act 1989, Part 3A which was inserted by Energy (Fuels, Levies, and References) Amendment Act 2008.



required biofuels to meet sustainability principles which included having at least a 35 per cent reduction in GHGs, that the feedstock did not compete with land used for food production, and that its production did not reduce biodiversity or adversely effect land with high conservation value.<sup>11</sup> By international standards, these sustainability principles were reasonable. The sales obligation came into force on 1 October 2008 and is perhaps a contender for the least amount of time in the statute books, as the obligation was repealed just 84 days later on the 23 December 2008. The incoming Government argued the Act should be repealed because it went against government philosophy towards regulation, that there was not enough biofuels in New Zealand to satisfy the obligation, there was a risk of unsustainable biofuels being sold, and that it loaded uncertain costs on consumers.<sup>12</sup> The opposing argument was that repealing the obligation would remove certainty from industry and cause biofuel manufacturers to withdraw from New Zealand resulting in a reduced amount of biofuel — which has been the case.<sup>13</sup> Further, the information the Government relied on regarding increased costs on consumers was ill-founded as it was information that was supplied by oil companies and did not take into account that biofuels would only be expensive while oil prices were low.<sup>14</sup> This cogent argument unfortunately did not persuade the incoming Government.

Because repealing the Energy (Fuels, Levies, and References) Amendment Act 2008 also repealed the sustainability principles, a new member's bill was introduced into Parliament in 2009 which aimed "to ensure that biofuels that are supplied or sold in New Zealand after 1 May 2010 are sustainable biofuels".<sup>15</sup> The Select Committee report found that at present there is no concern that unsustainable biofuels are being sold in New Zealand but if it were to become an issue sections 35 and 36 of the Energy (Fuels, Levies, and References) Act 1989 provide the legislative means to regulate them. A further point the Select Committee made was the potential advantage of utilising regulations under the

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<sup>11</sup> Energy (Fuels, Levies and References) Amendment Act 2008, s 9.

<sup>12</sup> (16 December 2008) 651 NZPD 729.

<sup>13</sup> See J de Pont *Low-Emission Fuel-Efficient Light Vehicles* (NZ Transport Agency Research Report 391, 2009) at 100 and (16 December 2008) 651 NZPD 756.

<sup>14</sup> (16 December 2008) 651 NZPD 756.

<sup>15</sup> Sustainable Biofuel Bill 2009 (49-1), cl 4.

Act for sustainability standards and the ease that any international standards could be incorporated into them.<sup>16</sup> Following the advice by the Select Committee Parliament decided not to proceed with the Bill in April 2012. The result is that New Zealand has no sustainability standards for biofuels, or any sales obligation, and the only policy instrument the Government is using to advance biofuels is the grant scheme. This is a disappointing result because biofuels play a vital role to complement other policies.

## ***B Electric Vehicles***

In coordination with the Government's policy on renewable energy<sup>17</sup> EVs provide a valid policy response for New Zealand. Once again, the life cycle analysis must be considered when evaluating the effectiveness of EVs as in one sense it could be claimed that the emissions are just moving up stream instead of out of the tailpipe. This is why a government commitment to renewable energy is so important if this is to be a valid policy option.

The Government policy on EVs is stated in the NZEECS; whereby the Government intends to "encourage the entry of ... electric vehicles in the New Zealand market".<sup>18</sup> The way they intend to achieve this is by providing an exemption from road-user charges (RUCs) for EVs until 30 June 2020.<sup>19</sup> Under the Road User Charges Act 2012 a light electric RUC vehicle is defined as having its motive power wholly or partially derived from an external source of energy.<sup>20</sup> A literal interpretation of this would include plug-in hybrid electric vehicles (PHEVs), but if the engine being powered is a petrol engine then the vehicle is exempt, if the engine is a hybrid diesel engine then RUCs are payable.<sup>21</sup> However, for technologies that are primarily electric, but use petrol as a back-up –

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<sup>16</sup> Select Committee Report *Sustainable Biofuels Bill* at 3-4.

<sup>17</sup> See *National Policy Statement for Renewable Electricity Generation 2011* which reaffirms a target of 90 per cent of electricity generated from renewable sources by 2025.

<sup>18</sup> Ministry of Economic Development *New Zealand Energy Efficiency and Conservation Strategy 2011-2016*, above n 2, at 19.

<sup>19</sup> Road User Charges (Exemption Period for Light Electric RUC Vehicles) Order 2012, SR 2012/140.

<sup>20</sup> Road User Charges Act 2012, s 5.

<sup>21</sup> Telephone conversation with the Road User Charges Contact Centre (24 September 2012).

such as the Holden Volt – the vehicle is deemed to be a light electric RUC vehicle. For the sake of clarity, and reasons we shall come to shortly, this definition should be amended to exclude vehicles that are partially powered by an external source of electricity.

According to the Regulatory Impact Statement for amendments to road user charges in 2009, 52 per cent of respondents from an EECA market survey stated that having to pay RUCs would affect their decision to purchase an EV.<sup>22</sup> This is interesting because the cost of purchasing an EV can be up to three times more than the cost of purchasing a petrol powered equivalent and the exemption provides a saving of \$432 per annum, based on a distance of 12,000 kilometres per year.<sup>23</sup> The Regulatory Impact Statement considered a number of options for the length of the exemption but due to the loss of revenue to the Government, estimated to be \$88,000 in July 2013 on 300 EVs, it recommended to conclude the scheme in 2013, but which has since been extended. Another option that was discussed was leaving the exemption in place until one percent of the market was EVs, which could be seen as a better alternative given that the estimate of having 300 EVs on New Zealand roads in 2013 appears optimistic, with the statistics showing that in 2010 there were only 40 registered for use on New Zealand roads.<sup>24</sup> The extent that the policy has been promoted and advertised is limited and as a method to encourage the use of EVs its effectiveness must be questioned.

EECA's other work on assisting the introduction of EVs is to help overcome barriers such as uncertainty and inconsistency regarding electrical standards by helping manufacturers and importers with the requirements for charging of EVs in a New Zealand context. The result is a published guide which covers installation standards, charging options and general wiring considerations.<sup>25</sup>

Before EVs become a readily available option there are a few considerations that need to be addressed. The first consideration is the capacity of the electricity

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<sup>22</sup> Regulatory Impact Statement, *Road User Charges Amendments 2009* at 1.

<sup>23</sup> At 2

<sup>24</sup> New Zealand Transport Agency *New Zealand Motor Vehicle Registration Statistics 2010* (2011).

<sup>25</sup> Energy Efficiency and Conservation Authority *Deploying electric vehicles in New Zealand: A guide to the regulatory and market environment* (2012).

grid and management of peak demand. According to a discussion paper released by the MoT:<sup>26</sup>

The additional electricity required to charge electric vehicles is expected to fall within the capacity of the grid if grid improvements go ahead, consistent with the introduction of a target for 90 percent of electricity being generated from renewable sources by 2025. Uptake would have to be supplemented with a charging policy to manage peak demand.

Managing peak demand is essential as it can be expected EV owners will add further constraint to the grid by charging their EVs when they arrive home from work around 6 pm, which is when there is greatest demand on the system. King says that peak demand management “will involve the purchase and installation of a smart meter - a device that can either read the demand on the electricity system or operate on a timer – which will constrain demand to off-peak times”.<sup>27</sup>

Under existing legislation the Governor-General does not have the power to implement regulations that would specifically require installation of smart meters when charging facilities for EVs are installed.<sup>28</sup> However, pursuant to the Electricity Act 1992 regulations may be implemented that prescribe standards that must be met in respect of fittings and electrical installations that are to be used by consumers.<sup>29</sup> Standards are defined as specifications relating to goods, services, processes, or practices and may therefore require that an installation would be able to manage peak demand.<sup>30</sup> This would allow consumers the choice of how this would be achieved, while ensuring that demand will be managed.

A further consideration is that with a shift to EVs there will be a resulting loss in revenue from Fuel Excise Duty (FED), which funds the roading network. Revenue is collected in different ways for petrol and diesel vehicles: petrol sales

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<sup>26</sup> Ministry of Transport, *Sustainable Transport: Update of the New Zealand Transport Strategy Discussion Paper* (December 2007) at 56.

<sup>27</sup> S King *Electric Vehicles and New Zealand: Identifying Potential Barriers and Future Considerations* (Ministry of Transport, 2007) at 10.

<sup>28</sup> The Electricity Act 1992, s 169 does not cover regulations that relate to the supply or use of electricity not in connection with health and safety of people or protection of property.

<sup>29</sup> Electricity Act 1992, s 169 (1) (4).

<sup>30</sup> Standards Act 1988, s 2.

include a FED and diesel vehicles (and EVs after 2020) are required to contribute via RUCs which is based on the distance the vehicle travels. However as discussed above, hybrids and PHEVs do not fall into the EV category and are therefore exempt from paying RUCs but pay less FED than conventional vehicle owners because they use substantially less fuel than conventional vehicles. King suggests that one option is to apply the RUC system to all road users, which would make the system more equitable, although this would need to be offset with a reduction in the FED.<sup>31</sup> On the other hand, the cheaper running costs could be seen as an enticement to purchase hybrid and PHEVs in an effort to improve energy efficiency and could be left as an incentive measure.

One of the main considerations in encouraging EVs is their cost, which provides a significant barrier to their introduction. For example, discussing the Mitsubishi MiEV, de Pont says:<sup>32</sup>

This electric vehicle is based on the same platform as the Mitsubishi i-car, which sells for NZ\$19,000. The i-car has a 660cc engine and a rated fuel consumption of 5.9l/100km. If we assume that this vehicle will travel 250,000km in its life, its total fuel consumption will be less than 15,000l. At current fuel prices, this is less than NZ\$24,000. Thus the cost of the petrol car, and all the petrol it uses in its whole life, is significantly less than the expected purchase price of the electric car. Based on the quoted range of the electric car, the battery pack would need to undergo more than 1500 charges in a 250,000km life. This is more than the expected life of current Li-ion batteries, so it is likely that the battery pack would need replacing. Clearly, the electric option is not a sound economic choice.

Similar comments could also be made about the recently introduced Holden Volt, which retails for around \$85,000. Certainly, when the retail price of an EV is taken into consideration the policy option of providing consumers a \$432 exemption seems inadequate and disproportionate to encourage their uptake. This exemplifies why further policy instruments are necessary. A further point to

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<sup>31</sup> King, above n 27, at 21.

<sup>32</sup> de Pont, above n 13, at 63.

consider is that for technologies such as the Holden Volt, which is also powered by petrol, the owner is also paying FED. If the definition of a light electric RUC vehicle was amended, as suggested above, this could act as a stronger incentive.

The issue of recharging facilities and infrastructure requirements have been considered minimal, with one report claiming that EVs could be introduced without a large investment in infrastructure, but as uptake levels and vehicle's capacity to travel further increase public charging facilities may be required<sup>33</sup> But as EVs become more available their range is expected to improve thereby creating less of a need for recharge facilities.

The Government policy of promoting EVs is certainly a move in the right direction, although the means of achieving this through RUCs exemptions seems ineffective and mild. Providing RUC exemptions until 2020 is the Government's single policy instrument to meet its commitment to encourage EVs into New Zealand. Although this is a good start, it needs to be supported by other policy instruments. Further Government action is required and more money needs to be directed into this area if Government is serious about this policy.

### ***C Fleet Best Practice***

The NZEECS states that the Government will promote efficient business fleet management through information and audit programmes, such as the Safe and Fuel Efficient Driver (SAFED) programme.<sup>34</sup> The SAFED driver development course is based on a United Kingdom programme, and aims to improve the skills and driving techniques of truck and bus drivers and helps organisations to reduce fuel and maintenance costs, reduce CO<sub>2</sub> emissions and improve safety.<sup>35</sup> To date, 543 drivers have been trained by the programme,<sup>36</sup> which has been running since July 2010. It must be mentioned that the MoT and NZTA websites do not overly

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<sup>33</sup> Ministry of Transport, *Sustainable Transport: Update of the New Zealand Transport Strategy Discussion Paper*, above n 26, at 56.

<sup>34</sup> Ministry of Economic Development *New Zealand Energy Efficiency and Conservation Strategy 2011-2016*, above n 2, at 19.

<sup>35</sup> <<http://safednz.govt.nz/>>.

<sup>36</sup> <<http://safednz.govt.nz/>>.

promote the programme. According to the SAFED New Zealand website, EECA has assisted three organisations to benefit from the programme through running a promotional draw.<sup>37</sup> It appears that this has been the extent of their assistance however as no mention of the programme can be found on their website.

As a policy option to improve energy efficiency this could be effective given the fact that the commercial fleet is responsible for large amounts of CO<sub>2</sub> emissions, however it is disappointing that it is not promoted and advertised as well as it could be, although it must be recognised that EECA is undertaking work in this area. This policy could be further strengthened if the regulatory framework for driver licensing included energy efficient driving as part of the assessment criteria. Instead, the Government is relying on the SAFED programme as the single instrument to achieve the policy.

#### ***D Public Transport***

It is the role of both central and local government to promote the policy of public transport. Central government advances public transport by including it in strategic documents such as the GPS on Land Transport Funding, the NZES and the NZEECS, as we have seen. Under the Public Transport Management Act 2008, regional councils are responsible for regulating and providing public transport services.<sup>38</sup> Funding for public transport is available through the NLTF which is made up mainly from fuel excise duty, road user charges, and motor vehicle registration and licensing fees, but tolling and contributions from rental or sale of State highway land and interest from investment also contribute to the fund.<sup>39</sup> Local government also contributes through revenue raised by rates, development contributions, borrowing and investments. The contributions from local government are separate from those of central government and are therefore not included in the GPS funding allocation figures. The following table shows the amount allocated to public transport and the percentage of the total fund.

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<sup>37</sup> <[www.safednz.govt.nz/news/](http://www.safednz.govt.nz/news/)>.

<sup>38</sup> Public Transport Management Act 2008, s 3.

<sup>39</sup> *Government Policy Statement on Land Transport Funding 2012/13 – 2021/22* at 16.

**Table 2 Allocation of land transport funding**

Activity Class	2011/12 Allocation	
	\$m	%
New & improved infrastructure for State highways	1038	34.68
New & improved infrastructure for local roads	132	4.40
Public Transport infrastructure	57	1.90
Renewal, maintenance & operation of State highways	502	16.76
Renewal, maintenance & operation of local roads	619	20.67
Public Transport Services	220	7.34
Road policing	302	10.08
Road safety promotion	38	1.26
Walking & cycling	15	0.50
Sector research	6	0.20
Transport planning	32	1.06
Management of the funding allocation system	32	1.06

The table above shows a clear focus of investment in new and improved roads, and road policing, rather than efforts to reduce vehicle kilometres travelled. Also the amount allocated for walking and cycling, while being more than the allocation for sector research, is less than the allocation for planning or management of the funding allocation system.

Particular policy responses for promoting public transport vary in each region according to its size. These range from simply providing a regular bus service and providing free priority parking for car-poolers<sup>40</sup> to traffic management measures such as priority lanes for passenger transport and parking measures which limit the number of available parking spaces in the central business district.<sup>41</sup> These measures will be discussed further in Chapter VII.

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<sup>40</sup> Nelson City Council promotes carpooling in this way. <[www.nelsoncitycouncil.co.nz](http://www.nelsoncitycouncil.co.nz)>

<sup>41</sup> See City of Auckland- District Plan, Central Area Section, operative 2004, updated 13/04/2011 at 6.



There is a tension between the outcomes that the Government expects for public transport. The NZTA have a National Farebox Recovery Policy that sets a target for a national farebox recovery ratio of no less than 50 per cent.<sup>42</sup> This requires that the fares received from providing the public transport account for 50 per cent of the costs. A further requirement of the policy is that as a condition of funding approval all regional councils will have a farebox recovery policy in place, as part of their adopted Regional Public Transport Policy. The conflict arises where services are cut due to lack of profitability and the council is therefore not deemed to be promoting the policy of public transport.

In terms of improving the energy efficiency of public transport services in New Zealand the regulatory framework does not require a certain percentage of the fleet to be powered by alternative fuels or to be next-generation vehicles, or that procurement must take into account the overall lifetime energy consumption. Where alternative fuels are used, such as in Wellington's electric trolley buses, the choice has been made without any regulatory requirement.

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<sup>42</sup> New Zealand Transport Agency *National Farebox Recovery Policy* (2010).

## VI A Comparative Discussion

This chapter will focus on the different approaches to improve energy efficiency in other fleets, including vehicle and fuel efficiency, measures to promote eco-driving, and other measures to improve the fleet.

### A Comparing Vehicle Efficiency Regulation between Jurisdictions

Comparing vehicle fuel efficiency and GHG emissions standards is rather difficult due to the fact there is no global standard in place. There are differences in test cycles, with three different types being used. There are also differences in how the standards are applied to the vehicle fleet. For example, the United States, Japan and Australia have standards that are based on an average across the fleet, compared to China who is the only country that applies standards to individual vehicles. A further point of difference is whether a footprint-based or weight-based standard is used. In the United States fuel economy goes on footprint, in Japan the approach is weight-based. To ease comparison, a study by An et al has standardised fuel economy and GHG standards between Europe, Japan, China, and the United States and the results are shown in the figure below.

Figure 1 Standardised comparison of fuel economy standards

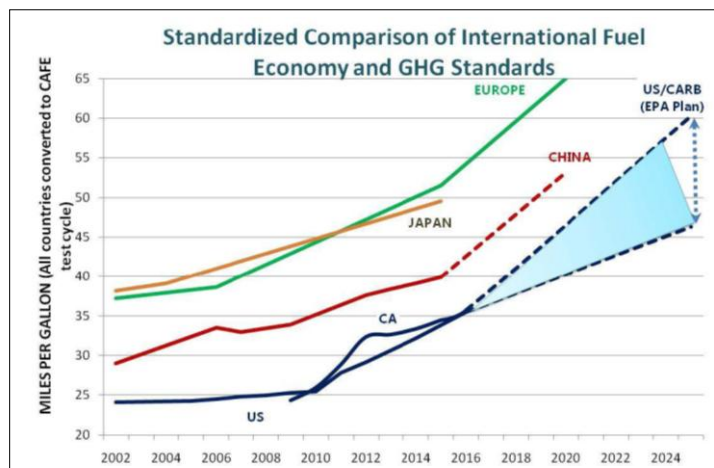
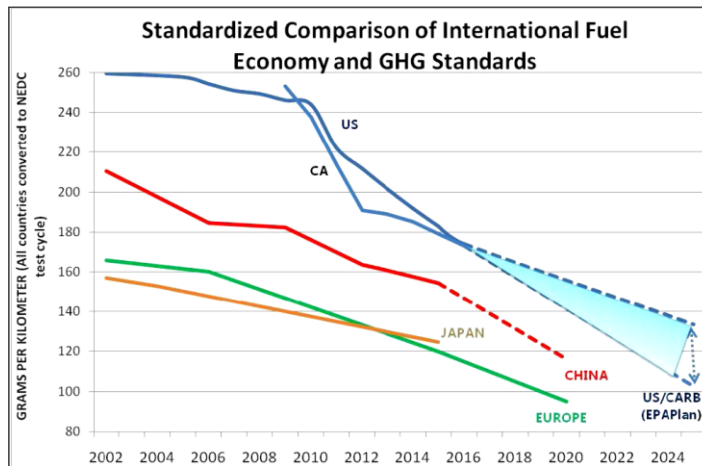


Figure 2 Standardised comparison of GHG standards



Source: An, Early, and Green-Weiskel (2011).

The figures show that Europe has the most stringent vehicle standards, closely followed by Japan. China’s vehicle standards exceed those of the United States, which has the worst performing standards of all four jurisdictions.

A further point of difference is the fiscal policy used to improve fuel and vehicle efficiency, which varies significantly between countries. For example, in 2010 the tax rate on petrol in the United States was only 12 cents per litre. Japan’s tax rate was higher, at 57 cents per litre, and the European countries had the highest tax rate reaching \$1.15 in the United Kingdom,<sup>1</sup> which could explain why there is demand in Europe for smaller, diesel vehicles.

### ***B Vehicle Fleet Composition***

The age of the fleet and how the vehicles are powered also varies between countries and has a direct influence on energy efficiency. The United States has the oldest passenger car fleet of these three fleets, with an average age in 2009 of 10.6 years, and the average age of light trucks was 9.6 years. Both of these

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<sup>1</sup> Organization of the Petroleum Exporting Countries. <[www.opec.org/opec\\_web/en/data\\_graphs/333](http://www.opec.org/opec_web/en/data_graphs/333)>.

figures have been increasing steadily since records began in 1995.<sup>2</sup> Not too different is Australia, which has an average age of passenger vehicles of 9.8 years, accounting for 77 per cent of the fleet. The entire Australian vehicle fleet has an age of 10 years.<sup>3</sup> The European Union's average age of the vehicle fleet in 2008 was 8.2 years, with approximately one third being less than five years, one third five–ten years and a third over ten years.<sup>4</sup> Japan has the youngest fleet and according to 2010 statistics, records show the highest number of vehicles in use as having an age of 4 years.<sup>5</sup> It is likely that the age of the fleet in Japan is influenced by the percentage of exports of used vehicles. As we have learned, New Zealand gets 95.54 per cent of its used cars from Japan. In the United States 32 per cent of new passenger vehicle sales are imported vehicles, in Australia this figure is 85 per cent.<sup>6</sup>

Petrol is the principal fuel used in transportation, particularly in Japan that has only 0.1 per cent of passenger vehicles sold as diesel powered.<sup>7</sup> It is claimed the reason for this is Japan's stringent NOX emission standards and the negative image that has been associated with the noise and vibration from diesel trucks. However the Ministry of Economic Trade and Industry (METI) has launched a Clean Diesel Promotion Strategy aimed at increasing the numbers of diesel vehicles as they are seen as a valuable global warming countermeasure.<sup>8</sup> The United States is also primarily powered by petrol; sales figures in 2011 show 0.82 per cent of total vehicle sales were clean diesel vehicles.<sup>9</sup> The Australian light-duty vehicle fleet is also primarily powered by petrol, with 2010 statistics showing 25 per cent of vehicles as powered by diesel.<sup>10</sup> The European fleet has

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<sup>2</sup> Research and Innovative Technology Administration, Bureau of Transportation Statistics, Table 1-26, retrieved from <www.bts.gov>.

<sup>3</sup> As at January 2011. Australian Bureau of Statistics <www.abs.gov.au>.

<sup>4</sup>The remaining 2.7 per cent of the fleet is powered by 'other' types of fuel. See European Automobile Manufacturers Association, <www.acea.be>.

<sup>5</sup> Japan Automobile Manufacturers Association Inc *Motor Vehicle Statistics of Japan* (2010) at 3,7.

<sup>6</sup> Research and Innovative Technology Administration, Bureau of Statistics <www.bts.gov>; Department of Infrastructure and Transport *Light Vehicle CO<sub>2</sub> Emission Standards for Australia: Key Issues- Discussion Paper* (2011).

<sup>7</sup> Petroleum Association of Japan *Petroleum Industry in Japan 2011* (September 2011) at 55.

<sup>8</sup> At 56.

<sup>9</sup> Hybrid cars "August 2011 Clean Diesel Car Sales Numbers" < www.hybridcars.com>.

<sup>10</sup> Department of Infrastructure and Transport *Light Vehicle CO<sub>2</sub> Emission Standards for Australia: Key Issues- Discussion Paper* (2011).

the highest percentage of vehicles powered by diesel, at 33.71 per cent in 2008.<sup>11</sup> The proportion of diesel vehicles is likely to continue to grow as most statistics show a steady increase in diesel vehicle sales.

The composition of the fleet in Europe, combined with strict vehicle standards and a high rate of taxation, has enabled the fleet to be relatively more efficient than other countries. When compared to the average age of vehicles and the percentage of diesel vehicles in the United States, with the low rate of taxation on petrol and generous vehicle standards, it is not surprising the United States has one of the least efficient fleets.

### *C The Regulatory Approach of the United States of America*

As we shall see from the policy response in the United States, the key drivers of energy efficiency in transport have been the need to improve air quality and to ensure security of supply. Although climate change has been a concern in recent years, this has not been the dominant force behind improving vehicle and fuel efficiency.

#### *1 Vehicle and fuel standards*

##### (a) Fuel economy standards

Pursuant to the Energy Policy and Conservation Act of 1975,<sup>12</sup> the National Highway Traffic Safety Administration (NHTSA) administers the Corporate Average Fuel Economy (CAFE) standards. These standards first applied to Model Year (MY) 1978 and included passenger cars and light trucks. Manufacturers are required to meet a fleet-wide fuel economy average of all vehicles sold in that model year, with a penalty being imposed for every mile per gallon (mpg) over the average. Although the United States implemented fuel economy standards earlier than any other country, they did not improve from

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<sup>11</sup> This is the latest figure available from the European Automobile Manufacturers Association, <[www.acea.be/](http://www.acea.be/)>.

<sup>12</sup> Energy Policy and Conservation Act of 1975, Pub L No 94-163, 89 Stat 871 (1975).

1985 until 2007 leaving the United States behind Europe, Japan and China for improvements in fuel economy.

Following a staunch commitment by President Obama in 2009 to improve fuel efficiency and ultimately improve energy security, the National Fuel Efficiency Program gives joint rulemaking powers to the Environmental Protection Agency (EPA) and NHTSA to issue fuel economy and GHG emission standards. These standards have been promulgated under the Energy Independence and Security Act of 2007.<sup>13</sup> Accordingly:<sup>14</sup>

The new standards, covering model years 2012-2016, and ultimately requiring an average fuel economy standard of 35.5 mpg in 2016, are projected to save 1.8 billion barrels of oil over the life of the program with a fuel economy gain averaging more than 5 percent per year and a reduction of approximately 900 million metric tons in greenhouse gas emissions. This would surpass the CAFE law passed by Congress in 2007 [that] required an average fuel economy of 35 mpg in 2020.

Further standards for MY 2017-2025 have been given, with a target of 54.5 mpg by 2025. From 2011 the fuel efficiency rating also takes into account the vehicle's footprint (size, determined by wheelbase multiplied by track width), with varying standards for different sized vehicles in each class.

Under the Energy Policy and Conservation Act individual states are prohibited from regulating fuel economy, but in accordance with the waiver provided to the state of California to regulate emissions under the Clean Air Act, other states may also adopt the California standards.<sup>15</sup> The standards must be at least as stringent and at least as protective of health and welfare as the federal standards, and compliance will be deemed to be compliance with the federal standards.<sup>16</sup> However the EPA is the federal agency charged with protecting the environment

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<sup>13</sup> Energy Independence and Security Act of 2007, 42 USC Ch 152.

<sup>14</sup> Office of the Press Secretary, The White House, "President Obama Announces National Fuel Efficiency Policy" (Press Release, 19 May 2009).

<sup>15</sup> The waiver was available to states that had adopted standards to control emissions from vehicles prior to 1966; California is the only state that meets the requirement. 42 U.S.C. 7543 (a)(b).

<sup>16</sup> 42 U.S.C 7543 (b)(2) (3).

by abating and controlling pollution and may deny the waiver if the standards are arbitrary or capricious, if air quality does not provide compelling and extraordinary conditions to impose more stringent conditions, and the standards are inconsistent with the EPA's authority.<sup>17</sup>

(b) GHG emission standards

Following the seminal decision of the Supreme Court in *Massachusetts v Environmental Protection Agency*,<sup>18</sup> the EPA's role now includes regulating GHG emissions from new motor vehicles. In *Massachusetts* the court held that GHG emissions were pollutants that endangered public health and welfare under the Clean Air Act and could therefore be regulated by the EPA. Accordingly, in September 2011 the EPA and NHTSA released a final rule with fuel economy and GHG standards for medium to heavy-duty engines and vehicles. The rule became effective in November 2011 and sets standards for MYs 2014–2018. The GHG emission standards apply to MY 2014, but the fuel economy standards are only voluntary for MYs 2014 and 2015, becoming mandatory in 2016.<sup>19</sup> The standards set different requirements for combination tractors, vocational vehicles, and heavy-duty pick-up trucks and vans.

(c) Tyre pressure monitoring standard

A less direct way in which fuel efficiency is being improved is through the safety standards which have been promulgated by the NHTSA, requiring Tyre Pressure Monitoring Systems (TPMS) to be fitted on all new light vehicles from 2008. The system is to inform drivers when one or more tyres are under-inflated by having an illuminated indicator which comes on not more than 20 minutes after the tyre pressure is 25 per cent less than the manufacturer's recommendation.

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<sup>17</sup> 42 U.S.C. 7543 (b) (1). Also see L Hall "The Evolution of CAFE Standards: Fuel Economy Regulation Enters its Second Act" (2011) 39 Transport Law Journal 1.

<sup>18</sup> *Massachusetts v Environmental Protection Agency*, 127 S. Ct. 1438 (2007).

<sup>19</sup> Federal Register Volume 76 No. 179, September 15 2011, Rules and Regulations, 57106.

(d) Fuel standards

In January 2012 the EPA issued a final rule for the Renewable Fuel Standard Program. The Standards require a minimum volume of renewable fuels to be included in transportation fuels, including gasoline and diesel.<sup>20</sup> The Code of Federal Regulations now stipulates that a final percentage of 0.006 per cent cellulosic biofuel, 0.91 per cent biomass-based diesel, 1.21 per cent advanced biofuel, and 9.23 per cent renewable fuel be included.<sup>21</sup> Renewable fuels must meet sustainability criteria where “[t]he lifecycle greenhouse gas emissions from renewable fuels must be at least 20 percent less than baseline lifecycle greenhouse gas emissions”.<sup>22</sup> The baseline lifecycle GHG emissions referred to is defined in the Code of Federal Regulations as the average lifecycle GHG emissions for gasoline sold or distributed as transportation fuel in 2005. As we will see, this is significantly lower than that required in other countries.

2 *Information Measures*

(a) Fuel economy and environment labelling

New fuel economy and environment labelling requirements are in place for 2013 models.<sup>23</sup> They include all vehicles including gasoline, diesel, PHEVs, EVs, and FFVs. The labels include not only fuel consumption but also a GHG emission rating, and they give an estimate of savings over five years. This is important as it shows the significant differences between gasoline and PHEVs and EVs and should encourage consumers to look at the long-term benefits and pay-back period. An example of the label is included as figure 2 in Appendix 1.

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<sup>20</sup> Federal Register, Vol 77, No. 5, January 9, 2012, Rules and Regulations, 1320.

<sup>21</sup> 40 C.F.R §80.1405.

<sup>22</sup> 40 C.F.R §80.1403.

<sup>23</sup> 49 C.F.R §575.401.



(b) Tyre labelling

Pursuant to the Energy Independence and Security Act of 2007, NHTSA is required to develop a tyre fuel efficiency consumer information program.<sup>24</sup> It is seen as a means to improve the efficiency of the existing fleet, as compared to CAFE standards which improve the efficiency of new vehicles entering the fleet. The programme requires NHTSA to develop a rating system, an information system for consumers at the point of sale and on the internet, a testing method, and an information programme which informs consumers on the correct pressure for inflation, rotation, alignment, tread-wear, safety and durability. It applies to new pneumatic tyres only, not deep tread, winter-type snow tyres, space-saver or temporary use spare tyres, tyres with nominal rim diameters of 12 inches or less, or limited production tyres.<sup>25</sup> The proposed label for tyres is included as figure 6 in Appendix 1.

### 3 Fiscal Incentives

One of the fiscal instruments used to regulate fuel economy is the Gas Guzzler Tax, which aims to discourage the production and purchase of inefficient vehicles. Pursuant to the Energy Tax Act of 1978<sup>26</sup> a tax is imposed on new passenger cars that do not meet the fuel economy standards. This tax is normally paid by the manufacturer and can be up to USD7,700.<sup>27</sup> The effectiveness of the scheme has been limited, however, as it does not include SUVs, minivans, or pick-up trucks. The reason given for this was in 1978 these vehicles were not widely available and were rarely used for non-commercial purposes.<sup>28</sup>

A further fiscal measure which has been adopted to encourage new technology vehicles is the federal income tax credits for consumers who purchase advanced technology vehicles. In the past this has included hybrid, diesel, and alternative

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<sup>24</sup> 49 USC § 32304A.

<sup>25</sup> 49 CFR §575.104.

<sup>26</sup> Energy Tax Act, Pub L No 95-618, 92 Stat 3174 (1978).

<sup>27</sup> <[www.epa.gov/fueleconomy/guzzler](http://www.epa.gov/fueleconomy/guzzler)>.

<sup>28</sup> <[www.epa.gov/fueleconomy/guzzler](http://www.epa.gov/fueleconomy/guzzler)>.

fuel vehicles but currently it only applies to PHEVs and fuel-cell vehicles.<sup>29</sup> The credit applies to certain qualified passenger or light truck vehicles and has a limit of USD7,500 which is phased out when at least 200,000 of the manufacturer's qualifying vehicles have been sold.<sup>30</sup>

To improve fuel efficiency by reducing the age of the vehicle fleet the federal Government has implemented the Consumer Assistance to Recycle and Save Act of 2009, or CARS Programme. Under the Programme the Government will provide USD3,500 or USD4,500 to help consumers purchase or lease a new, more fuel efficient car, van, sport utility vehicle or pickup truck from a participating dealer when they trade in an old, less fuel efficient vehicle.<sup>31</sup>

The United States also has a voluntary emissions trading scheme which includes transport fuel. There are also individual state programs which regulate GHG emissions, including inter-state initiatives such as the Regional GHG Initiative and the Western Climate Initiative.<sup>32</sup>

#### 4 Other measures

Since 1999 the United States has had an alternative fuelled vehicles acquisition mandate that requires federal and state government fleets, including agencies, to have 75 per cent of the fleet as alternative fuelled vehicles.<sup>33</sup> A similar mandate is provided for alternative fuel providers, and requires that 90 per cent of new light-duty vehicles purchased by persons whose principal business is producing, storing, transporting, distributing, refining, importing or selling either wholesale or retail alternative fuels to be alternative fuelled vehicles. The same obligation applies to non-federal persons who generate, transmit, import or sell electricity.<sup>34</sup>

More recently, the American Recovery and Reinvestment Act of 2009 has allocated significant amounts of money to invest in EVs and PHEVs for the

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<sup>29</sup> Email from A Bunker, EPA to the author regarding a regulatory enquiry (30 May 2012).

<sup>30</sup> Internal Revenue Code, s 30 D.

See <[www.irs.gov/businesses/article/0,,id=219867,00.html](http://www.irs.gov/businesses/article/0,,id=219867,00.html)>.

<sup>31</sup> <[www.nhtsa.gov/Laws+&+Regulations/Vehicles](http://www.nhtsa.gov/Laws+&+Regulations/Vehicles)>.

<sup>32</sup> See S Deatherage *Carbon Trading Law and Practice* (Oxford University Press, New York, 2011).

<sup>33</sup> 42 USC § 13212; 10 CFR 490.201.

<sup>34</sup> 42 USC §13251.

federal fleet, and to stimulate development of these technologies.<sup>35</sup> This follows a strong commitment by the Federal Government to improve the environmental performance of its departments and agencies and reduce energy consumption.<sup>36</sup> President Obama has said “[i]n order to create a clean energy economy ... the Federal Government must lead by example”.<sup>37</sup> There are many programmes and initiatives being run by different departments and agencies that aim to promote the use of alternative fuelled vehicles. One such example is the Department of Energy EV-Everywhere Challenge that aims to make EVs more convenient and affordable to own.<sup>38</sup>

The State of California deserves distinct mention for its world-leading approach to emission regulation. A measure that is unique to California and that has been in place since 1998 is the Zero Emission Vehicle (ZEV) Mandate. This requires certain manufacturers to include ZEVs as part of their total production. It started in 1998 at two per cent and has been steadily increasing up to the 2012–2014 period requiring 12 per cent. The 2015–2017 period will require an amount of 14 per cent of a manufacturer’s total production to be ZEVs.<sup>39</sup>

California has also been the first state to regulate GHG emissions. In 2002 the California Air Resources Board (CARB) was required to set GHG emission standards for passenger vehicles starting with MY 2009, pursuant to Assembly Bill 1493.<sup>40</sup> These became known as the Pavley Standards, after the member who introduced the Bill. This Bill created the world’s first GHG vehicle regulation scheme with emissions trading capability. The Bill does have its restrictions however; CARB may not impose any additional fees or taxes on vehicles, fuel, or vehicle miles travelled. Also CARB may not ban the sale of a vehicle category

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<sup>35</sup> The American Recovery and Reinvestment Act of 2009, Pub L No 111-5, 123 Stat 115.

<sup>36</sup> See Executive Order 13423 on Strengthening Federal Environmental, Energy, and Transportation Management (24 January 2007) and Executive Order 13514 on Federal Leadership in Environmental, Energy, and Economic Performance (5 October 2009).

<sup>37</sup> Executive Order 13514 on Federal Leadership in Environmental, Energy, and Economic Performance (5 October 2009).

<sup>38</sup> See Department of Energy “President Obama Launches EV-Everywhere Challenge as part of Energy Department’s Clean Energy Grand Challenges” <[www.energy.gov](http://www.energy.gov)>.

<sup>39</sup> Attachment B-1, FINAL REGULATION ORDER, Zero Emission Vehicle Regulation: 2009 through 2017 Model Years, Title 13, California Code of Regulations.

<sup>40</sup> Assembly Bill 1493 amended § 42823 and inserted § 43018.5 into the California Health and Safety Code.

(such as SUVs), or require a reduction in vehicle weight or speed limits, or impose mandatory reductions on vehicle miles travelled.<sup>41</sup> The Clean Air Act allows other States to opt-in to these standards and require that only vehicles that are California certificated be sold in their State. So far, thirteen other States and the District of Columbia have opted-in.<sup>42</sup> This ability for States to opt-in to the California Standards is important because according to Nichols “[a] comparison of the CARB and federal regulatory initiatives for light-duty and medium-duty vehicles shows EPA generally lagging from one to five years behind California”.<sup>43</sup>

Since 1 January 2012 a cap-and-trade programme for GHG emissions has been operating in California and covers the major sources of emissions, including transportation fuels. The programme is seen as just one of the strategies to reduce GHG emissions which will help California meet its emission reduction target. It has an enforceable GHG cap that will decline over time, with CARB auctioning allocations that meet the cap.

California also introduced the world’s first low-carbon fuel standard (LCFS) in January 2007 which aims to reduce the carbon intensity of fuel by ten per cent.<sup>44</sup> The LCFS “is a requirement that fuel providers reduce the average lifecycle greenhouse gas intensity of the transportation fuels they sell in California by at least 10 percent by 2020”.<sup>45</sup> A further example of California leading the way is the fuel efficient tyre programme which the California Energy Commission has been required to develop since 2003, which was required by Assembly Bill 844.

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<sup>41</sup> D Keeth “The California Climate Law: A state’s cutting-edge efforts to achieve clean air” (2003) 30 Ecology Law Quarterly 715 at 721.

<sup>42</sup> Final Rule.

<sup>43</sup> M Nichols “California’s Climate Change Program: Lessons for the Nation” (2009) 27 Journal of Environmental Law 185 at 191.

<sup>44</sup> In accordance with Executive Order S-06-06. See M Nichols “California’s Climate Change Program: Lessons for the Nation” (2009) 27 Journal of Environmental Law 185at 198.

<sup>45</sup> Nichols, above n 43, at 205.

## 5 Summary

The regulatory approach by the United States shows a clear intention to reduce consumption and increase the use of alternative fuels in an effort to improve air quality and security. Although vehicle standards have historically been weak, the move to an attribute-based standard that takes account of the vehicle's size is a good move. The United States should also be commended for the commitment shown by the Federal Government to lead by example and decrease petrol consumption.

### ***D The Regulatory Approach of the European Union***

In accordance with the Treaty on the Functioning of the European Union “Union policy on energy shall promote energy efficiency, energy saving and the development of new and renewable forms of energy”.<sup>46</sup> Furthermore, the Commission Communication on Energy 2020 “places energy efficiency at the core of the EU energy strategy for 2020 and outlines the need for a new energy efficiency strategy that will enable all Member States (MSs) to decouple energy use from economic growth”.<sup>47</sup> It is to this end that the Union has implemented an integrated approach to improve fuel and vehicle efficiency to reduce GHG emissions from the road transport sector. We will see that the EU puts a strong focus on reducing GHG emissions, rather than on improving air quality or security of supply.

#### *1 Vehicle and fuel standards and regulations*

##### (a) CO<sub>2</sub> emission standards

To improve energy efficiency in transport the EU has specifically addressed CO<sub>2</sub> emissions. Emission performance requirements for new passenger cars and light

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<sup>46</sup> Treaty on the Functioning of the European Union, Article 194 [2010] OJ C 83/47.

<sup>47</sup> COM(2011) 370 final, Proposal for a Directive of the European Parliament and of the Council on energy efficiency and repealing Directives 2004/8/EC and 2006/32/EC at 9.

commercial vehicles aim to achieve a fleet average of 120 g CO<sub>2</sub>/km, which will be achieved by an integrated approach requiring an improvement in vehicle technology attaining an average of 130 g CO<sub>2</sub>/km, and additional measures that will correspond to a reduction of 10 g CO<sub>2</sub>/km. The regulation also sets a target of an average of 95 g CO<sub>2</sub>/km for the new car fleet by 2020.<sup>48</sup> This requirement commenced in January 2012 but its effect will be diluted because initially only 65 per cent of a manufacturer's vehicles will be taken into account, progressively increasing to 100 per cent from 2015.<sup>49</sup> Manufacturers may also pool together to meet these obligations.<sup>50</sup> The standards are further diluted by the provision of 'super-credits' for vehicles that emit less than 50 gCO<sub>2</sub>/km; in calculating the average emissions each vehicle counts as three and a half cars in 2012, and is progressively phased until 2016 when they count as one car.<sup>51</sup>

An excess emissions premium is charged at differing rates depending on the amount of emissions that exceed the target. From 2012 to 2018 the amounts progressively increase until 2019 when a flat amount is charged no matter how much the target is exceeded by.<sup>52</sup> However charging a flat amount could mean that for manufacturers that would rather pay the emissions premium than meet the target, there would be little incentive for making a vehicle that would only exceed the target by a small amount; therefore encouraging the manufacture of larger less efficient vehicles. The performance of manufacturers is published by the Commission annually, showing a list for each manufacturer of specific targets, emissions, the difference between them, the specific emissions of all passenger cars and the average mass of all new passenger cars. From 31 October 2013 the list will also show whether the manufacturer has complied with meeting its specific emissions targets.<sup>53</sup>

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<sup>48</sup> Regulation 443/2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles, Article 1 [2009] OJ L 140/1.

<sup>49</sup> Article 4.

<sup>50</sup> Article 7.

<sup>51</sup> Article 5.

<sup>52</sup> Article 9.

<sup>53</sup> Article 10.

Emission standards have also been set for new light commercial vehicles which require an average of 175 g CO<sub>2</sub>/km from 1 January 2014. This limit has been decreased to 147 g CO<sub>2</sub>/km from 2020.<sup>54</sup> Similar provisions to the percentages of vehicles taken into consideration as mentioned above for passenger vehicles apply as do provisions for super credits, pooling, and the mechanisms to encourage compliance. Manufacturers of passenger cars or light commercial vehicles may apply for a derogation from these requirements if they make fewer than 10,000 or 22,000 vehicles respectively.<sup>55</sup>

There are currently no standards in place for CO<sub>2</sub> emissions from the heavy-duty vehicle fleet, although the Commission has indicated that a strategy will be proposed that targets fuel consumption and CO<sub>2</sub> emissions from heavy-duty vehicles.<sup>56</sup>

(b) Tyre standards

Regulation 661/2009 also sets out requirements for maximum values for rolling resistance of tyres and applies from 1 November 2011.<sup>57</sup> These requirements are to be tested using the International Organisation for Standardisation's method for measuring rolling resistance.<sup>58</sup>

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<sup>54</sup> Regulation 510/2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles, Articles 1 and 4 [2011] OJ L 145/1.

<sup>55</sup> Regulation 443/2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles, Article 11, [2009] OJ L 140/1 and Regulation 510/2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles, Article 11, [2011] OJ L 145/1.

<sup>56</sup> COM(2010)186 final, A European strategy on clean and energy efficient vehicles.

<sup>57</sup> Regulation 661/2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor [2009] OJ L200/1, Annex II, Part B and Article 20.

<sup>58</sup> ISO 28580: 2009.

(c) Tyre pressure monitoring system regulation

In accordance with Article 9.2 of Regulation 661/2009 Tyre Pressure Monitoring Systems (TPMS) must be installed in new passenger cars from 1 November 2011.<sup>59</sup> The aim is to improve safety, fuel efficiency and CO<sub>2</sub> emissions from vehicles. In accordance with Article 13.5, National Authorities may prohibit the registration of vehicles that fail to comply with the regulation.

(d) Gear shift indicator regulation

In an effort to encourage eco-driving the EU has implemented a Regulation that requires all new passenger vehicles with a manual gearbox to be equipped with Gear Shift Indicators (GSIs), as from November 2011 for the purpose of minimising fuel consumption.<sup>60</sup> In January 2012 an implementing regulation was issued that set out the requirements for vehicle manufacturers; the GSI is to be a visual indicator that will clearly inform the driver whether to shift gears up or down, or into a specific gear when the fuel consumption with the suggested gear is estimated to be lower than the current one.<sup>61</sup>

(e) Air conditioning standards

Currently the Union regulations only cover hydrofluorocarbons and GHG emissions from mobile air conditioning systems and not their effect on fuel consumption, although this has been indicated as being a topic of future legislation. According to a Communication from the Commission in 2010, further work is to include a proposal to reduce fuel consumption impacts of mobile air

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<sup>59</sup> This includes passenger cars with no more than eight seats in addition to the drivers seat. This vehicle is classed as M1, as defined by Annex II A 1, Directive 2007/46 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles [2007] OJ L263/1.

<sup>60</sup> Regulation 661/ 2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor [2009] OJ L200/1, Article 11.

<sup>61</sup> Regulation 65/2012 implementing Regulation 661/2009 as regards gear shift indicators [2012] OJ L 28/24.



conditioning systems. The Commission intended to achieve this by 2011 although to date no proposal has been issued.<sup>62</sup>

(f) Biofuels directive

The current Directive on the promotion of the use of energy from renewable sources requires MSs to implement laws and regulations to “ensure that the share of energy from renewable sources in all forms of transport in 2020 is at least 10 % of the final consumption of energy in transport in that Member State.”<sup>63</sup> This target is not as stringent as previous figures but perhaps more achievable. The Commission Green Paper ‘Towards a European strategy for the security of energy supply’ had set the objective of 20 per cent substitution of conventional fuels by alternative fuels in the road transport sector by the year 2020, and the previous Directive had a target of two per cent by 2005 and 5.75 per cent by 2010. Unfortunately these targets were not achieved and according to one Communication:<sup>64</sup>

With the objectives set by the Member States, the share of biofuels would have attained, at most, only 1.4%. The Commission has launched infringement proceedings in seven cases where Member States adopted low targets without due justification.

The current Directive now requires that any biofuel that is included in this target must meet the sustainability criteria set out in Article 17, which requires:

- the GHG savings to be at least 35 per cent, increasing to 60 per cent;
- the feedstock is not to come from land of high biodiversity value; and
- social sustainability within the Community and third countries in relation to International Labour Organisation laws.

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<sup>62</sup> COM(2010)186 final, *A European strategy on clean and energy efficient vehicles*, Brussels, 28.4.2010

<sup>63</sup> Directive 2009/28 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, Article 3.4 [2009] OJ L140/16.

<sup>64</sup> COM (2006) 34 final, *An EU strategy for biofuels* at 8.

A further requirement of the Directive is that MSs are to ensure that information is provided to the public on the availability and environmental benefits of renewable sources of energy. Also when biofuel blends exceed ten per cent content this must be indicated at the point of sale.<sup>65</sup> Overall, the Directive provides an achievable target that will ensure that biofuels environmentally and socially sustainable, thereby improving GHG emissions and security.

## 2 *Consumer information measures*

### (a) Fuel economy and CO<sub>2</sub> emissions labelling

In 2000 the European Union issued a Directive relating to the availability of consumer information on fuel economy and CO<sub>2</sub> emissions in respect of the marketing of new passenger cars. The Directive set out a comprehensive system that is designed to enable consumers to make an informed choice regarding their vehicle purchase or lease. The first element is a label which is required to be displayed at the point of sale near each new passenger car. The format is specified in Annex I of the Directive which gives specifications for the information which is to be displayed, although there is no template that all MSs are to follow. Additional to the fuel consumption and CO<sub>2</sub> emissions the label is to inform consumers that driving behaviour and other non-technical factors also influence these things and CO<sub>2</sub> is the main GHG responsible for global warming. The label must also inform the consumer that a guide on fuel economy and CO<sub>2</sub> emissions is available at any point of sale, free of charge.<sup>66</sup> This is the second element. The guide is to be portable, compact, free of charge and available upon request by the consumer at the point of sale and also from a designated body within each MS. Not only is the guide to provide information on fuel

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<sup>65</sup>Directive 2009/28 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, Article 21.[2009] OJ L140/16.

<sup>66</sup>Directive 1999/94 relating to the availability of consumer information on fuel economy and CO<sub>2</sub> emissions in respect of the marketing of new passenger cars, Article 3, Annex I [2000] OJ L 12/16.

consumption and CO<sub>2</sub> emissions of each new model available for purchase, but also a list of the ten most fuel-efficient models is to be included. So too is:<sup>67</sup>

... advice to motorists that correct use and regular maintenance of the vehicle and driving behaviour, such as avoiding aggressive behaviour, travelling at lower speeds, anticipation braking, correctly inflated tyres, reducing periods of idling, not carrying excessive weight, improve the fuel consumption and reduce the CO<sub>2</sub> emissions of their passenger car; an explanation of the effects of greenhouse gas emissions, potential climate change and the relevance of motor cars as well as a reference to the different fuel options available to the consumer and their environmental implications ... [and] a reference to the Community's target for the average emissions of CO<sub>2</sub> from new passenger cars and the date of which the target should be achieved[.]

This quotation shows that the guide provides substantial information to the public, but what makes this information unique is the requirement to explain the effects of GHG emissions and the relevance of motor vehicles, and the environmental implications of fuel choice.

The third element requires MSs to ensure that for each make of car a poster is displayed which exhibits a list of all new models available for purchase or lease with their fuel consumption and CO<sub>2</sub> emissions, at the point of sale or lease. Annex III of the Directive sets minimum requirements that the poster must meet and suggests a format for MSs to follow. Models are to be grouped by fuel type and ranked in order of most efficient being at the top of the list. The poster is to also inform consumers of the guide which is available free of charge, and the same text as required on the label regarding the effects of driving behaviour and non-technical factors and that CO<sub>2</sub> is the main GHG responsible for global warming.<sup>68</sup>

The final element for the marketing of new passenger cars is that all promotional literature is to contain the fuel consumption and CO<sub>2</sub> emissions. This

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<sup>67</sup> Article 4, Annex II.

<sup>68</sup> Article 5, Annex III.

includes “all printed matter used in the marketing, advertising and promotion of vehicles to the general public”.<sup>69</sup> The Directive further prohibits the use of any symbols or inscriptions relating to fuel economy or CO<sub>2</sub> emissions if they do not comply with the Directive and cause confusion to consumers.<sup>70</sup> Member States were required to bring laws and regulations into force as to comply with the Directive by January 2001.

The vehicle labelling system in the EU provides an excellent and comprehensive way of providing information to consumers. It provides the full picture to consumers, and brings to the fore the importance of fuel economy for the environment by highlighting that CO<sub>2</sub> is the main GHG responsible for global warming. The information will assist consumers to understand why fuel economy is important. It also provides information at the fingertips of consumers without requiring them to go and search through many different makes and models for the most fuel efficient vehicle. It is limited in scope, however, as it only applies to new passenger cars.

#### (b) Tyre information labelling

From 1 November 2012 tyre information labelling is required for tyres of passenger vehicles and light and heavy-weight commercial vehicles. Certain tyres are excluded however, such as re-treads, temporary-use, off-road professional tyres, and racing tyres.<sup>71</sup> Distributors are to ensure that a sticker provided by the supplier be either affixed to the tyre or clearly displayed in the immediate proximity of the tyre, informing purchasers of the fuel efficiency, wet grip, and external rolling noise classes.<sup>72</sup> The format of the sticker is to be in accordance with specifications set out in the Regulation; an example is included in Appendix 1.

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<sup>69</sup> Article 2.

<sup>70</sup> Article 7.

<sup>71</sup> Regulation 1222/2009 on the labelling of tyres with respect to fuel efficiency and other essential parameters, Article 2.2 [2009] OJ L 342/46.

<sup>72</sup> Article 5.

### 3 Fiscal measures

Taxation measures at the Union level have mainly focused on ensuring that there are no barriers to the proper functioning of the internal market. In relation to passenger car taxes a proposal for a Council Directive was issued by the Commission in 2005 which called for the calculation of annual circulation taxes to be based on their CO<sub>2</sub> emissions and also the prohibition of registration taxes.<sup>73</sup> To date, this has not been finalised as a Directive although many MSs have already implemented taxation based on CO<sub>2</sub> emissions. One example is France, which was the first European country to introduce a feebate system in 2008, which applies when a car is first registered and is based on CO<sub>2</sub> emissions. The programme provides a rebate from €200 up to €5,000. The fee for a vehicle with high emissions ranges from €200 up to €2,600.<sup>74</sup> France imposes an additional annual tax on high emission vehicles as well, which has applied since 2009.<sup>75</sup> The United Kingdom and Germany also have first time registration charges which are based on CO<sub>2</sub> emissions.<sup>76</sup> In Germany the annual tax is based on engine size and CO<sub>2</sub> emission levels; in the United Kingdom the annual vehicle excise duty is based on CO<sub>2</sub> emissions only.<sup>77</sup>

The integrated approach by the Union is apparent by the connection between energy efficiency measures and energy conservation. The Eurovignette Directive aims at eliminating distortions of competition by harmonising the levy systems and establishing fair mechanisms for charging infrastructure costs to hauliers.<sup>78</sup> The Directive applies to vehicle taxes, tolls and user-charges for heavy goods vehicles and sets a minimum tax rate that can be imposed. It also provides that MSs may impose tolls or user charges based on vehicle emissions or the time of

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<sup>73</sup> COM (2005) 261 final, *Proposal for a Council Directive on passenger car related taxes*.

<sup>74</sup> H He and A Bandivadekar *A review and comparative analysis of fiscal policies associated with new passenger vehicle CO<sub>2</sub> emissions* (The International Council on Clean Transportation, Washington DC, 2011) at 21.

<sup>75</sup> At 22. Also see the General Tax Code (Code général des impôts). See also Taxes in Europe database at <[http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)>.

<sup>76</sup> 2002 Motor Vehicle Tax Law (Federal Law Gazette 2002 I p. 3818)(Germany), Vehicle Excise and Registration Act 1994, Schedule 1, Part 1A (UK). See also Taxes in Europe database at <[www.ec.europa.eu/taxation](http://www.ec.europa.eu/taxation)> .

<sup>77</sup> He and Bandivadekar, above n 74.

<sup>78</sup> Directive 1999/62 on the charging of heavy goods vehicles for the use of certain infrastructures [1999] OJ L 187/42.

day.<sup>79</sup> Such measures aim at improving energy efficiency by encouraging travel at non-peak time thereby reducing congestion and idling. Energy conservation in transport is encouraged in many European countries through the imposition of transport demand management measures such as road pricing which includes tolls, user charges and congestion charges.

For the sake of completeness, it should be mentioned that the EU ETS does not include road transport as their scheme is based on the principle of direct emissions.<sup>80</sup>

#### 4 *Other measures*

From December 2010 MSs were required to implement policies to ensure public authorities and operators of public transport services take into account the operational lifetime energy consumption and the emission levels when purchasing road transport vehicles, with the objectives of promoting and stimulating the market for clean and energy-efficient vehicles.<sup>81</sup>

#### 5 *Summary*

The EU provides an impressive approach to regulating energy efficiency through strict emission standards and requiring feedback mechanisms for vehicles. The EU is the only country that requires gear shift indicators in vehicles, or that has set maximum rolling resistance for tyres. The information requirements should also be commended.

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<sup>79</sup> Articles 6 and 7.

<sup>80</sup> COM (2007) 19 final, *Results of the review of the Community Strategy to reduce CO<sub>2</sub> emissions from passenger cars and light-commercial vehicles*, at 4.

<sup>81</sup> Directive 2009/33 on the promotion of clean and energy-efficient road transport vehicles [2009] OJ L 120/5.

## ***E The Regulatory Approach in Japan***

### *1 Vehicle and fuel standards*

#### (a) Fuel efficiency standards

Vehicle fuel efficiency standards in Japan are different in approach from other countries. Instead of imposing minimum standards that products must achieve, a target standard is set, which is known as the Top Runner Programme. This programme was introduced in April 1999 and is prescribed by section 6 of the Law Concerning the Rational Use of Energy, or the *Energy Conservation Law*. Currently there are 23 products covered which includes electric appliances and vehicles. Vehicles covered include passenger vehicles, buses, and freight vehicles, and tractors. The standards for freight vehicles have been in place since 2006, and were a world first. The Top Runner Programme:<sup>82</sup>

... uses, as a base value, the value of the product with the highest energy consumption efficiency on the market at the time of the standard establishment process and sets values by considering potential technological improvements as efficiency improvements.

Therefore it is industry that actually sets the base standard, which must be reached by a weighted average of shipment volumes by all manufacturers. Target values are then set by the Advisory Committee for Natural Resources and Energy, and then these values must be approved by a number of subcommittees and working groups that are made up of industry, manufacturers, academics, researchers, consumer representatives and related corporations. Once draft standards are approved they are reported to the World Trade Organisation to ensure compliance with the Agreement on Technical Barriers to Trade. The targets can be set for three to ten fiscal years (FY) ahead. The standards are measured in kilometres per litre and are based on a weight classification system where the efficiency is incrementally increased the lighter the vehicle.

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<sup>82</sup> Ministry of Economy, Trade and Industry *Top Runner Program: Developing the World's best Energy-Efficient Appliances* (2010) at 6.

The current standards that apply to passenger vehicles provide different values for gasoline, diesel and LPG powered vehicles, yet under the standards that apply from FY 2015 just one standard applies to passenger vehicles that are powered by gasoline or diesel. Hopefully new targets will be set soon for target year FY 2020 that differentiate between the different fuel types, including next-generation vehicles. A further point to note is that from FY 2015 the testing mode is different than previous years with a shift to the JC08 mode fuel consumption value which is meant to better reflect actual fuel consumption as it more closely reflects recent average driving in Japan.<sup>83</sup> There are also different standards for freight vehicles that depend on the transmission type, as well as category and weight. This distinction between transmission types and weight is important because of the different efficiencies that can be achieved through drive-train technologies of vehicles and reduced weight.

Enforcing the standards follows a four step process. First, a recommendation is made to the manufacturer by both the Minister of Economy, Trade and Industry (METI) and the Minister of Land, Infrastructure and Transportation (MLIT) giving advice to comply; if the manufacturer does not follow that recommendation then the next step is to publish their name, along with the advice given. This process has become known as ‘name and shame’ and is considered extremely effective in Japan. If the manufacturer still does not comply with the advice the next step is that an order will be made, and the final step if the order is not complied with is to impose a penalty of up to one million yen.<sup>84</sup> Kimura claims that although no documentation on compliance rates has been made public, no producer to date has been publically named as non-compliant. One of the reasons for this is the Japanese culture, where criticism from the Government works similarly to a serious penalty.<sup>85</sup>

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<sup>83</sup> See Ministry of Economy, Trade and Industry, above n 82.

<sup>84</sup> A Kodaka *Japan's Top Runner Program: The Race for the Top* (EECD, METI) at 5. See also Final Report of Joint Meeting between the Automobile Evaluation Standards Subcommittee, Energy Efficiency Standards Subcommittee of the Advisory Committee for Natural Resources and Energy and the Automobile Fuel Efficiency Standards Subcommittee, Automobile Section, Land Transport Division of the Council for Transport Policy at 1.

<sup>85</sup> O Kimura *Japanese Top Runner Approach for Energy Efficiency Standards*, SERC Discussion Paper SERC 09035 (Central Research Institute of Electric Power Industry, 2010) at 5.



The Top Runner Programme has been claimed a success with efficiency gains from appliances and vehicles exceeding expectations. For example, vehicle standards were set in 1999 for a 22.8 per cent fuel economy improvement by target year 2010. This target was in fact met in 2005.<sup>86</sup> More recently, the IEA said:

... fuel efficiency increased by a laudable 5.4% by 2007, compared to the 2002 baseline year. As of May 2008, about 20% of vehicle types of new trucks and 35% of new buses already exceeded the 2015 fuel efficiency standards. However, it is possible that the fuel efficiency improvement of future vehicles could slow or temporarily decline due to the stringent Japanese local pollutant emission regulations of 2009.

Kimura attributes the programme's success to the fact that it "set a clear market direction toward higher fuel efficiency, removed private risk in investing in more efficient vehicles, and thereby accelerated fuel efficiency improvements".<sup>87</sup> A further point Kimura makes is that the standards changed the manufacturers priority in favour of fuel efficiency and accelerated improvements that would otherwise have been delayed a few years.<sup>88</sup>

(b) Fuel standards

Fuel quality is regulated by the Law on Quality Control of Gasoline and Other Fuels (Fuel Quality Control Law), which became effective in 1996. As of February 2011 a compulsory standard is in place that sets a maximum volume of three per cent for ethanol in petroleum and an upper limit of five per cent for Fatty Acid Methyl Ester (FAME) in diesel fuel.<sup>89</sup> Sulphur-free fuels have also been

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<sup>86</sup> Kodaka, above n 84, at 4.

<sup>87</sup> Kimura, above n 85, at 8.

<sup>88</sup> At 8.

<sup>89</sup> Petroleum Association of Japan *Petroleum Industry in Japan* (September 2011) at 48.

claimed to reduce CO<sub>2</sub> because of fuel efficiency improvement and are supplied nationwide.<sup>90</sup>

Sustainability criteria for biofuels are to be introduced based on the Law Concerning Sophisticated Methods of Energy Supply, following the advice of the report by The Study Group on Sustainability Standards for the Introduction of Biofuel. The report suggested the “life cycle assessment [LCA] of the GHG reduction effect should be more than 50 % of the GHG emission by gasoline”.<sup>91</sup> This figure is substantially higher than the requirement in the United States which, as noted above, only required a 20 per cent improvement in lifecycle GHG emissions. In the provisional translation of the *Major Discussion Points Toward the Establishment of a New “Basic Energy Plan for Japan”* there was a lack of discussion on the roles that biofuels could play. In discussing the use of fossil fuels and securing natural resources the paper identified the need to move away from fossil fuels to achieve sustainability and stated that Japan must make the shift to natural gas.<sup>92</sup>

## 2 Consumer information measures

### (a) Fuel efficiency

Passenger and freight vehicles are excluded from the labelling programme under the Top Runner Programme but vehicles that meet the standards, and those that exceed them by five per cent, have stickers attached to inform consumers.<sup>93</sup> An example of the sticker is included as figure 3 in Appendix 1.

Manufacturers must also display energy consumption efficiency and other major fuel efficiency measures in catalogues and exhibits, along with other technical information, such as the maximum output, torque, vehicle weight, and transmission ratio. Tojo claims that MLIT evaluates the fuel efficiency of cars

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<sup>90</sup> At 54.

<sup>91</sup> At 58, 59.

<sup>92</sup> Fundamental Issues Subcommittee, Advisory Committee on Energy and Natural Resources *Major Discussion Points Toward the Establishment of a New “Basic Energy Plan for Japan”* Provisional translation (20 December 2011) at 19.

<sup>93</sup> N Tojo *The Top Runner Program in Japan: Its Effectiveness and Implications for the EU* (Swedish Environmental Protection Agency, Stockholm, 2005) at 35.

covered by the Programme and publishes the results on its website, and annually publishes a catalogue of the efficiency of all cars.<sup>94</sup>

(b) Tyre labelling

Following the establishment of the Fuel Efficient Tire Promotion Council in 2008 – which involved the METI, MLIT, and other related industry groups – a voluntary tyre labelling system is now in place to promote energy efficient vehicle tyres.<sup>95</sup> Launched in January 2010 the system initially covered summer replacement tyres for passenger cars but aimed to cover all applicable tyres by the end of 2011.<sup>96</sup> The labelling scheme provides a grading system (Grade AAA to C) for rolling resistance and wet-grip performance, and has specific performance requirements for fuel efficient tyres. An example of the label is provided in Appendix 1.

### 3 *Fiscal policies*

According to the Ministry of Finance in Japan, the following measures form part of the 2012 tax reform to improve environmental policy:

- The Automobile Tonnage Tax – from May 2012 standard rates of tax shall apply for vehicles that meet certain environmental performance standards, such as fuel consumption, with extended reduction for vehicles with high performance standards. There shall also be a reduced tax rate for vehicles of less than 13 years;
- The motor vehicle acquisition tax shall have the eco-car tax cut extended until March 2015;

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<sup>94</sup> At 36.

<sup>95</sup> See <[www.meti.go.jp/english/press/data/20081226\\_01.html](http://www.meti.go.jp/english/press/data/20081226_01.html)> See also Japan Automotive Tyre Manufacturers Association Inc *Tyre Industry of Japan 2011* (JATMA, Tokyo, 2011) at 16.

<sup>96</sup> Japan Automotive Tyre Manufacturers Association Inc *Tyre Industry of Japan 2011* (JATMA, Tokyo, 2011) at 16.

- The ‘CO<sub>2</sub> Tax of Global Warming Countermeasure’ shall apply from October 2012 and will be added on to the Petroleum and Coal Tax.<sup>97</sup>

Tojo says:<sup>98</sup>

The automobile tax is paid annually by the car owner and is differentiated based on the size of vehicles ... Depending on the level of achievement of exhaust gas emissions reduction and fuel efficiency, the acquisition tax is reduced by JPY 10,000 to JPY 15,000 ... The automobile tax is reduced by 25 to 50%, which means, depending on the size of the cars and the achievement level, that it varies from JPY 7,375 to JPY 55,500 ... the year after the car is purchased.

These fiscal incentives are to support the Next-Generation Vehicle Strategy of METI, which sets a Government target of up to 50 per cent of new vehicle sales to be next-generation vehicles by 2020. Next-generation vehicles include Hybrid, Plug-in Hybrid, Fuel-cell vehicles, and clean diesel vehicles.<sup>99</sup>

To encourage the use of biofuels a tax incentive was introduced in 2008 that lowered the Gasoline and Coal Tax on fuels that contained three per cent bioethanol, which will be effective until March 31, 2013.<sup>100</sup>

#### 4 Other measures

Eco-driving is promoted in Japan by vehicle manufacturers voluntarily offering driver feedback mechanisms, such as GSIs or TPMSs, and according to the IEA “[i]n 2009 more than 70% of new cars contained such instruments”.<sup>101</sup>

Another measure that encourages improved energy efficiency is green procurement, which has been promoted in Japan since 2001 following the introduction of the Law Concerning the Promotion of Procurement of Eco-

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<sup>97</sup> See Ministry of Finance *FY2012 Tax Reform (Main Points)* (10 December 2011) (Provisional Translation) at 3.

<sup>98</sup> Tojo, above n 93, at 37.

<sup>99</sup> <[www.meti.go.jp/english/press/data/pdf/N-G-V2.pdf](http://www.meti.go.jp/english/press/data/pdf/N-G-V2.pdf)>

<sup>100</sup> M Iijima *Japan: Biofuels Annual – Japan to focus on Next Generation Biofuels* (USDA Gain Report No. JA9044 (6 January 2009) at 3.

<sup>101</sup> International Energy Agency *Transport Energy Efficiency* (IEA, Paris, 2010) at 7.

friendly Goods and Services.<sup>102</sup> Only products that meet the Top Runner standards are candidates for the tendering process.

## 5 Summary

Because of the low average age of vehicles in Japan, the overall efficiency of the fleet is comparatively more efficient than other countries. The Top Runner Programme has exceeded expectations, and it is claimed that the relationship between the green procurement law, the Top Runner standards, and tax reductions is the reason for their success. Tojo claims “the combined use of these instruments has created synergies and accelerated the application of environmental technologies as well as their uptake by consumers”.<sup>103</sup>

## ***F The Regulatory Approach in Australia***

### *1 Vehicle and fuel standards*

#### (a) Fuel efficiency and CO<sub>2</sub> emission standards

At present there are no mandatory fuel consumption or CO<sub>2</sub> emission standards to regulate energy efficiency in Australia, although CO<sub>2</sub> emission standards are proposed for new light-duty vehicles from 2015.<sup>104</sup> It is proposed “[t]he mandatory standard will set a national fleet-wide target of average carbon dioxide emissions and each individual motor vehicle company will have to contribute to this target.”<sup>105</sup> This is not consistent with trends in other countries which are moving away from this approach to attribute-based approaches.<sup>106</sup> The proposed

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<sup>102</sup> Law Concerning the Promotion of Procurement of Eco-friendly Goods and Services, Law No. 100 of 2000.

<sup>103</sup> Tojo, above n 93, at 62.

<sup>104</sup> See Department of Infrastructure and Transport *Light Vehicle CO<sub>2</sub> Emission Standards for Australia: Key Issues- Discussion Paper* (2011) (AU) at 1.

<sup>105</sup> Julia Gillard and Labor, Election Commitment of 24 July 2010 “Emission standards for cars” included as Appendix A, Department of Infrastructure and Transport *Light Vehicle CO<sub>2</sub> Emission Standards for Australia: Key Issues- Discussion Paper* (2011) at 30.

<sup>106</sup> F An, R Early, L Green-Weiskel *Global Overview on Fuel Efficiency and Motor Vehicle Emission Standards: Policy Options and Perspectives for International Cooperation* CSD19/2011/BP3 (2011) at 19.

approach may be because of the suggestion of the Vehicle Fuel Efficiency Working Group, who suggested that the standard be a sales weighted average for new light vehicles.<sup>107</sup> However this report was written in 2009 and international thoughts have changed since then. It will be interesting to see what form the final standards take and whether, if an attribute based standard is decided, it follows the European Union's approach of vehicle mass (weight) or the United States' approach of footprint (area between the wheels). So too will it be interesting to see the final limits. The election commitment of the incoming Labor Government set a target of 190 g CO<sub>2</sub>/km by 2015, and a target of 155 g CO<sub>2</sub>/km by 2024 as a starting point. It is certainly hoped that the final targets will be an improvement on this starting point and will reflect the limits set by the European Union and the United States. Comparatively, the European Union has a 2015 target of 130 g CO<sub>2</sub>/km and by 2020 aims to achieve 95 g CO<sub>2</sub>/km, and the United States target for 2025 is 102 g CO<sub>2</sub>/km, although this is using a different test cycle. It is claimed:<sup>108</sup>

... a number of major car suppliers including Honda, Volkswagen, Hyundai, Suzuki and Peugeot would not need to change a thing from what they achieved in 2009 in order to meet the Australian 2015 requirement. Also, 2010 sales data has both BMW and Audi beating the standard. In addition Mazda and Kia ... would only need to achieve marginal improvement by 2015. Interestingly, every single supplier's European model mix, even Mercedes (Daimler), already comfortably surpass Australia's proposed 190g standard.

Consultation on the *Light Vehicle CO<sub>2</sub> Standards for Australia: Key Issues; Discussion Paper* closed on 30 November 2011 so it would be hoped that the final standards will be passed in 2013, following the Regulatory Impact Statement which is yet to be released.

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<sup>107</sup> Australian Transport Council and the Environment Protection and Heritage Council *Vehicle Fuel Efficiency Working Group Final Report* (March 2009, amended April 2009) at 22.

<sup>108</sup> Tristan Edis "Australia's laughable fuel economy standards" (17 July 2012) <[www.climatespectator.com.au](http://www.climatespectator.com.au)>.

The Federal Chamber of Automotive Industries (FCAI) encouraged a voluntary target to reduce the National Average Carbon Emission (NACE) to 222 g CO<sub>2</sub>/km under NEDC drive cycle by 2010 and although efficiency improved many manufacturers did not meet the target.<sup>109</sup> Statistics show that the NACE figure has declined (the 2011 figure is down 2.8 per cent from 2010 levels and includes all new passenger cars, SUVs and light commercial utility vehicles, vans and buses up to 3.5 tonne).<sup>110</sup> Not surprisingly, the FCAI claim “[t]he average new car sold in Australia is now at least 20 per cent more efficient than it was in 2000”.<sup>111</sup> This would certainly be hoped for, considering advances in technology over the last 12 years. It also reflects the relative success of the voluntary programme between manufacturers to improve the efficiency of the fleet, although not enough to prevent the imposition of mandatory standards.

The *National Strategy on Energy Efficiency* states that there will be an introduction of voluntary measures to improve the efficiency of the heavy-duty vehicle fleet, although to date no such measures have been implemented.<sup>112</sup>

(b) Fuel standards

Currently there is no national requirement to supply biofuel in Australia. In 2006 the Fuel Quality Standards (Renewable Content of Motor Vehicle Fuel) Amendment Bill was introduced to the House of Representatives to amend the Fuel Quality Standards Act 2000 (Cth). The Bill required a percentage of ethanol to be included in motor vehicle fuel supplied in Australia, which was to be at least four per cent from 1 July 2006, increasing to seven per cent from 1 July 2012, and then at least 10 per cent from 1 July 2015.<sup>113</sup> But six months after the Bills first

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<sup>109</sup> Australia Automotive Fuel Economy Policy <[www.unep.org/transport/gfei/autotool/case\\_studies/apacific/australia/Australia%20CASE%20STUDY.pdf](http://www.unep.org/transport/gfei/autotool/case_studies/apacific/australia/Australia%20CASE%20STUDY.pdf)>.

<sup>110</sup> Federal Chamber of Automotive Industries “Significant Improvement in Vehicle CO<sub>2</sub> Emissions” (7 February, 2012) <[www.fcai.com.au](http://www.fcai.com.au)> .

<sup>111</sup> Federal Chamber of Automotive Industries, above n 110.

<sup>112</sup> Council of Australian Government *National Strategy on Energy Efficiency* (July 2009) at 21. See also <[www.ntc.gov.au](http://www.ntc.gov.au)>.

<sup>113</sup> Fuel Quality Standards (Renewable Content of Motor Vehicle Fuel) Amendment Bill 2006, C2006B00121, introduced HR 4 September 2006, CI 29F.

reading the House of Representatives decided it would not be proceeded with. Some states such as New South Wales, Queensland, Victoria, and Western Australia have implemented their own biofuel mandates or targets.<sup>114</sup>

## 2 Consumer information measures

### (a) Fuel consumption and GHG emission labelling

Under the Motor Vehicle Standards Act 1989 (Cth), standards have been implemented that, since 2004, require all new light-duty vehicles for sale to display fuel consumption information labels on their windscreens. From 2009, GHG emission information has also been required.<sup>115</sup> The label also includes a message that informs the consumer that CO<sub>2</sub> is the main contributor to climate change, and that actual fuel consumption and CO<sub>2</sub> emissions depend on factors such as traffic conditions, vehicle condition, and how you drive. Since 2011, labelling has also been required for EVs and PHEVs, stating the energy consumption, range, fuel consumption and CO<sub>2</sub> emissions. Examples are included in Appendix 1. While these standards are a positive step they only apply to new light-duty vehicles, and to be more effective should be extended to all vehicles for sale.

According to the *Report of the Prime Minister's Task Group on Energy Efficiency* “a forthcoming code for disclosing fuel consumption of vehicles in advertising will help improve the information available to consumers”.<sup>116</sup> Bradbrook considers that promoting fuel efficiency in advertising is one of the essential elements in improving energy efficiency, along with fuel economy standards and fuel consumption labelling.<sup>117</sup>

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<sup>114</sup> See Biofuels Association of Australia <[www.biofuelsassociation.com.au](http://www.biofuelsassociation.com.au)>.

<sup>115</sup> Vehicle Standard (Australian Design Rules 81/01 – Fuel Consumption Label for light vehicles) 2005 and Vehicle Standard (Australian Design Rules 81/02 – Fuel Consumption Label for light vehicles) 2008.

<sup>116</sup> *Report of the Prime Minister's Task Group on Energy Efficiency* (Department of Climate Change and Energy Efficiency, July 2010) at 128.

<sup>117</sup> See A Bradbrook “Regulating for fuel efficiency in the road transport sector” (1994) 1 *Australasian Journal of Natural Resources Law and Policy* 1.



(b) Online vehicle guide

The *Green Vehicle Guide* website provides comprehensive information to consumers on vehicles manufactured from 2004, although the site redirects consumers if they want information on vehicles manufactured from 1986-2003. The site includes information on fuel consumption, CO<sub>2</sub> emissions, a GHG rating, air pollution ratings, lists of top performers and sellers, and a truck buyers' guide. The site also enables consumers to compare the data of up to three vehicles, which is most useful when comparing fuel efficiency as, unlike GHG emissions and pollution, there is no rating scale provided.<sup>118</sup>

### 3 *Fiscal incentives*

At a federal level the only fiscal incentive provided by the Australian Government that is aimed at consumers and affects energy efficiency in transport is the LPG Vehicle Conversion Scheme which was implemented to increase the use of LPG as a transport fuel.<sup>119</sup> The Department of Innovation, Industry, Science and Research administers the grant, which provides up to AUD2,000 towards the purchase of a new vehicle already fitted with LPG, or a grant of up to AUD1,000 for conversion of either a new or used vehicle between 1 July 2012 until 30 June 2014. To encourage manufacturers to improve energy efficiency through vehicle technology the Australian Government has implemented the Automotive Transformation Scheme (ATS). The ATS is a ten year scheme that will invest approximately AUD3b to encourage innovation in the industry.<sup>120</sup>

In 2009 the Australian Transport Council and the Environment Protection and Heritage Council issued a report which recommended that as a measure to encourage low emission vehicles:<sup>121</sup>

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<sup>118</sup> See <[www.greenvehicleguide.gov.au/GVGPublicUI/Home](http://www.greenvehicleguide.gov.au/GVGPublicUI/Home)>.

<sup>119</sup> Minister of Innovation, Industry, Science and Research *Liquefied Petroleum Gas (LPG) Vehicle Scheme Ministerial Guidelines 2011* (17 April 2011) at 2.

<sup>120</sup> See <[www.innovation.gov.au/Industry/Automotive/InitiativesandAssistance/Pages/ATS.aspx](http://www.innovation.gov.au/Industry/Automotive/InitiativesandAssistance/Pages/ATS.aspx)>

<sup>121</sup> Australian Transport Council and the Environment Protection and Heritage Council *Vehicle Fuel Efficiency Working Group Final Report* (March 2009, amended April 2009) at 6.

State and Territory Governments give consideration to revising their stamp duty and/or registration regimes for new light vehicles to establish differential charges linked to environmental performance ... [and that] Any differential stamp duty and/or registration charges should utilise the environmental ratings published on the Australian Government's Green Vehicle Guide as the measure of environmental performance ... Revenue neutrality be considered as a design feature for any differential charges, to assure the community that the objective is not higher public revenue[.]

Following these recommendations, the Australian Capital Territory (ACT) Government has introduced the first Australian 'green vehicle duty scheme'.<sup>122</sup> Under the scheme vehicles are given a rating depending on the information provided by the Green Vehicle Guide. An 'A' rated car receives no stamp duty, 'B' cars receive a lower level, 'C' cars pay the average stamp duty, and 'D' cars pay a higher level of stamp duty tax. The effect of the scheme is that for an 'A' rated car such as the Toyota Prius there is a discount of up to AUD1,122 and for vehicles such as the Nissan Navara 4 x 4 the duty increases by up to AUD380.<sup>123</sup>

#### 4 Summary

Australian federal efforts at improving energy efficiency in transport are disappointing compared to other international approaches. The lack of vehicle and fuel standards and direct fiscal incentives aimed at improving consumer choice provide an unsatisfactory result. The response from some state Governments however, is more promising.

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<sup>122</sup> Taxation Administration (Amounts Payable – Motor Vehicle Duty) Determination 2010 (No. 2) DI2010-133, in accordance with the Taxation Administration Act, s 139. (ACT)

<sup>123</sup> ACT Government *Green Vehicles Duty Scheme: Green vehicles come in many shapes and sizes* (Publication No. 08/1059, 2008) at 5.

## *G Summary*

We have learned that the composition of the vehicle fleet in New Zealand is not as efficient as other fleets we have examined. We have the oldest average age of vehicles, and our percentage of diesel vehicles is also behind Australia and the EU, which is a disappointing situation to be in considering our possible biofuels position. We can see from the above discussion that the EU's regulatory approach to improving energy efficiency exceeds other countries in the integrated and holistic way in which reducing emissions is addressed. The EU's regulatory framework aims to improve vehicle efficiency and encourages it through excellent consumer information provisions and eco-driving through feedback mechanisms in vehicles. Similar praise can be given to Japan, whose integrated use of vehicle standards, consumer information and fiscal policies has contributed to significant improvements in energy efficiency. Also, because of the 'race to the top' culture in Japan that is inherent in their vehicle regulatory system and the voluntary efforts to improve driver feedback, New Zealand's reliance on their efficiency standards for imports may not be ill-founded. The efforts of the United States at improving the efficiency of the federal fleet and leading by example are an excellent step that is not seen to the same extent in the other regulatory regimes we examined.

What we can learn from other countries is the importance of an integrated approach, and that regulatory standards, consumer information labelling, and fiscal incentives work to provide a synergy. We can also learn that an important role for Government is to lead by example.

## VII Wider Concepts of Energy Efficiency

No discussion of energy efficiency in transport would be complete if it did not cover the final elements in the transport efficiency paradigm. It will be recalled from Chapter I that this includes reducing vehicle kilometres travelled (VKT), and vehicle ownership and usage. These elements, as already discussed, can be more appropriately considered as energy conservation because they aim to reduce overall energy use, thereby reducing energy intensity across the sector.

Energy conservation involves a reduction in overall energy use by “changing technology and policy to reduce the demand for energy without corresponding reductions in living standards”.<sup>1</sup> Some views on energy conservation are negative and see it as provision of energy services at a lower level of quality, such as reduced speed for cars, or doing without to save energy.<sup>2</sup> While this implies a reduction in human benefits, it does show that energy conservation is influenced by consumer behaviour and lifestyle.

While there are critics of energy conservation, some of whom claim the benefits gained are marginal, proponents argue that promoting behaviour and lifestyle changes will reduce absolute energy consumption over time and this is preferable to increasing the energy efficiency of vehicles.<sup>3</sup> Indeed, Hurn rightly claims that improving the efficiency of vehicles and the introduction of EVs into New Zealand will be insufficient to reduce harmful emissions to acceptable levels, and that policy change is needed at national level to manage VKT growth, the quality of person kilometre travelled, and to adapt to changes in demand and energy sources.<sup>4</sup> To be sure, policy change to manage VKT growth will also minimise the impact any rebound effect may have, but what is important is that

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<sup>1</sup> J Gibbons & H Gwin “Conservation Measures for Energy Use, History of” in *Encyclopedia of Energy* (Elsevier, Oxford, 2004) <[www.credoreference.com](http://www.credoreference.com)>.

<sup>2</sup> See H Herring “Energy Efficiency: A Critical View” (2006) 31 *Energy* 10.

<sup>3</sup> Rudin (2000), cited in H Geller & S Attali *The Experience with Energy Efficiency Policies and Programmes in IEA Countries: Learning from the Critics IEA Information Paper*. (IEA, Paris, 2005) at 31.

<sup>4</sup> R Hurn “Towards a more resilient transport system” in *Sizing up the City: Urban Form and Transport in New Zealand* (eds) P Howden-Chapman, K Stuart and R Chapman (Steele Roberts, Wellington, 2010) at 132.

both energy efficiency and energy conservation measures can work together. Grazi et al say that “the two types of policy are generally complementary and in the long run may need to be implemented simultaneously”.<sup>5</sup> One further point they make is that energy conservation measures are more likely to be politically acceptable and less likely to be hampered by vested interests and public good features. Certainly urban planning and traffic demand management measures would meet less opposition than regulations that constrain the automotive industry, but what should also be considered is that energy conservation measures do not generally come from central government.

One factor that inhibits energy conservation is individual wealth; when individuals who are less influenced by the cost of fuel and parking can be more influenced by the ease and prestige of driving their own vehicle. Therefore they opt out of the efficient choice of public transport in favour of their own comparatively more expensive vehicle. Car ownership also becomes more available to more people as wealth increases. Already New Zealand has one of the highest levels of car ownership per capita.<sup>6</sup> This poses a problem because government policies promote economic growth and increased wealth but by doing so inhibit energy conservation by relying on the personal values of consumers to reduce their energy use. This is shown in a study by Cameron et al, who claim that increased VKT is driven by increased vehicle ownership, which is in turn driven by increased personal wealth combined with population growth.<sup>7</sup> Though the extent is considered limited that income affects fuel use, and Newman and Kenworthy say that “income has a very poor correlation with fuel use per capita”.<sup>8</sup> Their research was conducted 25 years ago however, and may not reach the same conclusions today. What is certain is that “policies to restrain urban automobile ownership and use ... are essential in constraining VKT growth”.<sup>9</sup>

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<sup>5</sup> F Grazi, J van den Bergh and J van Ommeren “An Empirical Analysis of Urban Form, Transport, and Global Warming” (2008) 29 *The Energy Journal* 97 at 117.

<sup>6</sup> Ministry of Transport *The New Zealand Vehicle Fleet: Annual Statistics 2010* (March 2011) at 8.

<sup>7</sup> See I Cameron, T Lyons, J Kenworthy “Trends in vehicle kilometers of travel in world cities, 1960-1990: underlying drivers and policy responses” (2004) 11 *Transport Policy* 287

<sup>8</sup> P Newman and J Kenworthy “The transport energy trade-off: fuel efficient traffic versus fuel efficient cities” (1988) 22A *Transportation Research* 163 at 168.

<sup>9</sup> Cameron, Lyons and Kenworthy, above n 7, at 292.

An interesting point is raised by Tennoy who questions whether the reason we fail to address urban road traffic volumes is because of the way planners are framing the problem. Tennoy claims that instead of addressing the problem from a “predict and provide” position and seeing the answer as providing bigger and more roads, planners should be approaching the problem from a position of providing “coordinated land use and transport planning for reduced urban road traffic volumes”.<sup>10</sup> This certainly seems the more common sense approach that looks at the bigger picture and what is actually needed in transport. This view is also consistent with those of other writers, which we will come to shortly. The point raised by Tennoy about the need to coordinate land use and transport planning is a vital one, and is one of the most significant factors that will reduce VKT. Transportation and land use planning are inextricably interrelated and it is our approach to urban design that has created urban sprawl and our need for transportation, but it also provides the solution to the situation.

It must be acknowledged that there is extensive literature on the topic of transport demand management and it deserves more analysis than what can be provided here. Because the response in New Zealand is regional, the specific measures in place will not be discussed in detail here; the objective is to acknowledge the important connection between energy conservation and energy efficiency.

### ***A Transport Demand Management***

Transport Demand Management (TDM) is used to influence travel behaviour and provide the means by which VKT can be reduced. TDM measures aim to increase vehicle occupancy, encourage off-peak travel, and encourage substituting alternative modes of travel over the private motor vehicle. These TDM measures include a range of administrative measures, including flexible work schedules,

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<sup>10</sup> A Tennoy “Why we fail to reduce urban road traffic volumes: Does it matter how planners frame the problem?” (2010) 17 Transport Policy 216 at 222.

auto-restricted zones, and parking management.<sup>11</sup> Further measures include reducing the need for travel by land-use planning and using incentives such as road pricing, and distance-based insurance pricing, the latter has been claimed to be one of the most effective TDM strategies.<sup>12</sup> Many TDM measures are implemented to reduce traffic congestion and pollution but they have the added benefit of improving energy efficiency and conservation as well. TDM policies can be implemented as either area-wide or site-specific measures. Institutionally, they can come from government, transport management authorities (TMAs) and similar organisations, or employers, depending on whether it is commuters, shoppers, or tourists whom are being targeted. Meyer claims that the level of success of TDM measures depends on the level of dis/incentives used; and the most effective measures involve affecting the price of travel for single occupant vehicles, mandatory employer programmes, and land-use planning.<sup>13</sup> This is true, but another aspect that also strongly influences the level of success of any TDM measure is the relationship with other TDM policies and the synergy that can be created between them. Habibian and Kermanshah explore the interaction between various TDM policies and claim that the level of synergy that is created varies.<sup>14</sup> They say that with low levels of implementation of TDM policies there are low levels of synergy, but higher levels of both policies results in higher levels of synergy.

### *1 The role of urban design*

Urban design is explained as “the design of the buildings, places, spaces and networks that make up our towns and cities”.<sup>15</sup> In New Zealand the design of our towns and cities has by and large led to an urban sprawl of low-density buildings, which contributes to an inefficient transport sector where private motor vehicle

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<sup>11</sup> A Schafer “Passenger Demand for Travel and Energy Use” in *Encyclopedia of Energy* (Elsevier, Oxford, 2004) <[www.credoreference.com](http://www.credoreference.com)>.

<sup>12</sup> See Victoria Transport Policy Institute, online TDM encyclopedia, <[www.vtpi.org](http://www.vtpi.org)>.

<sup>13</sup> M Meyer “Demand Management as an element of transportation policy: using carrots and sticks to influence travel behavior” (1999) 33 *Transportation Research Part A: Policy and Practice* 575

<sup>14</sup> M Habibian and M Kermanshah “Exploring the role of transportation demand management policies’ interactions” (2011) 18 *Scientia Iranica* 1037 at 1041, 1042.

<sup>15</sup> Ministry for the Environment *New Zealand Urban Design Protocol* (2005) at 7.

use is preferred over alternative modes of transport. New Zealand's history and geography have contributed to this, where a dispersed settlement pattern and typical low urban density is the norm — with Wellington and central Auckland the notable exceptions (Wellington in particular, as the form of the land has created a natural corridor and a concentrated traffic flow<sup>16</sup>).

Empirical evidence shows us that:<sup>17</sup>

... there is a negative statistical correlation between residential density and transport-related energy consumption per capita. High density cities have been found to have a far lower transport energy demand per capita than low-density cities.

An explanation for this is that “the most compact metropolitan areas generate about 25 percent less VMT [vehicle miles travelled] per capita than the most sprawling metropolitan areas”<sup>18</sup> and that higher urban density is also likely to lead to a change in travel behaviour”.<sup>19</sup> One study found that “[w]hen predicting car ownership and travel demand, residential density is the most effective urban variable, followed by the amount of nearby public transit”.<sup>20</sup> Not surprisingly then, CO<sub>2</sub> emissions reduce when transport and urban design strategies are integrated.<sup>21</sup> Although there is the argument that air quality has declined with more concentrated emissions in an area, there is an overall improvement. One point to consider is that to combat CO<sub>2</sub> emissions urban planning is more politically feasible than taxes, although it is claimed these measures are generally complementary and should be implemented simultaneously.<sup>22</sup>

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<sup>16</sup> See Centre for Advanced Engineering, *Energy Efficiency: A Guide to Current and Emerging Technologies* (CAE, Christchurch, 1996) Chapter 1 Transport Energy Use- Historical Perspective.

<sup>17</sup> H.B Dulal, G Brodnig, C.G Onoriose “Climate change mitigation in the transport sector through urban planning: A review” (2011) 35 *Habitat International* 494 at 496.

<sup>18</sup> R Ewing and others “Urban development, VMT and CO<sub>2</sub> emissions” in *Sizing up the City: Urban form and transport in New Zealand* (eds) P Howden-Chapman, K Stuart and R Chapman (Steele Roberts, Wellington, 2010) at 21.

<sup>19</sup> F Grazi, J van den Bergh and J van Ommeren, above n 5.

<sup>20</sup> Dulal, Brodnig, and Onoriose, above n 17, at 496.

<sup>21</sup> See R Tiwari, R Cervero and L Schipper “Driving CO<sub>2</sub> reduction by integrating transport and urban design strategies” (2011) 28 *Cities* 394.

<sup>22</sup> See Grazi, van den Bergh and van Ommeren, above n 5.



The regulatory framework for urban design places the responsibility on regional, city and district councils through their functions under the RMA. In accordance with section 31 of the RMA each territorial authority (city or district council<sup>23</sup>) has the power to control any actual or potential effects of the use, development, or protection of land and may include the control of subdivision. The manner in which this is achieved is through the use of district plans, which set out the objectives, goals and policies of the council for the district.<sup>24</sup> The scope of the council's authority is limited by the hierarchical nature of the RMA which requires a district plan to give effect to any national and regional policy statements and regional plans.<sup>25</sup> Regional plans are implemented by a regional authority that has, inter alia, the function of providing for the strategic integration of infrastructure with land use through objectives, policies and methods.<sup>26</sup> Regional plans shall have regard to any strategies prepared under other Acts, such as the NZEECS, and must give effect to any national policy statement (NPS) or regional policy statement (RPS).<sup>27</sup> It is through this hierarchy that Government could influence urban design by implementing a NPS. The purpose of a NPS is to state objectives and policies for matters of national significance that are relevant to achieving sustainable management of natural and physical resources.<sup>28</sup> An interesting point to note is that even though the RMA is the key piece of legislation that governs sustainable development of land it does not mention or recognise the importance of quality urban design. This has attracted considerable reform attention, as we shall see. Despite the lack of recognition in the RMA local authorities autonomously develop their own strategies for urban design that are relevant for their region.

Councils are required to make various strategies and policies under both the RMA and Local Government Act 2002 (LGA) & LTMA, and this raises questions of how these strategies and policies are meant to work together. Under the LGA a council is required to develop a long term council community plan (LTCCP)

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<sup>23</sup> Territorial authority is defined as such in the Local Government Act, s 5.

<sup>24</sup> Resource Management Act 1991, ss 72, 75.

<sup>25</sup> Section 75 (3), (4)

<sup>26</sup> Section 30 (1) (gb).

<sup>27</sup> Sections 66, 67.

<sup>28</sup> Section 45.

which, pursuant to section 93 of the LGA, describes the community outcomes and provides for integrated decision-making and coordination of resources of the local authority. Imperative to this is the consultative process for community involvement. This plan underpins the policies and plans which are then implemented under the RMA, although the LGA is silent as to how the LTCCP is meant to relate to any other plans, policies or strategies. It will be recalled that under the LTMA Regional Transport Committees are to develop a regional land transport strategy, which, as discussed earlier, must be consistent with any RPS, and must take into account district plans, the GPS and the NZEECS. This provides a hierarchy of the RMA provisions taking priority over the LTMA, and the LTCCP guiding the direction of any plans and policies, although it would not influence any decision made by a consent authority considering a resource application or submission under section 104 of the RMA. In *Mulligan v Whangarei District Council* the Environment Court held that a RLTS is a relevant consideration under section 104,<sup>29</sup> but, in regards to the role of the Urban Growth Strategy, held that they could place little weight on the Strategy since the planning had not reached the stage of a plan change under Schedule 1 of the RMA.<sup>30</sup> Therefore any urban planning strategies or other policies that are not incorporated by reference into the district plan will not be a consideration under the RMA decision making process. This confusing and complicated arrangement of various strategies and plans has been part of the reason for the Land Transport Amendment Bill discussed above.

It has been claimed the RMA is a barrier to urban intensification, and that it has failed the built environment.<sup>31</sup> Rae asserts there is “a fundamental disharmony between the sustainable management of resources and sustainable urban design” and that “[t]he RMA is primarily an environmental protection act and is more about the sustainable management of natural resources than

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<sup>29</sup> *Mulligan v Whangarei District Council* EnvC, Auckland, A096/06, 12 July 2006 at [69].

<sup>30</sup> At [70].

<sup>31</sup> See B Rae “Urban design and reform of the RMA” *Resource Management Journal* (April 2009) and K Witten, W Abrahamse and K Stuart (eds) *Growth Misconduct: Avoiding sprawl and improving urban intensification in New Zealand* (Steele Roberts, Wellington, 2011) at 194.

sustainable urban development”.<sup>32</sup> Further, the MfE also consider “the RMA does not effectively facilitate the achievement of long-term, efficient and integrated planning and urban design outcomes”.<sup>33</sup> This view is also held by Ralph, who claims “the RMA in its present form has its limitations as a strategic planning tool, but can work reasonably well as a site development compliance tool”.<sup>34</sup>

These criticisms have caused a review of the RMA and its ability to manage urban design. One option the Government has considered is to implement a NPS on Urban Design, which as Irvine claims “would not just be beneficial but is in fact necessary to the implementation of quality urban design in New Zealand”.<sup>35</sup> In 2008 the MfE issued a Background Paper on the Scope of a National Policy Statement on Urban Design, which recognised that national guidance would improve the quality of urban design while complementing the *New Zealand Urban Design Protocol* and reinforcing that urban design is a legitimate pursuit under the RMA.<sup>36</sup> The *New Zealand Urban Design Protocol* is part of the Government’s Sustainable Development Programme of Action implemented by MfE and is currently the only national initiative to improve urban design. The Protocol is a voluntary commitment by central and local government, property developers, investors, design professionals, educational institutions and others who are committed to improving the quality of urban design in New Zealand; currently it has 187 signatories.<sup>37</sup> There are seven essential design qualities to guide quality urban design: context; character; choice; connections; creativity; custodianship; and collaboration. Pertinent to transport is ‘connections’, which:<sup>38</sup>

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<sup>32</sup> B Rae “Urban design and reform of the RMA” *Resource Management Journal* (April 2009) at 18.

<sup>33</sup> Ministry for the Environment *Building Competitive Cities: Reform of the Urban and Infrastructure Planning System- A Discussion Document* (ME1021, October 2010) at 6.

<sup>34</sup> A Ralph “The Challenges of Implementing Residential Intensification” in *Growth misconduct: Avoiding Sprawl and Improving Urban Intensification in New Zealand* (Steele Roberts, Wellington, 2011) at 104.

<sup>35</sup> J Irvine “A changing climate for urban design: an examination of the New Zealand regulatory approach” (2008) 12 NZJEL 277 at 312.

<sup>36</sup> Ministry for the Environment *Scope of a National Policy Statement on Urban Design: Background Paper* (August 2008)

<sup>37</sup> Current as at 20 April 2011. For a full list of signatories see <[www.mfe.govt.nz/issues/urban/design-protocol/signatories.html](http://www.mfe.govt.nz/issues/urban/design-protocol/signatories.html)>.

<sup>38</sup> Ministry for the Environment, *Urban Design Protocol*, above n 15.

... enhance choice, support social cohesion, make places lively and safe, and facilitate contact among people. Quality urban design recognises how all networks — streets, railways, walking and cycling routes, services, infrastructure, and communication networks — connect and support healthy neighbourhoods, towns and cities. Places with good connections between activities and with careful placement of facilities benefit from reduced travel times and lower environmental impacts.

While the Protocol is an excellent initiative, it is claimed an NPS would provide the “national leadership [that] is pivotal to quality urban design”.<sup>39</sup>

Interestingly, a different view was held by Local Government New Zealand who submitted that a NPS under the RMA is unlikely to achieve the level of integration between the RMA, LGA, LTMA and the Building Act 2004 that is required and that it would fail to adequately address the full scope that is urban design.<sup>40</sup> Local Government New Zealand also suggested that amending Part 2 of the RMA to include urban design would be a better option than an NPS.<sup>41</sup> This view is supported in the *Report of the Minister for the Environment’s Urban Technical Advisory Group* (UTAG report) which recommended the following:

- Amending the definition of ‘environment’ in section 2 to include the built environment;
- Modifying the definition of ‘amenity values’ in section 2 so that the quality of the urban and built environment is addressed to a greater extent; and
- Including it as a matter of national importance that functionaries shall recognise and provide for in section 6.<sup>42</sup>

The report considered that as well as the amendments to the Act, an NPS should also be developed.<sup>43</sup> Following the recommendations in that report a further

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<sup>39</sup> Irvine, above n 35, at 312.

<sup>40</sup> Local Government New Zealand *Possible National Policy Statement on Urban Design: Comments from Local Government New Zealand* (30 September 2008) at 4.

<sup>41</sup> At 5.

<sup>42</sup> *Report of the Minister for the Environment’s Urban Technical Advisory Group* (July 2010) at 78.

<sup>43</sup> At 78.

report was commissioned to look into reforming sections 6 and 7 of the RMA. The Technical Advisory Group Report on RMA Principles (TAG Report) reached the same conclusion as the UTAG Report that a reference to the built environment should be included in Part 2, but differed on how and the extent to which the RMA should be amended.<sup>44</sup> The TAG Report claims that section 6 should be amended to:

In making the overall broad judgment to achieve the purpose of this Act, all persons performing functions and exercising powers under it must recognise and provide for:

...

- (j) The planning, design and functioning of the built environment, including the reasonably foreseeable availability of land for urban expansion, use and development; and
- (k) The planning, design and functioning of significant infrastructure.

It is worth noting that the recommendations by the TAG report have met criticism. In a well considered and cogent assessment on the same terms of reference as the TAG report, the Environmental Defence Society Technical Advisory Group came to different conclusions. They do not support amending section 6, but claim that including “[t]he maintenance and enhancement of a quality urban and built environment” should be a matter that a functionary shall have regard to under section 7.<sup>45</sup> Further, an NPS or best practice guidelines should also be implemented. Direct criticism has been made of the TAG report in a letter written to the Minister for the Environment by leading environmental NGOs of New Zealand.<sup>46</sup> They say that there is no justification for most of the changes recommended, and they also correctly point out that the TAG report went outside its terms of reference by recommending that the ‘overall broad judgment’

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<sup>44</sup> *Report of the Minister for the Environment’s Resource Management Act 1991 Principles Technical Advisory Group* (February 2012) at 49.

<sup>45</sup> *Report of the Environmental Defence Society Technical Advisory Group on the Review of Sections 6 and 7 of the Resource Management Act 1991* (April 2012) at 17.

<sup>46</sup> Letter from G Taylor, C Browning, B Johnson, G Salmon, B McDiarmid, and C Howe to the Minister for the Environment regarding the Report of the Resource Management Act 1991 Principles Technical Advisory Group (3 September 2012) at 3, 4.

approach be codified. Further, they say that the recommendations will lead to lower environmental standards, placing New Zealand well behind international best practice, and that the recommendations will introduce significant uncertainty. This last point has also been raised by Smellie, who says that by including the requirement to make an overall broad judgment in achieving the purpose of the Act, it will upend more than 20 years of case law leading to costly delays and litigation while new precedents are set.<sup>47</sup> To date, no Bill reforming the RMA has been tabled in Parliament nor is there a draft NPS. Until this happens, sustainable urban design will not be given its rightful place in the New Zealand legal framework.

An international example of legislation that focuses on reducing VKT and urban sprawl is California's Sustainable Communities and Climate Protection Act of 2008 which enacted Senate Bill 375.<sup>48</sup> The Bill was enacted following Senate Bill 32 that we discussed above, which was the first law to limit GHG emissions. Senate Bill 375 was enacted to specifically address the transportation and land-use components of GHG emissions and requires the California Air Resources Board to develop regional reduction targets for passenger vehicle and light truck emissions. To achieve the reduction targets, regions must combine transportation and land-use elements which are then stated in a Sustainable Communities Strategy.<sup>49</sup> The goal is to see a significant decrease in GHG emissions. What makes this Bill unique is that it has the specific focus of reducing VKT with a goal to improve emissions. Perhaps this is because of the underlying rationale for promoting energy efficiency in California, which is to improve air quality. In New Zealand the reasons local government aim to integrate transportation and land-use planning appear to be more related to the technical advantages of less congestion rather than the environmental ones.

Despite the lack of recognition from central government of TDM as a means to improve environmental efficiency, many local authorities already actively recognise and promote quality urban design and the integration between land-use

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<sup>47</sup> P Smellie "Green Lobby Unites Over Government's Pro-Growth Agenda" *New Zealand Energy and Environment Business Week Vol 9 No. 22* (Christchurch, 12 September 2012) at 1.

<sup>48</sup> Sustainable Communities and Climate Protection Act of 2008 Cal Gov Code § 65080.

<sup>49</sup> <[www.scag.ca.gov/factsheets/pdf/2009/SCAG\\_SB375\\_Factsheet.pdf](http://www.scag.ca.gov/factsheets/pdf/2009/SCAG_SB375_Factsheet.pdf)>.

and transportation in their plans and other strategies. Local government also have objectives of improving energy efficiency and energy conservation, but the connection that is clear in the Senate Bill in California does not seem to be made here. Perhaps the reason for this is that local government feel they are unable to address climate change issues because of the provisions in the RMA that we have already discussed, which would be a disappointing outcome.

An excellent example of a local government initiative that is considered a successful effort is the Smart Growth strategy in the Bay of Plenty region.<sup>50</sup> This has been developed from a partnership between the Tauranga City Council, Western Bay of Plenty District Council, Bay of Plenty Regional Council, tangata whenua, and other key organisations from the community. The aim of the strategy is to enhance sustainable growth by “support[ing] a fundamental shift in growth management from focussing largely on accommodating low-density suburban residential development to supporting a compact and balanced ‘live, work, and play’ approach”.<sup>51</sup> There is the expected provision for promoting energy and fuel efficiency and energy conservation, but it is interesting to note that in discussing the policy of increasing public transport and other modes the stated focus is on the economic and general mobility benefits, not the environmental benefits. This is despite the strategy also stating it wants to improve air quality. This is a good example of the lack of connection mentioned above.

## *2 Parking as the link between transportation and land-use*

An important aspect of planning which influences car ownership and usage is parking management. Car ownership can be influenced through limiting the available parking provided in new residential developments, and car usage can be curtailed by limiting the available spaces, increasing prices, or offering incentives such as preferential parking for high-occupancy vehicles. Indeed, Genter et al see parking as the integration of transportation and land-use, and say it is the current

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<sup>50</sup> See Ralph, above n 34. See also <[www.smartgrowthbop.org.nz](http://www.smartgrowthbop.org.nz)>.

<sup>51</sup> SmartGrowth *50 Year Strategy and Implementation Plan*, (May 2007) at 1.

approach to minimum parking requirements (MPR) that subsidises single-occupant vehicle trips, increases the cost of living, and acts as a barrier to land-use intensification.<sup>52</sup> They suggest that options to use instead of MPR are removing minimum parking requirements, using pricing controls to discourage long-stay users such as commuters, and using strategies such as shared parking. Underlying this idea is the issue that parking is generally free for the driver, and the true cost of parking imposes hidden costs on cities, the economy, and the environment.<sup>53</sup>

Parking requirements for new developments are stipulated in district plans and vary between regions. For example, the North Shore District Plan sets minimum parking standards depending on the activity and either how many occupants will be in the building or its floor space.<sup>54</sup> Hamilton City Council also has a policy of requiring a minimum number of parking spaces,<sup>55</sup> but central areas of our larger cities take a different approach. The City of Auckland District Plan restricts parking in the central area section by setting a maximum amount of parking instead of a minimum amount.<sup>56</sup> This is also the approach taken in the Wellington City District Plan.<sup>57</sup> Central government does not provide any direction to local government on the amount of parking spaces to provide, and instead this is left to traffic engineers, planners and local authority policy makers to decide. For the sake of completeness, one should note that the LTNZ Traffic Control Devices Manual includes matters pertaining to parking such as design requirements and signage but does not include any guidance on the amount of parking to be allocated per square metre of a development.<sup>58</sup>

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<sup>52</sup> J Genter, L Schmitt, S Donovan *The Missing Link: Parking as the Integration between Transportation and Land use* (IPENZ Transportation Conference, Institute of Professional Engineers New Zealand, 2008) at 1.

<sup>53</sup> See D Shoup *The High Cost of Free Parking* (American Planning Association, Chicago 2005).

<sup>54</sup> See Auckland Council District Plan, Operative North Shore Section 2002, Chapter 12: Transportation, at 17.

<sup>55</sup> Hamilton City Council, Operative District Plan, July 2012, Transportation and accessibility, objective 4.2.3, Policy a).

<sup>56</sup> City of Auckland District Plan, Central Area Section, Operative 2004, updated 27/03/2012, Part 9, Transportation, at 6.

<sup>57</sup> Wellington City District Plan, Central Area, policy 12.2.1.3, at 12/19.

<sup>58</sup> See LTNZ *Traffic Control Devices Manual: Part 13: Parking Control* (December 2007).



### 3 *Alternative travel options*

The most commonly utilised method of TDM in New Zealand is the provision of public transport. As already mentioned above, the New Zealand Government has a policy of promoting public transport which is evidenced in the NZES, the NZEECS, and in allocations made from the Land Transport Fund. Under the Public Transport Management Act 2008 regional councils have the power to regulate and set standards for public transport services, and are responsible for implementing regional public transport plans that give effect to the public transport components of the regional land transport strategy.<sup>59</sup> Clearly the demographics of different towns and cities dictate the extent which public transport is provided; in some cities the demand exceeds the supply and in other towns services are being cut due to lack of demand. In situations where there is limited demand the efficiency of providing public transport declines until it is no longer a viable option. For example, the energy spent by two vehicles travelling into the city is arguably less than the energy spent by the bus travelling the route to collect the two people using the service. Therefore the provision of public transport services depends widely on the region. Another aspect that influences public transport is urban sprawl, and more compact cities tend to have better public transport services. Cameron et al consider that urban sprawl and the lack of public transport are reasons for increased VKT.<sup>60</sup>

Alternative travel options include other modes such as walking and cycling, or mode-share. Walking and cycling reduce the demand for energy and also have the added bonus of improving health and well-being. Mode-share can require limited infrastructure improvements such as cycle storage facilities and parking at outer public transport nodes. Initiatives in this area come from central and local government, employers, and TMAs, and generally involve promoting the health and financial benefits.

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<sup>59</sup> Public Transport Management Act 2008, ss 3, 7

<sup>60</sup> Cameron, T Lyons, J Kenworthy, above n 7, at 294.

#### 4 *Increasing vehicle occupancy*

Increasing vehicle occupancy improves the efficiency of transport not only through reducing VKT but also as it reduces traffic volume, therefore there is less congestion and less idling, resulting in greater efficiency of energy. Institutions can encourage greater vehicle occupancy through promoting car-share schemes that reward participants with either preferential parking or (one option the NZTA suggests) is that businesses can offer rewards for employees through free parking or offering a ‘miles scheme’ that awards participants with vouchers for every mile that they carpool.<sup>61</sup> There are also online carpooling schemes that cater to different regions or localities.<sup>62</sup>

Roading authorities can encourage increased occupancy through the use of high occupancy vehicle lanes, or, as they are called in New Zealand, transit lanes (T2 or T3, depending on how many vehicle occupants are required) which reduce travel time due to less congestion. Currently the only region that uses these is Auckland. The legal foundation for transit lanes is the LTA 1998, which provides that rules may be made that limit the use of the road and that regulations may specify infringement offences for any breach of the rules.<sup>63</sup> Under the Land Transport (Road User) Rule 2004 a driver must not use a lane that is a special vehicle lane, or transit lane, unless the vehicle is of the class which the lane is reserved for.<sup>64</sup> To do so is an offence and may result in either an infringement fee of \$150 or a summary conviction with a fine of up to \$1,000.<sup>65</sup> The NZTA has the authority to designate part of a motorway as a transit lane and does so by implementing a bylaw under the Government Rounding Powers Act 1989.<sup>66</sup>

In Auckland, monitoring transit lanes has provided revenue to the Council and has proved to be quite effective, although it has been said that drivers are coming

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<sup>61</sup> See <[www.nzta.govt.nz/resources/carpooling/docs/carpooling-guidelines-print.pdf](http://www.nzta.govt.nz/resources/carpooling/docs/carpooling-guidelines-print.pdf)>.

<sup>62</sup> Examples include the University of Waikato’s own RideLink that is available for staff and students and which also provides preferential parking for those who use the service, the Bay of Plenty Regional Council initiative <[www.carsharebop.co.nz](http://www.carsharebop.co.nz)> that aims to link people across the region, and the government initiative <[www.letscarpool.govt.nz](http://www.letscarpool.govt.nz)> that is a nationwide initiative.

<sup>63</sup> Land Transport Act 1998, ss 157, 167.

<sup>64</sup> Land Transport (Road User) Rule 2004, r 1.6, 2.3

<sup>65</sup> Land Transport (Offences and Penalties) Regulations 1999 (SR 1999/99), r 3, Schedule 1.

<sup>66</sup> Government Rounding Powers Act 1989, ss 61, 80.

up with novel ways to try and avoid getting caught, such as using inflatable dolls and shop mannequins as passengers.<sup>67</sup> The High Court has held that the offence of driving in a transit lane is one of strict liability, and is not criminal but a public welfare infringement offence that supports government policy to increase efficiency in the public transport sector and promote the use of public transport.<sup>68</sup>

Transit lanes have been used in Wellington, but they received criticism that eventually resulted in their removal. The Mana T2 lanes were used during peak travel times but were for parking in off-peak times, which resulted in confusion for motorists. Instead of fining offenders a letter was sent to the registered owner of the vehicle informing them of the offence,<sup>69</sup> resulting in reduced levels of compliance and effectiveness of the lanes. Following the New Zealand Transport Agency (Mana Clearway) Bylaw 2012 the transit lanes have been replaced with a clearway during peak travel hours.

## ***B Institutions of Transport Demand Management***

### *1 Transport management associations*

TMA's are organisations that promote sustainable travel options and try to reduce single vehicle occupancy. They are generally private-public partnerships that are established in a specific business area, making them quite useful in situations where there are a number of small businesses with few employees. The role of a TMA can be to facilitate car-sharing schemes, or to manage parking, in particular providing a parking brokerage service. In New Zealand a TMA is in use in the Wynyard Quarter development of the waterfront of downtown Auckland which has been established through a steering group of representatives from Auckland Council, Auckland Transport, Waterfront Auckland, Viaduct Holdings Ltd, and the NZTA. The TMA's objectives are to improve accessibility in the area while working with businesses, residents and landowners, to achieve a goal of 70 per

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<sup>67</sup> W Thompson "Transit lane chancers a pack of dummies" *The New Zealand Herald* (Auckland, 12 June 2008).

<sup>68</sup> See *Cooke v Auckland Transport* HC Auckland CRI-2010-404-454, 20 June 2011 at [20].

<sup>69</sup> <[www.waikato.transit.govt.nz/projects/P2P/enforcement.htm](http://www.waikato.transit.govt.nz/projects/P2P/enforcement.htm)>.

cent of trips into the area being made by foot, cycle, or as a passenger. They intend to do this by improving public transport and carpooling services, encouraging businesses to promote alternative modes through providing showers, lockers, and bike lock facilities, restricting parking by providing fewer spaces and increased cost for lengthier stays, and reducing vehicle speed through the area to 30 kilometres per hour.<sup>70</sup>

## 2 *Employers and other organisations*

Employers and other large institutions in New Zealand do not have any legal obligation to promote or provide TDM measures, but they can have an influence by offering carpooling schemes, rewards and preferential parking. Other ways employers can assist reducing VKT are offering alternative work options like flexible hours or working from home. Alternative modes can be promoted by ensuring there are facilities in place such as showers and lockers. These options can also provide a benefit to employers through increased collegiality between employees who car share, and improved well-being of employees through increased levels of physical activity.

In California the South Coast Air Quality Management District has issued Rule 2202, which requires employers of 250 or more staff to implement a programme to reduce commute emissions and to meet a work-place emission reduction target.<sup>71</sup> The rule became effective in 1998 and was designed to meet the air quality standards mandated under the federal Clean Air Act. According to Meyer, a year after the rule was adopted a Bill was passed that would allow the rule to be rescinded if it could be shown that the same effect could be achieved through voluntary measures, but the emission equivalency of voluntary measures did not match what would have been achieved under the mandatory programme.<sup>72</sup>

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<sup>70</sup> See <[www.aucklandtransport.govt.nz/improving-transport/wynyard-quarter-tma](http://www.aucklandtransport.govt.nz/improving-transport/wynyard-quarter-tma)>

<sup>71</sup> South Coast Air Quality Management District, Rule 2202 *On-Road Motor Vehicle Mitigation Options* (Adopted December 8, 1995). Pursuant to the California Environmental Quality Act, Pub Res Code § 21000, the Air Quality Management District has the mandate to implement rules, regulations and plans.

<sup>72</sup> Meyer, above n 13.

### *3 Local Government*

As an institution for TDM local government has an integral role in influencing urban design and providing public transport services, although there is no statutory requirement for local government to specifically reduce VKT. Many councils are taking excellent steps to provide an integrated approach to transportation and land-use planning and recognise the importance of TDM in their regional and district plans, RLTSs and implementation plans. Once the amendments to the RMA have been made, that were discussed earlier, the role for local government regarding sustainable land-use will be clearer.

#### *C Summary*

The regulatory framework in New Zealand does not require VKT to be reduced. Indeed, Hurn considers that “[g]iven New Zealand’s policy settings, economic growth is likely to lead to continued VKT and CO<sub>2</sub> emission increases”.<sup>73</sup> Despite this, local government utilise TDM measures to reduce VKT but their efforts seem to be directed at reducing congestion rather than improving the technical or environmental efficiency of energy. Employers and other large institutions can have an effective role in encouraging reduced VKT, and can benefit from it as well.

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<sup>73</sup> Hurn, above n 4, at 132.

### VIII *Is New Zealand on the Right Road?*

When the New Zealand legal framework is compared to other jurisdictions there is a clear lack of regulatory measures to improve energy efficiency in transport; indeed, using single policy instruments to achieve the policy objective is unlikely to effectively influence people's behaviour, and this needs reform. This chapter discusses measures that New Zealand should implement to improve the efficiency of the fleet and show internationally that we are committed to reducing our GHG emissions. Measures are needed that address the obstacles that we identified earlier, and we should take heed of what we have learned from the approach of other jurisdictions. Many measures would be easy to implement and would be politically feasible, if there was political will; but this must come from both central and local government. The IEA has recently said that New Zealand "need[s] to quickly put in place planned transport energy efficiency policies, and implement policies where there are currently none".<sup>1</sup> Further, the IEA say:<sup>2</sup>

... a critical concern is that responsibilities for policy development in [the transport] sector are unclear. There is an urgent need to clarify which agencies lead policy making in each sector. Secondly, once these issues are resolved, New Zealand should consider adopting policies on proper tyre inflation levels and introducing fuel-efficiency standards for light and heavy-duty vehicles.

What the IEA say picks up on an issue regarding the institutional framework identified earlier, but the suggestion we need to introduce fuel efficiency standards may not be so well considered. This suggestion does not seem to take into account that New Zealand does not manufacture the vehicles sold here and that other regulatory methods may be used to achieve the same result. Regulation that improves the age, size, and performance of the fleet, encourages consumers to

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<sup>1</sup> S Pasquier and A Saussay *Progress Implementing the IEA 25 Recommendations: 2011 Evaluation* (International Energy Agency, Paris, 2012) at 41.

<sup>2</sup> At 85, 86.

make efficient choices, and reduces VKT may be equally as effective. This will be discussed further shortly.

Improving energy efficiency in transport requires encouraging consumers to make efficient choices but that in turn requires market barriers such as imperfect information, access to capital, and split incentives to be addressed. Educating consumers is fundamental to improving the energy efficiency of the transport sector and is pivotal in addressing some of the psychological barriers. These measures need to be implemented with energy conservation measures.

The following discussion suggests specific options that are worthy of further consideration, and policies or legislation that are needed to improve energy efficiency in the transport sector that have not been raised before in this paper.

## ***A Regulating Vehicle Fuel Economy and CO<sub>2</sub> Emissions***

### *1 Fuel economy and GHG emission standards*

As we have learned, the existing regulatory framework in New Zealand does not include any fuel consumption or CO<sub>2</sub> emissions standards. While on the one hand there is the argument that they are unnecessary because we do not have a vehicle manufacturing industry here, on the other hand is the argument that if standards were in place it may help raise consumer awareness and show internationally that we are committed to improving the efficiency of our fleet, and also provide one instrument that could be integrated with other policies. The question that must be posed is whether we need the above standards, or can the same result be achieved by other means? If we were to implement fiscal policies and information measures it is possible the same result could be achieved.

### *2 Fiscal instruments to encourage energy efficiency*

As discussed above, utilising other fiscal policy options can improve energy efficiency in transport and create a synergy with fuel economy standards. This could be achieved by reviewing the charges and taxes already in place. Part of this review could include amending the road user charges system, vehicle

registration and licensing, and fuel excise duty to provide a price on GHG emissions.

### *3 Information measures*

Improving the information available to consumers requires an amendment to the current labelling requirements of vehicles for sale. The labels of the EU and the United States provide an excellent example of what should be included, and New Zealand should follow a similar format. Consumers need to be informed of the effect of transport emissions and their relationship with climate change, and how consumers can improve their efficiency. The EU also requires information to be included in promotional material and New Zealand should do the same.

One suggestion from Bradbrook is that fuel consumption information should be compulsory in advertising; he cites film censorship and food and tobacco advertising as examples where the legislature has imposed requirements in advertising. He claims this would not only have the effect of raising awareness of fuel consumption as a consideration when purchasing a vehicle, it would also rank it “alongside other attributes in the overall image of desirability of ownership delivered by the advertisement”.<sup>3</sup> This would require an amendment to the EE&C Act 2000 as currently section 36 provides that the Governor-General may implement regulations, on the advice of the Minister, that prescribe minimum performance standards or labelling requirements only and it does not provide the necessary powers to impose regulations regarding advertising.

Tyre information labelling will improve the efficiency of the fleet and should be introduced. A label similar to the United States is preferable than the European label as it shows greater number of increments. This could be done by issuing a regulation in accordance with section 36(1)(b) of the Energy Efficiency and Conservation Act 2000 which provides that the Governor General may issue regulations that prescribe requirements in relation to the labelling of products with respect to their energy efficiency or proficiency in conserving energy. More

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<sup>3</sup> A Bradbrook “Regulating for Fuel Efficiency in the Road Transport Sector” (1994) 1 *Australasian Journal of Natural Resources Law and Policy* 1.



information on correct inflation is also required. To achieve this would require an amendment to the EE&CA 2000 as mentioned above, with the following regulation that would prescribe that tyre outlets and air filling stations clearly display recommended pressures.

We have learned in the discussion on psychological barriers that the effect of promoting efficiency because it saves consumers money is limited, and therefore we should improve the way energy efficiency is promoted. Other countries promote efficiency because of the environmental benefits and this should be an angle from which it is promoted here. According to *Greening New Zealand's Growth*, "[t]he Advisory Group has been struck by New Zealanders' passion for green growth".<sup>4</sup> Generally, New Zealanders care about the environment and our clean green image. This attitude should then be used to try and influence behaviour. The approach by the European Union is one example that we should learn from, with the information provided to consumers on the effects of fuel efficiency and the relationship with global warming. The reasons why we need efficiency and the effects of a business-as-usual approach should be made aware to consumers. Indeed, it would fulfil our obligations under the Kyoto Protocol as well.

### ***B Improving Driver Behaviour***

To improve eco-driving and raise awareness of the safety benefits and the effects on fuel consumption it is suggested that the driver licensing system be reviewed. This suggestion could support the Government policy of fleet best practice. The IEA has recommended such action,<sup>5</sup> and in the United Kingdom drivers are now required to show they can drive fuel-efficiently and safely by smoother acceleration and braking, and by early gear changing.<sup>6</sup> *The Official New Zealand Road Code* includes tips on driving more sustainably under the part on driver

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<sup>4</sup> Report of the Green Growth Advisory Group *Greening New Zealand's Growth* (December 2011) at 2.

<sup>5</sup> Pasquier and Saussay, above n 1, at 36.

<sup>6</sup> At 31.

responsibility, but questions regarding this should be included in the learner licence theory test questions. The current online learner licence theory test questions do not include any questions on sustainable driving and these should be included as either core or behaviour questions.<sup>7</sup> Further, the restricted licence test that requires a practical driving assessment should also require applicants to demonstrate skills of sustainable driving. Currently, to pass the test applicants must only demonstrate safe decision-making, observance of road rules and satisfactory car-handling skills.<sup>8</sup>

The NZTA is the agency responsible for issuing driver licences and it has a wide authority for setting the tests required. Prior to the Land Transport Amendment Act 2005 theory tests were included as Schedule 5 to the Land Transport (Driver Licensing) Rule 1999 (SR 1999/100), but since the Act removed the tests the regulations require an applicant to pass an appropriate theory test approved by the Agency.<sup>9</sup> The tests are based on *The Official New Zealand Road Code* and since sustainable driving is covered in the Code, it should also be tested.

### ***C Improving the Efficiency of the Fleet***

Further policies that encourage electric vehicles are needed. One option is to offer subsidies for retro-fitting vehicles in the existing fleet; similar to what was done to encourage CNG and LPG conversions in the late 1980s, which proved to be quite effective. A retro-fit can be installed at less cost than purchasing a new EV and could be achieved more quickly than waiting for imports from overseas to enter the New Zealand market. EECA is currently focussing on providing funding for home insulation, and space and water heating, and expanding this to subsidies for an EV retro-fit could be within its mandate.

Electric vehicles could also be promoted through procurement policies that require the public sector to take account of the lifetime costs and sustainability of

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<sup>7</sup> See <[www.nzta.govt.nz/resources/roadcode/theory-test-questions/index.html](http://www.nzta.govt.nz/resources/roadcode/theory-test-questions/index.html)>

<sup>8</sup> New Zealand Transport Agency *Restricted Licence Test Guide (Class 1)* (February 2012) at 2.

<sup>9</sup> Land Transport (Driver Licensing) Rule 1999 (SR 1999/100), r 45.

its purchasing decisions. The Green Growth Advisory Group has claimed in their report that “[t]he Government has substantial capability to influence New Zealanders’ awareness and understanding of green growth through the \$31 billion procurement activities of 219 State Sector agencies each year”.<sup>10</sup> Green growth is understood to be economic growth in an environmentally sustainable way, in the interests of sustainable development. One of the recommendations by the Green Growth Advisory Group is for the Government to fund an ‘invest-to-save’ scheme for public sector agencies, which is an interest free loan to enable the agencies to shift to greener technologies by helping the agencies meet higher up-front costs and to secure net financial gains over the long-term.<sup>11</sup> This would also have spill-over benefits to the overall vehicle fleet when the vehicles are on-sold when the agency fleet is up-graded.

An alternative to specific procurement policies for EVs could be that a proportion of the fleet be alternative-fuelled vehicles or that they met a specific GHG emission rating. Government considered the latter option in 2009 when the Climate Change (Government Vehicle Procurement) Bill 2009 was introduced.<sup>12</sup> The Bill required that vehicles purchased or leased by the state sector had emissions better than 170 g/km CO<sub>2</sub>, which was the target in the NZEECS for the entire New Zealand fleet. The vehicles were also to be in the top 10 per cent of their size and class as listed on the fuelsaver website.<sup>13</sup> It is disappointing that the Bill did not make it passed its first reading. One example of an effective procurement scheme is that offered by the Taxi Federation funding for hybrid vehicles, which are now a dominant part of the fleet in most urban areas.

A further policy that would improve the efficiency of the fleet is to ensure that vehicles are functioning in the most efficient manner, by including vehicle tuning, emission measurement and tyre inflation as part of warrant of fitness vehicle testing. It will be recalled from the discussion on strategic planning in transport that this option was indicated as a future initiative in the 2002 NZTS. This could be achieved by implementing a rule under the LTA, which provides that the

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<sup>10</sup> Green Growth Advisory Group , above n 4, at 39.

<sup>11</sup> At 41.

<sup>12</sup> Climate Change (Government Vehicle Procurement) Bill 2009 (74-1).

<sup>13</sup> Clauses 3,7, and 8.

Minister may make rules setting licensing requirements for the maintenance of vehicles.<sup>14</sup> A vehicle that does not meet the rules is unable to be certified under the Land Transport Rule: Vehicle Standards Compliance 2002 and receive a Warrant of Fitness. Wilson et al discuss the positive effects this would also have on public health.<sup>15</sup> To be sure, testing that vehicles meet air quality emission standards that are currently in place would be a good start.

Another way by which the efficiency of the fleet could be improved is to re-introduce scrappage schemes for vehicles nearing the end of their life, as discussed above.

#### ***D Improving Institutional Barriers***

A further recommendation by the IEA that was mentioned above was for New Zealand “to define clear roles for policy development and implementation in the transport sector and, if possible, vest policy in one agency or ministry”.<sup>16</sup> As previously discussed, either EECA’s role should be extended to include developing the NEECS, or the MfE should be reinstated as the lead agency responsible. Considering that the MfE is the ministry with the expertise on climate change and air quality it would also be better placed with the knowledge required to develop the strategy, rather than the EDG.

But it is not just a policy change that is required; a philosophical shift by central government is also needed. One theme that appears in current literature is that investing in more roads is unwise and that there should be “less emphasis on system expansion and more emphasis on improving system efficiency and diversity”.<sup>17</sup> This point has been raised by TRAFINZ who claim that since 2005 there has been no growth in VKT in New Zealand on both a per capita and a per

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<sup>14</sup> Land Transport Act 1998, s 155.

<sup>15</sup> See N Wilson, C Wallace, and B Weeber “The New Zealand Government’s Energy Policies Need to Consider Public Health Benefits” *The New Zealand Medical Journal* Vol 118 Issue 1216 at U1513.

<sup>16</sup> International Energy Agency *Energy Policies of IEA Countries: NZ 2010 Review* (IEA, Paris, 2010) at 51.

<sup>17</sup> T Litman “Changing Travel Demand: Implications for Transport Planning” (2006)76:9 *ITE Journal* 27 at 32.

vehicle basis.<sup>18</sup> Therefore it is not economically efficient to continue to invest in expanding the roading infrastructure and that this money would be more wisely invested in TDM measures. Further, the Government justifications for expanding the roading network in Auckland and the focus on roads has come under criticism, and it has been claimed that the city “is an example of what not to do in terms of transport infrastructure investment”.<sup>19</sup> Mees claims that when compared to other cities, Auckland’s public transport system is “right down at the bottom” and this is not surprising because it has one of the most car-based transport policies of just about any city in the developed world.<sup>20</sup> He further says the idea that Auckland is too spread out to have effective public transport is an urban myth. To advance his claim he compares Auckland with Zurich, which has a greater population but less motorways and congestion. This argument then raises the question whether the RoNS and the focus of the GPS on land transport funding is the most appropriate course of action.

### ***E Encouraging Alternative Fuels***

Introducing a biofuel obligation is a necessary move to encourage the manufacture and use of biofuels in New Zealand, but should be done so with a corresponding enactment of sustainability standards under the Fuel Quality Act, which could be achieved if the previous legislation was re-enacted.

Increasing the use of natural gas should also be considered as a policy option. As mentioned above, this is an alternative that Japan and Australia are encouraging, and New Zealand would be well placed to do the same.

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<sup>18</sup> TRAFINZ, *Submission on Government Policy Statement 2011* (NZ Traffic Institute, 27 May 2011).

<sup>19</sup> *New Zealand Transport Intelligence Business Week* “Car-biased Auckland gets a roasting” (25 August 2011) retrieved from <[www.nztransport-logistics.co.nz/home/free-articles/car-biased-auckland-gets-a-roasting.html](http://www.nztransport-logistics.co.nz/home/free-articles/car-biased-auckland-gets-a-roasting.html)>.

<sup>20</sup> *New Zealand Transport Intelligence Business Week* above n 19.

## ***F Promoting Energy Conservation***

It is hoped the amendments to the RMA to include the built environment as a matter a decision-maker shall have regard to under section 7, along with an NPS is proceeded with. These changes, along with the implementation of energy efficiency policies, should have the desired effect without any policy that specifically aims to reduce VKT being required.

## ***G Summary***

The above recommendations would place New Zealand on an equal footing with other countries and show that we are committed to mitigating climate change. We need regulatory reform that will provide fiscal policies that will effectively change behaviour; we need information measures that adequately inform consumers of the effects of transport emissions; and we need an integrated approach. We also need further policy instruments to encourage the use of alternative fuels and efficient vehicles, and to improve driver behaviour. We also need Government to lead by example.

## *IX Conclusion*

If we do not improve the efficiency of the road transport sector we face continued degradation of our air quality, increased effects of climate change and a continued reliance on a depleting source of energy. But this does not need to be the case.

The legislative framework for energy efficiency in transport gives a disconnected and unsatisfactory result, which has led to current reform of the LTMA and the LTA. It is unfortunate that this reform will not benefit energy efficiency; the New Zealand Government needs to view energy efficiency in transport as a priority, not just as a desired outcome. Further, the strategic planning for transport shows a decline in the level of specific and measurable targets. The institutional structure underpinning energy efficiency needs review, and either the role of EECA needs to be expanded to include developing the NEECS, or the MfE needs to be reinstated as the Ministry responsible.

New Zealand's regulatory response to improve energy efficiency in transport is weak compared to other countries, and further regulation is required; improving the energy efficiency of the fleet requires increased vehicle efficiency, using alternative fuels, and reduced VKT. International comparisons show that this will not be achieved by New Zealand's current approach of providing more roads. The answer lies in reducing the age of the fleet and encouraging more efficient vehicles by using fiscal measures, and by improving the information available for consumers. Fuel economy and GHG emission standards, improved information measures – including tyre labelling – and vehicle licensing fees based on vehicle emissions should be introduced. This regulatory framework must be designed to work synergistically and provide an integrated approach that will affect people's behaviour. We also need regulation that will ensure quality urban design, and that will improve the public transport system.

The use of isolated policy instruments to achieve Government's objectives gives unsatisfactory results, and further policy instruments are needed to encourage the use of biofuels, EVs, and to improve driver behaviour. This requires reform of the current legal framework. But we need to think about what we can learn from theory, and about what we can learn from social psychology

and behavioural economics. This will help in choosing effective policy instruments and how to frame policy accordingly to address the actual and perceived barriers to behaviour change.

New Zealand needs to learn from overseas experience and structure our legal framework accordingly. The EU and Japan provide excellent examples of an integrated approach of regulation, and the procurement policies of the United States show an impressive commitment by the Federal Government to lead by example and to improve the efficiency of the fleet. We can be thankful that even though the New Zealand response is disappointing, the response by the United States and the European Union, as global leaders, is promising.

It is important that measures to improve the wider concepts of energy efficiency are also implemented, which will reduce the number of vehicles on the road and the distance travelled. The onus to provide these policies shifts to local government, employers, and other organisations; where policies are needed that promote quality urban design, public transport, alternative modes, increased vehicle occupancy, and off-peak travel.

The legal framework in New Zealand provides a basis, but it requires amendment to a few key areas. A philosophical shift is also required, to see the advantages of energy efficiency in their own right, rather than as a side benefit to other policies. Energy efficiency in transport offers a way of meeting New Zealand's international obligations, reducing GHG emissions, improving security of supply, and improving our air quality and it needs to be treated as such.



## Appendix

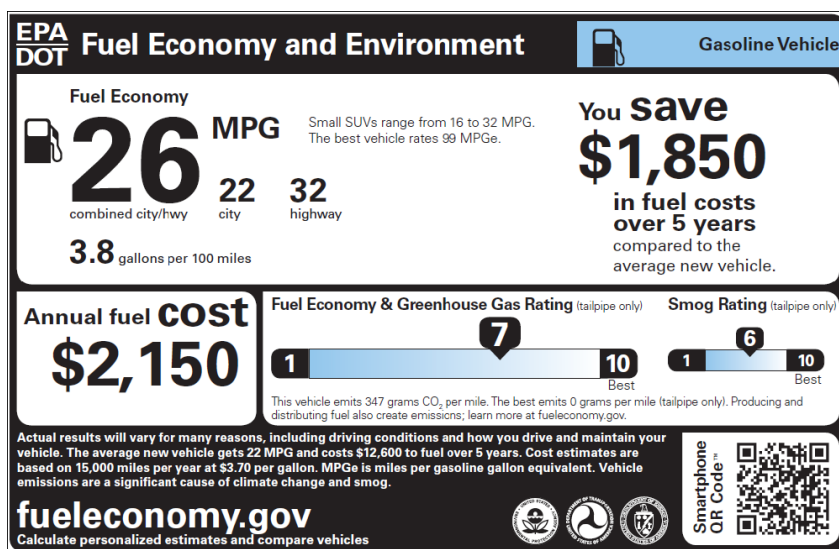
### A Examples of Vehicle Efficiency Labels

Figure 1 New Zealand fuel consumption label



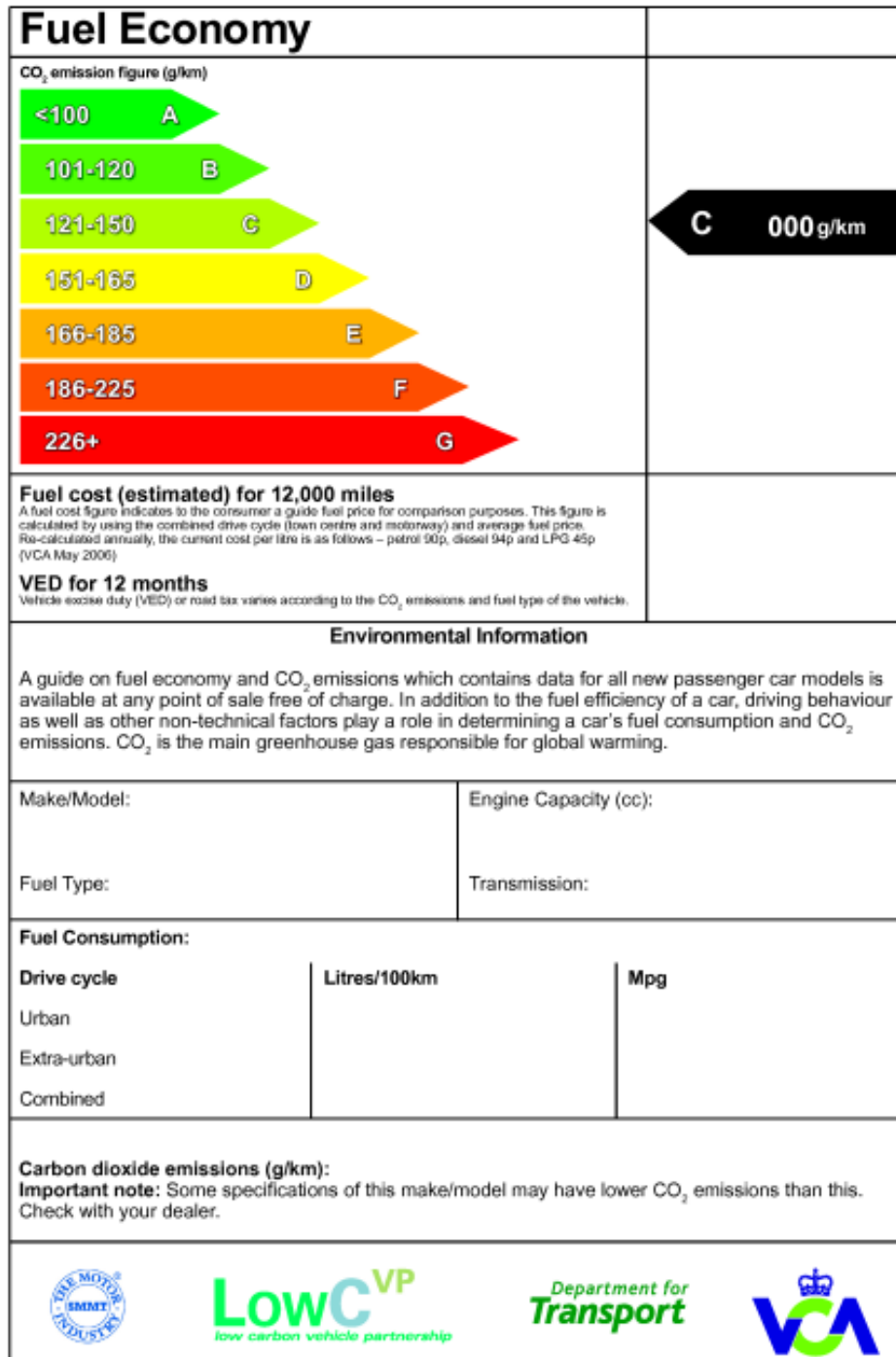
Source: Energy Efficiency (Vehicle Fuel Economy Labelling) Regulations 2007, Schedule 3.

Figure 2 United States fuel economy and environment label for gasoline vehicles, required for 2013 models.



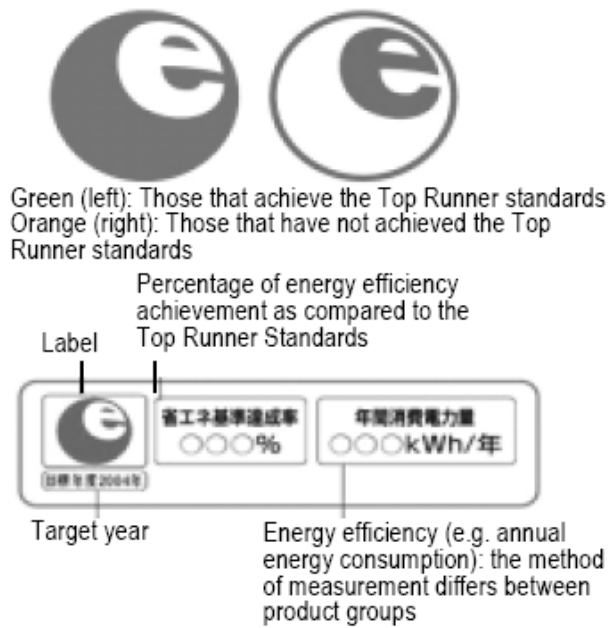
Source: <www.epa.gov>.

Figure 3 Example of a European label: A point of sale label from the United Kingdom



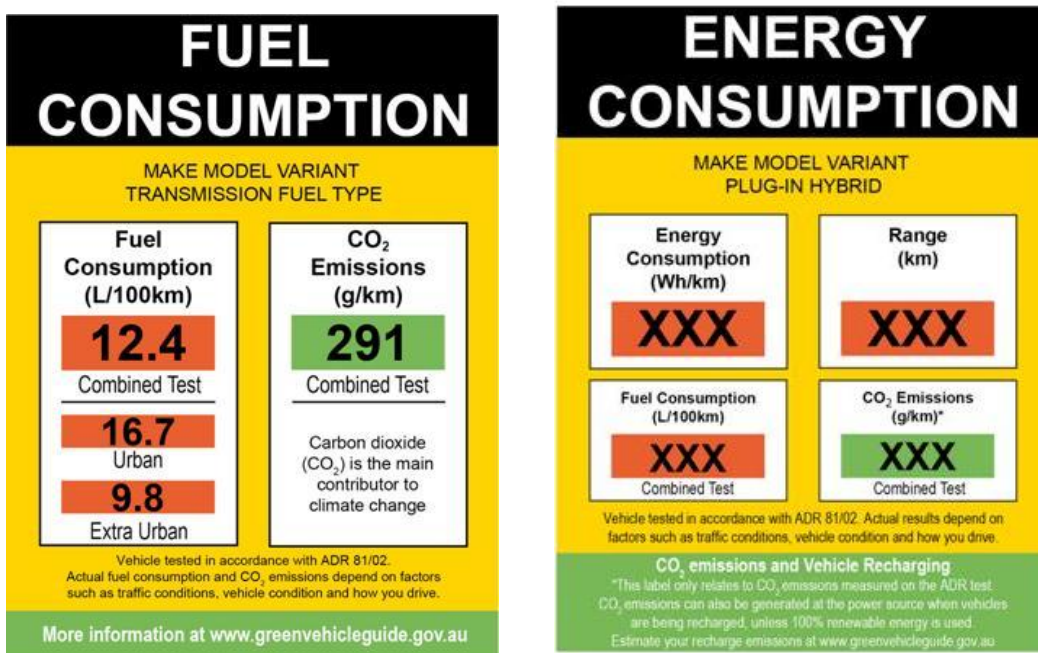
Source: <[www.fuel-economy.co.uk/greenlabel](http://www.fuel-economy.co.uk/greenlabel)>.

Figure 4 Energy efficiency label of Japan



Source: ECCJ

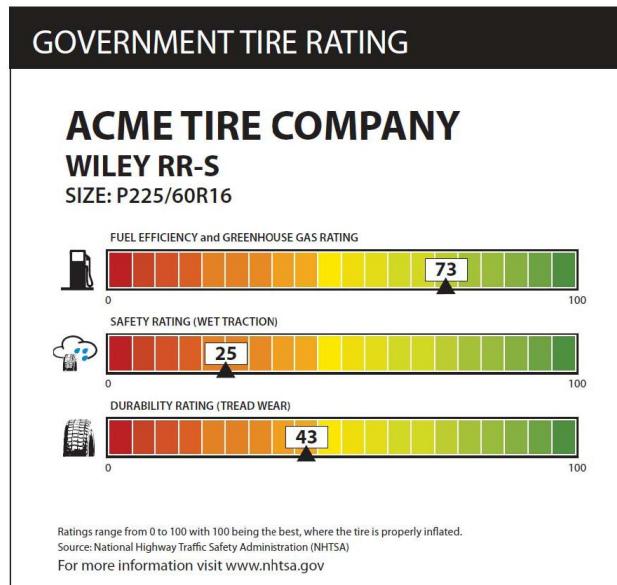
Figure 5 Fuel consumption and energy consumption label of Australia



Source: Vehicle Standard (Australian Design Rules 81/02 – Fuel Consumption Label for light vehicles) 2008, Appendix 1.

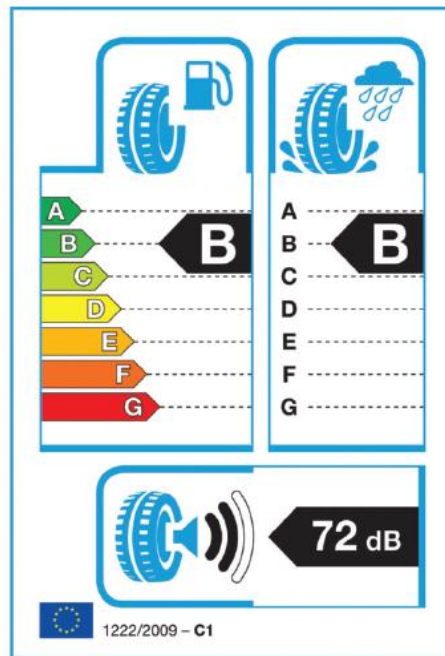
**B Examples of Tyre Information Labels**

Figure 6 United States proposed tyre information label



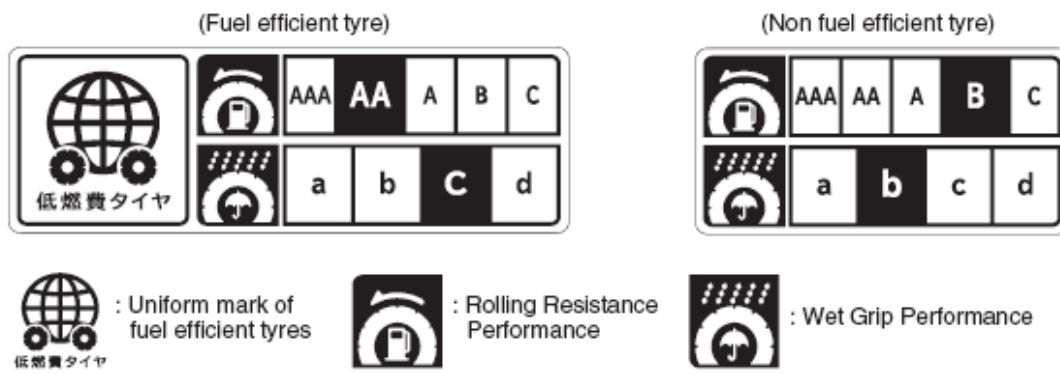
Source: <[www.nhtsa.gov](http://www.nhtsa.gov)>.

Figure 7 Tyre information label of the European Union



Source: Regulation 1222/2009 on the labelling of tyres with respect to fuel efficiency and other essential parameters, Annex II [2009] OJ L 342/46.

Figure 8 Tyre label from Japan



Source: Japan Automobile Tyre Manufacturers Association Inc, Tyre Industry 2011, at 16.

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