



**Responding to Climate Change and its Impact on the  
Australian Taxi Industry**

**by**

**Professor Des Nicholls  
School of Management, Marketing and International Business  
College of Business and Economics  
Australian National University ACT 0200**

**for the**

**Australian Taxi Industry Association**

**May 2009**

## Table of Contents

	<b>Page</b>
<b>Executive Summary</b>	<b>3</b>
<b>1. Introduction</b>	<b>4</b>
<b>2. Alternative Fuels and Alternative Fuel Vehicles</b>	<b>5</b>
<b>3. Emissions Controls and the Taxi Industry – Overseas Experiences</b>	<b>9</b>
<b>3.1 The European Union Trading Scheme</b>	<b>9</b>
<b>3.1.1 United Kingdom – London</b>	<b>12</b>
<b>3.2 The United States of America</b>	<b>13</b>
<b>3.2.1 New York</b>	<b>13</b>
<b>3.2.2 California</b>	<b>15</b>
<b>3.2.3 San Francisco</b>	<b>16</b>
<b>3.2.4 Boston</b>	<b>17</b>
<b>3.3 New Zealand</b>	<b>17</b>
<b>3.4 Australia</b>	<b>18</b>
<b>4. The Carbon Pollution Reduction Scheme (CPRS)</b>	<b>20</b>
<b>4.1 The Garnaut Review</b>	<b>20</b>
<b>4.2 The Carbon Pollution Reduction Scheme White Paper</b>	<b>21</b>
<b>4.2.1 Scheme Coverage</b>	<b>23</b>
<b>4.2.2 Fuel Tax Arrangements under the CPRS</b>	<b>23</b>
<b>4.2.3 Assistance to LPG, CNG and LNG Users</b>	<b>25</b>
<b>4.2.4 Overview</b>	<b>26</b>
<b>5. Conclusion</b>	<b>27</b>
<b>6. Acknowledgement</b>	<b>28</b>

## Executive Summary

The impact of climate change has become a world wide concern, particularly in developed and developing countries, with different countries responding in different ways to this challenge, or not at all. This review considers the response to climate change issues, including the introduction of emissions trading schemes, from the point of view of the taxi industry.

To effectively reduce carbon footprints, new approaches have to be adopted which include significant research and development relating to new technologies in the case of motor vehicles and alternative (non-oil based) fuels. Significant progress has been made, and continues to be made, in the development of hybrid (electric/petrol) vehicles, electric vehicles and, to a lesser extent, vehicles operating on alternative fuels such as compressed natural gas and hydrogen.

A number of developed countries, including those comprising the European Union and the United States of America, have responded, either totally or partially, to the need to reduce carbon dioxide (and other gas) emissions. In the case of the taxi industry, cities which include New York, San Francisco and London have, individually, been active in reducing carbon dioxide pollution. Within Australia the Victorian and Western Australian Governments have offered some (limited) incentives to encourage the introduction of hybrid taxis into fleets while some individual taxi operators (eg in Cairns) have themselves introduced hybrid vehicles into their fleet.

The Australian Government, in March 2009, introduced five Bills into the Federal Parliament aimed at introducing a Carbon Pollution Reduction Scheme (CPRS) from 1 July 2010<sup>1</sup>. These Bills, which resulted from the Government White Paper proposing a CPRS, will allow for some relief (for the taxi industry) as a result of expected increases in the cost of fuel. This will be in the form of a reduction in fuel tax, or an equivalent CPRS fuel credit in the case of LPG, the level of which will be reviewed on a six monthly basis, over the first three years of the Scheme.

With the introduction of a CPRS, new technologies will impact on the type of acceptable vehicles to be used as taxis, as well as the introduction of alternative fuel systems. While lobbying by business and industry, and opposition from some politicians, may delay the introduction of an effective CPRS, the taxi industry, in certain regions, has accepted that this will happen and has moved in a positive manner ( through the introduction of hybrid vehicles into fleets, for example).

As the impact of the CPRS will, over time, put increasing pressure on the industry to move towards significant reductions in carbon production, and carbon neutrality in the case of some groups, it must be undertaken in such a manner that the associated additional costs of doing so are spread equitably across all relevant stakeholder groups.

---

<sup>1</sup> On 4 May 2009 the Government announced that the introduction of the CPRS would be delayed one year to commence on 1 July 2011.

## 1. Introduction

This report is aimed at reviewing trends and experiences relating to the introduction of emissions trading schemes (ETS)/carbon pollution reduction schemes (CPRS) as they relate to the transport industry in general, and the taxi industry in particular. It will also review the current situation in Australia, taking into account the Commonwealth Government's approach and timetable with respect to the introduction of a CPRS.

Technological advances, combined with a need to address concerns relating to climate change, have resulted in the motor industry looking at improvements to traditional petrol and diesel propelled vehicles. These will be considered along with the prospects for alternative fuels for vehicles, and their potential for the taxi industry, will also be reviewed.

Given the Australian Government's climate change agenda, it will be argued that the industry has been pro-active, and will continue to be so, in addressing the issue of reducing carbon dioxide emissions into the atmosphere through the operation of taxis. Any costs incurred, both recurrent and capital, in adjusting to meet future carbon reduction targets, must be allocated appropriately in order to maintain an affordable taxi industry which will meet future emission reduction targets.

The Commonwealth Government Department of Climate Change website<sup>2</sup> states that its approach to climate change is 'to:

- reduce greenhouse pollution in Australia in the short and long term
- work with the international community to develop a global response that is effective and fair
- prepare for the climate change that we cannot avoid.'

During 2008 the Federal Government commissioned research and reports relating to climate change so as to determine a way forward for Australia in reducing its carbon footprint. In July 2008 the Government released its Green paper<sup>3</sup> and called for submissions/comments on that report. The Australian Taxi Industry Association made a submission to this Green Paper<sup>4</sup>, addressing issues relating to the impact of a carbon pollution reduction scheme on the taxi industry.

The Government commissioned Garnaut Climate Change Review presented its final report to the Government on 30 September 2008.<sup>5</sup> It followed the release of the Draft and Supplementary Draft Reports, and provided recommendations on the policy options for Australia to most effectively respond to climate change. On 30 October 2008 the Government released a comprehensive report<sup>6</sup> which

---

<sup>2</sup> [www.climatechange.gov.au](http://www.climatechange.gov.au)

<sup>3</sup> *Carbon Pollution Reduction Scheme Green Paper*. (July 2008). See [www.climatechange.gov.au](http://www.climatechange.gov.au)

<sup>4</sup> See Submission No. 0221 at [www.climatechange.gov.au/greenpaper/consultation/submissions.html](http://www.climatechange.gov.au/greenpaper/consultation/submissions.html)

<sup>5</sup> See [www.garnautreview.org.au/CA25734E0016A131/pages/draft-report](http://www.garnautreview.org.au/CA25734E0016A131/pages/draft-report)

<sup>6</sup> *Australia's Low Pollution Future: The Economics of Climate Change Mitigation*. (October 2008). See [www.treasury.gov.au/lowpollutionfuture/report/downloads/ALPF\\_consolidated.pdf](http://www.treasury.gov.au/lowpollutionfuture/report/downloads/ALPF_consolidated.pdf)

contained Treasury's detailed modelling of 'the costs and opportunities of acting decisively to meet the challenge of climate change.'

The Commonwealth Government White Paper, 'Carbon Pollution Reduction Scheme: Australia's Low Pollution Future', was released on 15 December 2008. This paper outlines the final design of the CPRS and decisions on other climate change programs.

A CPRS already operates in a significant number of European Union member states. In the US, President Obama has committed to introducing a scheme aimed at pollution reduction. Twenty seven states and provinces in the US and Canada are already introducing schemes to reduce carbon pollution. Japan is also considering introducing a scheme. New Zealand passed legislation implementing its scheme in September 2008. While the recently elected New Zealand government has indicated it will review the design of the New Zealand scheme by late 2009, it has confirmed that it is committed to the introduction of emissions trading.

The reduction of vehicle emissions, both now and into the future, is very much dependent on the current/future technology available to achieve this. The next section will review the current 'state of the art' with respect to advances in the development of vehicles aimed at reducing/eliminating carbon, and other, emissions. Overseas experiences/progress will then be discussed, prior to outlining the proposed way forward in Australia.

## **2. Alternative Fuels and Alternative Fuel Vehicles**

The United States Environmental Protection Agency (EPA) believes that cars, trucks and other mobile sources account for almost a third of the total air pollution in the US. The EPA established vehicle emission standards for cars and trucks in the early 1970's and since then, as technology has advanced, these standards have been made more stringent.

An article in the Taxi Limousine Car Service magazine in November 2008<sup>7</sup> by Hal Morgan, Executive Vice President of the Taxi Limousine Paratransit Association (TLPA), has indicated that the TLPA is developing an in depth paper covering the issues surrounding alternative fuel vehicles to assist its members in making 'informed buying decisions'<sup>8</sup>. In the US the Alternative Fuels and Advanced Data Centre (AFDC), sponsored by the US Department of Energy, provides a wide range of information and resources to enable the use of alternative fuels, in addition to other petroleum reduction options such as advanced vehicles, fuel blends, and fuel economy<sup>9</sup>.

---

<sup>7</sup> See [http://www.tlc-mag.com/tlpa\\_nov08.html](http://www.tlc-mag.com/tlpa_nov08.html)

<sup>8</sup> The remainder of this Section of the paper draws heavily on the significant research undertaken and reported by Hal Morgan in the article produced in the TLC (Taxi, Limousine, Car Service) magazine.

<sup>9</sup> See <http://www.afdc.energy.gov/afdc>

Alternative fuels are derived from resources other than petroleum. Such fuels include<sup>10</sup>:

- Ethanol, which is produced from corn and other crops and produces less greenhouse gas emissions than conventional fuels;
- Biodiesel which is derived from vegetable oils and animal fats. It usually produces less air pollutants than petroleum based diesel;
- Natural gas which is a fossil fuel that generates less air pollutants greenhouse gases than conventional fuels;
- Propane, also called liquid petroleum gas (LPG), which is a fossil fuel that generates less harmful air pollutants and greenhouse gases<sup>11</sup>; and
- Hydrogen, which can be derived from fossil fuels (such as coal), nuclear power, or renewable resources, such as hydropower. Fuel cell vehicles powered by pure hydrogen emit no harmful pollutants.

US Federal legislation<sup>12</sup> defines the following fuels as alternative fuels;

- Pure methanol
- Ethanol, and other alcohols,
- Blends of 85% or more with gasoline,
- Natural gas and liquid fuels domestically produced from natural gas
- Liquefied petroleum gas (propane) (LPG),
- Coal derived liquid fuels,
- Hydrogen,
- Electricity,
- Pure biodiesel (B100),
- Fuels, other than alcohol, derived from biological material, and
- P-Series fuels<sup>13</sup>.

In addition the Department of Energy (DOE) is authorised to designate other fuels as alternative fuels provided that the fuel is substantially non-petroleum, yields substantial energy security benefits, and offers substantial environmental benefits.

The legislation has changed as technological advances have been made, and would be expected to do so into the future. Indeed in January 2008 Section 301 of the EP Act was amended allowing alternative fuel vehicles to include hybrid electric vehicles, fuel cell vehicles, and advanced lean burn vehicles.

As the Executive Vice President of the TLPA has identified in his article, the current choice of alternative fuel vehicles currently on the road in the US include:

### **E-85 Flexible Fuel Vehicles**

E-85 is a mixture of 85% ethanol and 15% gasoline (petrol) which produces fewer emissions than petrol. In the US flexible fuel vehicles can run on either E-85 or gasoline, and in that country E-85 is significantly cheaper than regular unleaded

---

<sup>10</sup> See <http://www.fueleconomy.gov/Feg/current.html>

<sup>11</sup> LPG is produced from natural gas wellhead processes. It is also produced from petroleum refining.

<sup>12</sup> The *Energy Policy Act* (EP Act) of 1992

<sup>13</sup> P-series fuels are a set of renewable fuels that can substitute for gasoline. They are a mixture of ethanol, methyltetrahydrofuran, pentanes plus, with butane. Approximately 35% of the blend is, or can be created from waste products of other industrial processes.

fuel. While it has a higher octane than gasoline, so that vehicles can be tuned for high performance, fuel mileage is lower compared to gasoline and diesel (by 10%-15%).<sup>14</sup>

A further issue relating to the supply of E-85 is that the majority of ethanol is currently derived from corn and some analysts believe its increased production has contributed to an increase in food prices. However (as the TLPA article indicates), new technologies will allow for production from biomass facilities.

### **Hybrid Electric Vehicles**

There are currently three types of hybrid vehicles;

- Single mode hybrids that are electrically powered at low speeds and gasoline (petrol) powered at high speeds.
- Two mode hybrids which feature low and high speed electric variable transmissions. That is there are two sets of gears, one for the internal combustion engine and the other for the electric engine. This results in improved fuel economy in both city and highway driving and are adaptable to gasoline, diesel or E-85 engines regardless of the cylinder configuration.
- Plug in hybrids which feature a large, high capacity battery that can be recharged by traditional hybrid methods and by plugging into a household circuit.

Most current hybrids (including the Toyota Prius and, in the US, the Ford Escapes) are of the single mode type, and are very efficient in stop and go city driving. However they cannot compete with the mileage of traditional petrol or diesel alternatives in highway driving as the battery adds considerable weight to the vehicle.

### **Biodiesel Fuel Vehicles**

Biodiesel fuel is manufactured from vegetable oils, animal fats, or recycled restaurant greases. It can be used in its pure form (B100) or as a blend with petroleum diesel (B20, which is 20% biodiesel and 80% petroleum diesel). B20 is the most common biodiesel blend in the US.

B100 is biodegradable and produces less air pollutants than petroleum based diesel. It can be used in any diesel engine with little or no modifications. The bio portion is produced from non-petroleum, renewable resources. However in the US it is less available than gasoline and diesel, it has lower fuel economy and power (10% lower for B100 and marginal for B20), is more expensive than regular diesel and B100 is not suitable for use at low temperatures.

### **Gas Fuel Vehicles**

---

<sup>14</sup> In the US only about 1 in 170 public service stations sell E-85, with retail gas outlets hesitant to invest the thousands of dollars to add E-85 capacity. Saab offers BioPower engines in both its 9-3 and 9-5 range of models that run on E-85.

Natural gas is a fossil fuel comprised mostly of methane. It burns cleaner, more efficiently and completely than gasoline or diesel fuel and produces far less toxic pollutants and greenhouse gas emissions.

There are two main natural gas fuel types: compressed natural gas (CNG) and Liquefied Natural Gas (LNG). In the case of CNG, in the US there are currently very few filling stations. However a newly developed fueling appliance developed by a company partly owned by Honda allows drivers to fill their vehicle using the natural gas they use to heat their homes<sup>15</sup>.

There is a 30-40% reduction in greenhouse gas emissions with CNG powered vehicles. CNG has a higher octane than gasoline so vehicles can be tuned for better performance. CNG vehicles require five times more fuel storage space than conventional gasoline driven vehicles (LNG requires twice as much space). As a result the range per gas tank for CNG powered vehicles is usually limited to between 270 km and 360 km. This limits its use for road trips, particularly given the current very limited refilling options. Currently there are fewer than 200,000 CNG vehicles in the US, many are fleets owned by governments and corporations.

LPG is the third most used vehicle fuel behind gasoline and diesel. It is readily available, has clean burning qualities and produces up to 20% fewer toxic pollutants and greenhouse gases than gasoline (petrol) vehicles. No LPG vehicles have been produced in the US since the 2004 model year, though gasoline and diesel vehicles can be readily retrofitted, as is the case in Australia.

It is of interest to note that the majority of taxis, particularly in the major cities in Australia, have been retrofitted to run on LPG. Currently this places the Australian taxi industry well ahead of taxi industries in many overseas countries when it comes to greenhouse gas reduction.

### **Hydrogen Powered Fuel Cell Vehicles**

Hydrogen powered fuel cell vehicles have been in development for many years, with many major vehicle manufacturers researching, developing and testing concept and test fleet vehicles.<sup>16</sup> Such vehicles use a sophisticated electrochemical energy conversion device similar to a battery, with the power being put into the wheels via an electric motor. The fuel cell converts hydrogen and oxygen into water and the process produces electricity.

Despite the appeal of hydrogen fuel cell cars an affordable, commercially available model is not likely to be available in the near future. However Honda leased the first ever commercially available hydrogen fuel cell powered sedan to consumers in the US and Japan in July 2008. This vehicle is a completely new vehicle designed to utilise a hydrogen fuel cell as its sole power source. Honda expects the majority of the new fleet will initially be leased in Southern California, the only region in the US with enough hydrogen refueling stations to

---

<sup>15</sup> The appliance costs \$US4,000 and the installation cost is a further \$US1,500.

<sup>16</sup> Manufacturers who have hydrogen fuel cell vehicles in various stages of development include BMW, Chevrolet, Honda, Mazda, Audi, Dodge, Ford, Mercedes, Toyota and Volkswagen.



allow widespread daily use of the car. This new vehicle, the FCX Clarity, has a driving range of 450 km. Honda plans to initially offer three year lease arrangements on 200 FCX Clarity models.

Some small countries have been active in encouraging the development of electric powered vehicles. Countries where driving distances are relatively short alleviates the main concern associated with electric vehicles limited range. Israel is one of these where 90% of car owners drive less than 70 km a day and the country's three largest cities are within 160km of each other<sup>17</sup>. In Denmark where driving distances are also relatively short, it is proposed that electric cars could be plugged in for recharging at particular spots and that the energy will be generated from renewable wind power.

What is clear from this overview is that significant progress is being made on many independent fronts in the development of alternative fuel vehicles, all aimed at reducing pollutants and greenhouse gases. It is reasonable to expect that as technologies continue to advance alternative fuels will, over time, become increasingly prevalent globally in the taxi industry. To some degree this has already commenced with the introduction of hybrid vehicles into some taxi fleets.

### **3. Emissions Controls and the Taxi Industry – Overseas Experiences**

#### **3.1 The European Union Emissions Trading Scheme.**

During the last decade climate change has become a significant global issue, with different countries responding in different ways, or not at all. The introduction of pollution reduction measures by the European Union (EU) led to the introduction of an emissions trading scheme (ETS) which came into force on 25 October 2003. Phase I of the EU ETS began on 1 January 2005. In the first phase, from 2005-2007, this trading scheme covered the 'trading sectors'<sup>18</sup> and was designed as a learning phase in which policy makers and scheme participants 'could familiarise themselves with the rules and realities of trading emissions reduction allowances'.<sup>19</sup> Phase II is to run from 2008-2012, with phase III commencing in 2013.

It has been recognised that while the EU ETS has performed well on the level of compliance, it has had difficulty in establishing a robust carbon price. For the first two phases the EU-wide cap was set as an aggregate of individual member state caps agreed with the European Commission. Data from the first year showed that the overall emissions were lower than had been projected, and that there were more allowances than emissions, resulting in a surplus of allowances and a collapse of the carbon allowance price. As of 31 May 2007 the EU allowance had fallen to €0.29, down from €30 in April 2006.

---

<sup>17</sup> The price of the car will be competitive through a generous tax subsidy by the Israeli government.

<sup>18</sup> 'Trading Sectors' refers to power generation, mineral oil refineries, coke ovens, ferrous metal processing, cement, glass, ceramics, and pulp and paper.

<sup>19</sup> *Analysis paper on EU Emissions Trading Review Options*. (September 2007). UK Office of Climate Change. See [www.defra.gov.uk](http://www.defra.gov.uk)

It was observed that this dramatic drop could have been as a result of installations abating emissions more quickly than expected, making their emissions lower than forecast (unlikely), or countries may have over-estimated their emissions by overestimating forecast growth (ie giving out allowances to cover forecast growth which didn't actually occur). For Phase II the Commission has revised downwards many of the caps in the National Allocation Plans submitted by member states.

In June 2007 the Council of the European Union, as its contribution to a global and comprehensive post-2012 agreement, endorsed its commitment to achieve at least a 20% reduction of greenhouse emissions by 2020 compared to 1990, to be increased to a 30% reduction by 2020 compared to 1990 provided other developed countries commit themselves to comparable emission reductions and economically more advanced and developing countries contribute adequately according to their respective capabilities.<sup>20</sup> The Council recognised that the setting of caps for member states needs to be more transparent and predictable, and that there is also a need to explore ways of strengthening and further simplifying, where possible, the rules on monitoring and reporting. In January 2008 the European Commission published a package of proposals along these lines for tackling climate change and delivering a low carbon economy to Europe.

In the case of the United Kingdom (UK), the Government held the first UK auction in the EU ETS in November 2008, successfully distributing approximately four million allowances<sup>21</sup>. All bids which had been accepted at the clearing price were allocated approximately 17.5% of the amount bid for. With the auction clearing price set at €16.15 per EUA (EU allowance, equivalent to one tonne of carbon dioxide), competitive bids made above the clearing price were allocated in full, while bids made at prices below the clearing price were rejected.

It is notable that in Phase II, EU Governments must make sure that the total amount of allowances issued to installations is less than the amount that would have been emitted under a 'business-as-usual' scenario. In addition member states plans must also take account of emission levels in other sectors not covered by the EU ETS and address these within its own domestic policies. This includes transport, which is responsible for an estimated 21% of EU greenhouse gas emissions, households and small businesses (17%), and agriculture (10%)<sup>22</sup>.

At present 14 EU member states, including the United Kingdom, levy motor vehicle taxes that are totally or partially based on a car's carbon dioxide emissions and/or fuel consumption. Types of taxes include a fuel consumption tax, adjusted

---

<sup>20</sup> See [www.consilium.europa.eu/ueDocs/cms\\_Data/docs/pressData/en/envir/95032.pdf](http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/envir/95032.pdf)

<sup>21</sup> See

[www.businesswire.com/portal/home/permalink/?ndmViewId=news\\_view&newsId=20081119005546&newsLang=en](http://www.businesswire.com/portal/home/permalink/?ndmViewId=news_view&newsId=20081119005546&newsLang=en)

<sup>22</sup> See [http://en.wikipedia.org/wiki/European\\_Union\\_Emission\\_Trading\\_Scheme](http://en.wikipedia.org/wiki/European_Union_Emission_Trading_Scheme). It is not clear how accurate such estimates may be. While the EU estimates that transport is responsible for 21% of GHG emissions, the US Environmental Protection Agency believes that cars, trucks and other mobile sources account for almost a third of the total air pollution in the US.

registration taxes based on carbon dioxide emissions, and an annual circulation tax based on fuel consumption.<sup>23</sup>

While member countries in the EU have imposed regulations relating to vehicle emission controls through the EU Parliament, in other countries vehicle emission controls and how they affect the taxi industry have generally been addressed and implemented legislatively at a state and local government level. Many of the approaches adopted have been dependent on the available technology at the time. Consequently as technology changes/improves more options (will) become available to reduce vehicle emissions. This has been reflected in some regulations (eg in the case of the EU) which have set goals to be achieved into the future as vehicle technology improves as a result of the introduction of alternative fuels aimed at reducing pollution and greenhouse gases.

EU regulations, published as Directives, have the force of law within EU member states. In cooperation with the oil and motor vehicle industry the EU Commission devised an auto-oil program to reduce exhaust gas emissions. This program featured Directives dealing with the quality of petrol and diesel fuel and measures to tackle air pollution from vehicle gas emissions.<sup>24,25</sup> These Directives have had an impact on the taxi industry within EU countries.

One Directive (98/70) introduced new environmental specifications applicable to petrol and diesel fuels (including the banning of leaded petrol in 2000), and provided for progressive movements in the environmental quality of unleaded petrol and diesel fuel. Directive 98/69 laid down differing limit values for emissions by petrol and diesel cars from 2000 to 2005. Sulphur free diesel and petrol fuels ( $\leq 10$  ppm of sulphur) had to be available from 2005, and become mandatory from 2009. This Directive also permitted tax incentives to be granted by member states to encourage advanced compliance with new limit values (Euro 3/4 emissions standards).

Euro 5/6 emissions standards legislation, to be introduced in the period 2009/2014, includes a particle number emission limit, in addition to particle mass-based limits. Following the initial legislation, these limits were strengthened in 2007. The stricter limits relate to pollutant emissions for light road vehicles, particularly for emissions of nitrogen particles and oxides, and their specific replacement parts. As soon as Euro 5 and Euro 6 standards come into force, member states must refuse the approval, registration, sale and introduction of vehicles that do not comply with these emission limits.

At this stage, while the EU emissions trading scheme does not include road transport (or taxis), as has been indicated however, the EU has introduced enforceable regulations relating to the quality of petrol and diesel to be used, as well as requirements relating to the volume and mass of pollutant particles emitted by vehicles. Member nations can address this industry through internal (to that

---

<sup>23</sup> See [http://www.acea.be/images/uploads/files/20090202\\_CO2\\_tax\\_overview.pdf](http://www.acea.be/images/uploads/files/20090202_CO2_tax_overview.pdf). This list was updated in February 2009.

<sup>24</sup> See <http://www.adb.org/vehicle-emissions/General?Standards-eu.asp>

<sup>25</sup> See <http://europa.eu/scadplus/leg/en/lvb/128186.htm>

country) domestic policies. Even within a country, a specific segment of an industry can address these issues, as is the case of the Black Cabs in London.

### 3.1.1 United Kingdom-London

The key air pollutants from road transport in London are oxides of nitrogen and particulate matter. The London taxi fleet was estimated to be responsible for 12% of the oxides of nitrogen and 24% of the particulate matter from road transport emissions in central London. The mayor stated that London had the worst air quality in the UK and that air pollution was estimated to cause 1600 premature deaths each year in London, and that taxi drivers were exposed to more pollution because they spend long hours on the road each day and tend to operate in the most polluted areas, such as central London and Heathrow.

The Transport for London Public Carriage Office was given the task of implementing an emissions strategy for the taxi industry in London which was in the form of a three phase (extending over 3 years to 30 June 2007) approach requiring the fitting of approved emissions reduction equipment or approved conversion to run on alternative fuels such that they meet Euro 3 emissions standards in nitrogen oxides and particulate matter.<sup>26,27</sup> No vehicle was to be licensed after 31 December 2007 unless it was of Euro 3 emission levels or better.

To assist in the funding of these initiatives, with effect from 2 April 2005 an environmental charge of 20p a journey was introduced and was to apply for the following three years. The purpose of this charge was to:

- Enable drivers to recover the full cost of emissions reduction equipment they have had to fit to cabs they own;
- Enable drivers to pay the increased rental proprietors may charge in order that they can recover the cost of emission reduction equipment they had to fit to cabs they rent out;
- Contribute to the cost of converting to LPG or other alternative fuel which produces Euro 3 emissions standards;
- Assist drivers to purchase a new or newer cab or alternative fuel which produces Euro 3 emissions;
- Give some financial recompense to those who have already invested in a cab with compliant Euro 3, or better, emissions standards.

In March 2005 the Public Carriage Office amended the deadlines associated with the three phases, delaying their implementations by twelve months, with the third phase to be implemented by 30 June 2008. No taxi would be licensed after 30 June 2008 unless it was of Euro 3 emission levels or better.

In the same month the Radio Taxis Group, with a fleet of over 3,000 London black cabs and 80 executive cars, announced that it was going carbon neutral. This meant that the Group was to embark on a program to measure and reduce its carbon dioxide emissions, and to offset the remaining unavoidable

---

<sup>26</sup>Transport of London PCO Notice 32/04

<sup>27</sup> See <http://www.tfl.gov.uk/assets/downloads/businessandpartners/emissions-strategy-for-taxis.pdf>

emissions through renewable energy projects in Sri Lanka and Bulgaria and sustainable forestry projects in the UK and Germany. It was estimated that the projects would save and absorb some 24, 000 tonnes of carbon dioxide at a cost in the order of £100,000 per year.

In June 2008 the mayor of London announced funding of £1m to trial low carbon technology in London's taxi fleet. The funding is to be provided jointly by Transport of London (TfL), through its Climate Fund and Cenex, the UK's National Centre of Excellence for Low Carbon and Fuel Cell Technologies. TfL's Public Carriage Office (PCO) is keen to work with motor manufacturers to introduce taxis with lower fuel consumption and carbon dioxide emissions as part of its carbon reduction strategy. The funding is to be used to introduce a low carbon taxi demonstration project in London and the PCO has issued a contract notice to the Official Journal of the European Union inviting motor manufacturers to register their interest in supplying low carbon taxis.

Other city councils in the UK are also considering exhaust emission measures for taxis and private hire vehicles.<sup>28</sup>

## **3.2 The United States of America**

In the United States (US) progress with respect to emissions controls in the motor vehicle industry, including taxis, has been fragmented as a result of the previous (Bush) administration being tardy with respect to effectively addressing climate change and emission control measures at a Federal level. Despite this many State governors and local city council mayors have instigated procedures to reduce greenhouse gas emissions from vehicles. Up until now this has been difficult since such controls have really been controlled by Federal legislation, rather than state or city council legislation/regulation.

### **3.2.1 New York**

In May 2007 the mayor of New York announced that New York's yellow taxis would go entirely hybrid within five years, and all new taxis would have to meet emissions and fuel consumption standards. At the time of the announcement there were 375 fuel efficient hybrid vehicles among the 13,000 taxis on New York's streets. Under Mayor Bloomberg's plan that number would increase to 1,000 by October 2008 and would grow by about 20% each year until 2012, when every yellow cab would be a hybrid. By July 2008 there were more than 1,300 hybrid taxis in operation in New York.

Besides making the yellow cab fleet entirely hybrid within five years, the city would require all new vehicles entering the fleet after 2008 to achieve a minimum consumption of 10km a litre (10 litres per 100 km). A year later, all new vehicles must achieve a consumption rate of 13km a litre (7.7 litres per 100km) and must be hybrid.

---

<sup>28</sup> For example, see <http://cmis.derby.gov.uk/CMISWebPublic/Binary.aspx?Document=10211>

The New York City Taxi and Limousine Commission voted through a regulation in December 2007 to achieve these targets by 2012, with the exception of those vehicles designed for disabled accessibility. (Because all taxicabs must be replaced every three to five years under the city rules, the new regulations would have resulted in a virtually all hybrid fleet by 2012).

In February 2008 Mayor Bloomberg unveiled new fuel emissions standards for the city's 10,000 black taxis<sup>29</sup>, that would have compelled taxi owners to switch to hybrid technology within 5 years. In a lawsuit filed in September 2008 by taxi operators representing the owners of 29 large fleets that control 3,500 yellow cabs (about a quarter of the fleet) in New York, it was argued that the hybrid vehicles, which were more fuel efficient, were not designed to withstand the heavy wear and tear that cabs must endure. They also argued that fuel economy and vehicle emissions standards were the principal responsibility of the federal government.

In a ruling handed down in October 2008, a federal judge blocked New York city from requiring owners and operators of yellow cabs to switch to more fuel efficient hybrid vehicles that operate on a mixture of gasoline and electricity. The judgment argued that the new regulations relating to fuel economy were delegated to federal agencies (under the Energy Policy and Conservation Act). The mayor noted that

‘The decision is not a ruling against hybrid cabs, .... rather a ruling that archaic Washington regulations are applicable and therefore New York City, and all other cities, are prevented from choosing to create cleaner air and a healthier place to live.<sup>30</sup> .... We are very disappointed in the decision and we are exploring our options.’

On 26 March 2009 the New York City Taxi and Limousine Commission (TLC) approved a package of lease cap<sup>31</sup> modifications that will provide significant incentives for the purchase and operation of clean air vehicles as New York taxi cabs.<sup>32</sup> The program, to come into effect within 30 days, allows fleet owners to increase the lease cap charged to drivers in clean air vehicles by \$US3 per shift, which will offset the increased cost of purchasing a hybrid or similar clean-fuel vehicle. It is anticipated that the driver, while paying the increased lease cap fee, will achieve an average fuel saving of at least \$US15 per shift, potentially adding up to as much as \$US5,000 per year. The incentive is expected to generate approximately \$US2,000 per year, per clean vehicle, for fleet owners.

To further encourage the use of cleaner more efficient taxis, these new leasing regulations decrease the lease cap fee an owner can charge a driver by \$US4 per shift (decreasing in \$US4 increments to a maximum of \$US12 after two years) if

---

<sup>29</sup> Black taxis service mostly corporate clients and are responsible for an estimated two per cent of New York city's transportation related emissions.

<sup>30</sup> See <http://cityroom.blogs.nytimes.com/2008/10/31/judge-blocks-hybrid-taxi-requirements/>

<sup>31</sup> The TLC regulates ‘lease caps’, the maximum amount a fleet or taxi owner may charge a driver for the use of a taxi. Current lease caps allow fleets to charge a range of between \$US105 (for all day shifts) and \$US129 (for weekend night shifts).

<sup>32</sup> See <http://www.ens-newswire.com/ens/mar2009/2009-03-27-091.asp>

the vehicle is a Crown Victoria or other non-fuel efficient vehicle. The decrease is estimated to cost fleet owners approximately \$US2,830 per vehicle during the first year, \$US5,660 in the second year, and maximize at approximately \$US8,500 per vehicle, per year, at the start of the third year.

This incentive strategy follows the judicial decision in October 2008 that prohibited the city from mandating the use of cleaner, more fuel efficient taxis. It will provide financial incentives for the purchase of fuel efficient taxis and will speed up the phase-out of older inefficient taxis.

### **3.2.2 California**

In 2002 California adopted the world's first rules to reduce greenhouse emissions for cars. These regulations, approved by the California Air Resources Board (CARB), required the auto industry to cut exhaust emissions from California's cars and light trucks by 25% (and for larger trucks and sports utility vehicles (SUVs) by 18%).

Under the regulations the industry had until 2009 to begin introducing cleaner technology, and had until 2016 to meet the new exhaust emissions standards. Collectively the new vehicles, compared to 2002 levels, are to emit 22% fewer greenhouse gases by 2012 and 30% fewer by 2016.<sup>33</sup> Since California represents 10% of the national auto market, the auto industry often overhauls all of its cars to meet California standards.

Because it began regulating pollution before the federal government, California was the only state able to set its own pollution standards. Other states were able to adopt either the federal standards or California's. Under the Clean Air Act, however the state requires, from the federal Environmental Protection Agency (EPA) a federal waiver to implement the regulations. In 2003 this agency stated that carbon dioxide, one of the greenhouse gases, was not a pollutant and it did not have the power to regulate it. California and several other states filed a petition aimed at reversing the decision.

After waiting for two years for a decision, in late 2007 the EPA rejected California's bid to be the first in the nation to apply greenhouse gas limits to cars trucks and SUVs by refusing a state waiver that would have allowed those restrictions to take place. The EPA argued that the Bush administration was 'moving forward with a clear national solution, rather than a confusing patchwork of state rules'<sup>34</sup>. The Agency cited energy legislation signed into law by the President in December 2007 that required automakers to achieve an industry wide average fuel efficiency for cars, SUVs and small trucks of 35 miles per gallon by 2020. This is equivalent to consumption rate of 7.1 litres per 100 km.

This decision was seen as a setback for California and 16 other states seeking new car regulations to achieve their anti-global warming goals, and a victory for the automakers who claimed that they would have been forced to reduce their

---

<sup>33</sup> See <http://www.pbs.org/now/science/caautoemissions2.html>

<sup>34</sup> See <http://www.msnbc.msn.com/id/22332983>

selection of vehicles in those states who adopted California's standards. It was the first time the EPA has fully denied California a Clean Air Act waiver since Congress gave California the right to apply for such waivers in 1967.

With the arrival of the Obama administration, the president declared on 26 January 2009 that California's pioneering vehicle emissions controls, blocked for years by the Bush administration, 'will help launch a national effort to tackle global warming'<sup>35</sup>. President Obama has ordered a review of the state's request for a waiver under the Clean Air Act, allowing California to enforce strict limits on tailpipe emissions. At least 14 other states have adopted the California standard, with 4 more in the process, representing almost half the nation's population.

Political leaders on all sides expect the review by the EPA will lead to approval of the California standard in the near future. The chair of the CARB, who will enforce the standard, believes that approval will come by May 2009 at the latest.

In announcing the review, President Obama also directed the Transportation Department to come up with guidelines, by March 2009, on steps to reach an average fuel efficiency of 35 miles per gallon (7.1 litres per 100 km) for all passenger vehicles by 2020, to comply with the 2007 law. Vehicle manufacturers prefer a single fuel efficiency regulation approved by congress and administered by the federal transportation department that is based on vehicle attributes rather than emissions. While the Transportation department goal seeks to raise fuel efficiency by 40 per cent by 2020, the California law would exceed that mandate years sooner.

### **3.2.3 San Francisco**

The San Francisco Taxicab Commission was created in 1998 and took over regulatory and administrative duties previously held by the Police Commission. Legislation was introduced in April 2008 aimed at reducing greenhouse gas emissions in the San Francisco taxi fleet by 20% from 1990 levels by 2012. It is estimated that the fleet is emitting over 100,000 tons per year; this legislation is aimed at reducing it to 57,000 tons per year, which is less than 1990 levels.

This goal is to be achieved through a combination of mandates and incentives. The mandate is for all taxis to attain an average emission rate of no more than 38 tons per year per vehicle for all vehicles placed into service after 1 July 2008. The incentives are a combination of fuel cost savings, gate fee<sup>36</sup> surcharges and other grants and credits.

The legislation allows all taxi companies, from 7 April 2008, to charge an average gate fee of \$96.50 (which includes a \$5 increase) for a shift of 10 hours or longer.<sup>37</sup> In addition, any vehicle rated as a super ultra low emission vehicle (SULEV) or better by the CARB<sup>38</sup> will qualify for an additional \$7.50 per shift.

---

<sup>35</sup> See [http://www.mercurynews.com/ci\\_11559208?nclink\\_check=1](http://www.mercurynews.com/ci_11559208?nclink_check=1)

<sup>36</sup> The gate fee is the fee that the driver pays to the taxicab owner per shift to drive the taxi.

<sup>37</sup> The gate fee cap is prorated at \$9.65 per hour for shifts shorter than 10 hours.

<sup>38</sup> See <http://www.arb.ca.gov.homepage.htm>



Vehicles rated as an ultra low emission vehicle (ULEV) are also eligible for the surcharge if they were in service on 1 January 2008.

Taxi companies in San Francisco must comply with the rules and regulations of the Clean Taxi Program, including applying for the gate fee surcharge incentives, preparation of company specific fleet conversion plans, and continuing to implement overall environmental goals of reduction and elimination of greenhouse gas emissions. The Taxi Commission has been directed to strictly enforce the Clean Taxi Program and has introduced a penalty structure (which commenced in May 2008) to achieve the goals of this program.

### **3.2.4 Boston**

In September 2004 the mayor of the City of Boston announced the start of Boston CleanAir Cabs, a program to replace ordinary taxis with cleaner vehicle technology. In August 2008 it was announced that Boston was to follow the examples set down by New York and San Francisco and that by 2015 all taxis in that city were to be hybrids. Currently 50 of the 1875 taxis are hybrids.

### **3.3 New Zealand**

The New Zealand Government passed legislation to implement its emissions trading scheme in September 2008. The newly elected New Zealand Government has indicated it will review the design of the New Zealand scheme by late 2009, but has reaffirmed its commitment to the introduction of emissions trading.

In New Zealand individual taxi companies have moved to reduce vehicle emissions by moving to alternative fuels, as well as moving to become carbon neutral.

In Wanganui, River City Cabs began running a fleet of 12 Toyota Prius hybrids in 2006, while Matakana based Matakabs have been running hybrid Toyota Prius vehicles since 2007. Green Cabs began operating a fleet of hybrid Toyota Prius taxis in Wellington in November 2007. Green Cabs has 30 hybrid cars in Auckland and Wellington and 8 in Christchurch.<sup>39</sup> Green Cabs also forecasts greenhouse gas emissions from its operations and offsets them to achieve carbon neutrality.

In Christchurch the First Direct taxi company has converted their taxis to fuel efficient, low emission vehicles and are purchasing carbon credits to offset their carbon dioxide. In March 2008 this company formed a new fleet within the company called 'First Direct Eco-Cabs'. Currently the Eco-Cabs fleet consists of all hybrid (petrol/electric) vehicles. First Direct is encouraging all its members (who are self-employed owners/operators) to make the change and join the Eco-Cabs fleet.

Wellington Combined Taxis began trialling a hybrid vehicle in 2007 as part of its attempt to cut vehicle emissions. This has been a successful move and by August

---

<sup>39</sup> See <http://www.taxinews.co.nz>

2008 the company was operating about 20 hybrids. This company also introduced a new rule that from 1 June 2008 it would only bring vehicles into its fleet that are hybrids, LPG or diesel vehicles. The impact of this policy is that the company will have a fleet of environmentally friendlier vehicles within six years. This company has also been working with certification agencies to become carbon neutral, with emissions being measured with the aim of reducing and offsetting them. This carbon emission status is audited and then certified.

As the above indicates, some companies in the New Zealand taxi industry have commenced responding to environmental problems with the aim of reducing its carbon footprint. Individual companies have/are reviewing their vehicle policies, with some also offsetting their carbon dioxide emissions in order to achieve carbon neutrality. Taxi industry deregulation in New Zealand may cause some difficulties in achieving a unified approach to the reduction of carbon emissions.

### **3.4 Australia**

Prior to the Commonwealth Government's move towards a CRPS and a proposed methodology for its introduction, many industries, including the taxi industry, have pre-empted the problems associated with climate change pollution and moved to take positive steps to address the issue. It is of interest to note that while many overseas countries/regions/city councils are moving to encourage taxis to convert to LPG/petrol, in Australia this happened in most major cities many years ago. While the incentives for this have been financial through reduced running costs and government subsidies (LPG does not attract an excise (fuel) tax as does petrol), a spin-off has been a significant reduction in greenhouse emissions when compared to taxis operating solely on petrol.

This has been recognised by the Federal Government which has indicated that vehicles operating on LPG emit around one third less carbon dioxide than petrol driven vehicles.

Like many overseas countries, individual companies and some governments have made a move to further address the carbon footprint created by taxis. This has been in the form of a move to introduce hybrid electric/petrol vehicles into taxi fleets. At present there is only one brand of hybrid vehicle available in Australia which is in use as a taxi, namely the Toyota Prius. This may change in 2010 however when Toyota commences production of hybrid Camry vehicles in Australia.

To date there have been a number of companies/governments who have moved, or plan to move into introducing hybrid vehicles into the taxi industry. These include;

- As reported in July 2008,<sup>40</sup> in Cairns there were 32 Toyota Prius taxis operating with another 8 on order. Each Prius averages around 200,000 km per year. One Prius which commenced service in 2005 has clocked up 550,000 km. According to the owner, in the three years of service the

---

<sup>40</sup> See <http://www.caradvice.com.au/14639/toyota-prius-the-taxi-champion>

Prius has cost half the fuel and maintenance outlay compared to other conventionally powered taxis in the fleet. The car, which has travelled in excess of half a million kilometres, had a battery that recorded a 'low voltage reading' replaced at 500,000 km. Toyota has indicated that another Prius had its battery replaced at 350,000 km. These are the only two Prius cars in Australia to have had battery replacements to date.

- In 2007 the Western Australian Government's Department of Planning and Infrastructure (DPI) announced a new initiative to introduce up to 10 hybrid vehicles into Perth's taxi fleet. Each of the participants in this 'Green Taxi Trial' will benefit from a \$15,000 government funded grant and a 20% reduction in the lease rate. In introducing this 12 month trial the benefits of using a hybrid taxi were identified, including:
  - major reductions in costs, fuel emissions and noise,
  - no LPG cylinder to partially occupy the available boot space, and
  - special servicing arrangements provided for participating Green taxi drivers.

Vehicles approved under this scheme must have a 5 star rating as published in the Commonwealth Government's *Green Vehicle Guide*, be a new vehicle capable of seating 4 passengers, comply with minimum access requirements, have adequate luggage space and be fitted with taxi equipment. At the moment the Toyota Prius is the only hybrid (petrol-electric) vehicle available in Australia that meets these standards.

The DPI has met the trial quota of 15 Green Taxis. No more monetary grants, towards the cost of the vehicle, are available at this stage. It plans to closely monitor the performance of the 15 Green Taxis for a period of five years.

The initial evaluation results are promising, and as a result the DPI has amended its taxi licensing policy to enable operators to choose a petrol-electric hybrid vehicle as their taxi. The vehicle must be a DPI approved 5 star rated petrol-electric vehicle. Plate lessees will be entitled to a 20% lease subsidy if they choose to use a Toyota Prius hybrid or any other 5 star rated hybrid car as their taxi (with DPI's approval). In addition, the prior requirement for the taxi to be brand new is no longer applicable to receive the lease subsidy.<sup>41</sup>

- In early 2008 the Victorian Premier announced that 50 of the 100 'peak cabs' taxi licences that are granted annually in Melbourne would this year be available for hybrid cars. (Peak cabs are licensed to operate between 3pm and 7am every day – travelling on average 100,000 km a year.) The 'green' taxi licence lease fees are offered at a special rate of \$1,136 per year instead of the \$6,136 fee which is currently paid.

---

<sup>41</sup> See <http://www.dpi.wa.gov.au/taxis/15502.asp>

The first leases for these peak hour hybrid taxis have not been issued yet. However it is anticipated that they will be offered by the Government in April 2009.<sup>42</sup>

- A taxi company began trialling Toyota hybrid taxis in its fleet in Brisbane in 2008, while hire car and limousine service companies in Sydney and Melbourne have introduced hybrids into their fleets.

As the above overview indicates, a number of companies and state governments have been pro-active in moving to trialling alternative fuel cars, in this case the electric/petrol hybrid Toyota Prius. The initial outcomes from the introduction of these vehicles into fleets, particularly in the case of Cairns, have been extremely positive. However it would appear that in the Cairns (Townsville) region the financial incentives to switch to hybrid taxis may have been more attractive given the price (relative to other regions) of unleaded petrol and LPG in that region. As a result, from a financial point of view, a switch to hybrids, or other alternative fuel vehicles, may not be as financially attractive. This has been recognised in both Western Australia and Victoria, for example, where the respective state governments have given added financial incentives to attract a (limited) number of hybrid taxis into their markets.

While the larger fleets in Australia, when compared to their overseas counterparts, have already moved in the right direction through converting taxis to LPG/petrol, the experiences to date indicate that there are significant savings to be made in running costs by moving to hybrid vehicles. These savings will be offset by higher initial capital costs, however. These increased capital costs, in the case of the Western Australia and Victorian programs, have been reduced by the respective governments offering incentives through subsidies (capital and/or lease) to introduce hybrid vehicles as taxis.

## **4. The Carbon Pollution Reduction Scheme**

### **4.1 The Garnaut Review**

The Australian Government, together with state and territory governments commissioned a major review of climate change to examine the impacts, challenges and opportunities of climate change for Australia. This review, headed by Professor Garnaut released its final report in September 2008.<sup>43</sup> During this review public forums were held on a range of topics and over 4,000 submissions were received from community, industry, governments, and academics.

In his final report Professor Garnaut stated that transport systems will change dramatically in the next century, independently of climate change mitigation, due to:

- higher global oil prices,

---

<sup>42</sup> Personal communication with Mr Neil Sach, CEO of the Victorian Taxi Association.

<sup>43</sup> The Garnaut Climate Change Review Final Report. September 2008. See [www.garnautreview.org.au](http://www.garnautreview.org.au)

- research leading to new vehicle technologies (eg electric cars), and
- population growth requiring new housing and transport infrastructure.

The report also stated that these will interact with an emissions price through the market to drive:

- improved emissions-efficiency of vehicles,
- demand for lower-emission modes of transport, like public transport, and
- reductions in travel activity.

The Garnaut report indicated that oil will be the primary driver away from current transport patterns and technologies, but an emissions price will select the adoption of low emission fuels. It also believes that transport emissions will grow more slowly over the next few decades with mitigation, and then fall rapidly after the introduction of a very low emissions technology. Changes in road vehicle technology are expected to account for a large proportion of emission reductions. The Garnaut Review, in the case of transport, proposes that in addition to infrastructure policies, governments should;

- invest in mode shift and compact urban areas,
- reduce and equalise import tariffs on vehicles,
- shift flat charges on vehicles to use-base charges, and
- amend Fringe Benefit Tax provisions on vehicles.

#### **4.2 The Carbon Pollution Reduction Scheme White Paper**

Following the release of Professor Garnaut's initial findings, and prior to the release of his final report, the Australian Government produced a Carbon Pollution Reduction Scheme Green Paper in July 2008. This paper outlined a framework centred around the introduction of a Carbon Pollution Reduction Scheme (CPRS). The Government called for submissions to the Green Paper prior to the production of the White Paper in December 2008. The Australian Taxi Industry Association made a submission to the Green Paper,<sup>44</sup> pointing out that it had, in some states/regions, implemented the use of hybrid vehicles as taxis, as well as being significant users of LPG/petrol powered taxis.

The White paper itself sets out the Government's policy in relation to a medium term target range for national emissions, and the final design of the CRPS. In this paper the Government states that it is committed to meeting its long-term target of a 60% reduction in greenhouse gas emissions from 2000 levels by 2050. It is also committed to a medium term national target to reduce Australia's greenhouse gas emissions by between 5 per cent and 15 per cent below 2000 levels by the end of 2020.

The 5 per cent target represents a unconditional minimum commitment to reduce emissions by 2020, irrespective of the actions of other nations. The 15 per cent target represents a commitment 'to reduce emissions in the context of global

---

<sup>44</sup> See <http://www.climatechange.gov.au/greenpaper/consultation/pubs/0221-australian-taxi-industry-association.pdf>

agreement where all major economies commit to substantially restrain emissions and all developed countries take on comparable reductions to that of Australia'.<sup>45</sup>

Table E.1 of the White Paper summary, referred to above, gives a comparison of Australia's commitments with those of the EU, the UK and President Obama's proposed targets for emissions reductions. This Table is reproduced as Table 1.

**Table 1**

**Comparison of Different Countries Carbon Reduction Targets**

<b>Country</b>	<b>2020 Targets</b>	<b>2020 Per Capita Reduction</b>	<b>2050 Targets</b>
<b>Australia</b>	5%*- 15 % below 2000 levels  (4%-14% below 1990 levels)	27%-34% below 2000 levels  (34%-41% below 1990 levels)	60% below 2000 levels  (60% below 1990 levels)
<b>European Union</b>	20%-30% below 1990 levels	24%-34% below 1990 levels	60%-80% below 1990 levels
<b>United Kingdom</b>	26%-32% below 1990 levels	33%-39% below 1990 levels	80% below 1990 levels
<b>United States (proposal Of President Obama)</b>	Return to 1990 levels	25% below 1990 levels	80% below 1990 levels

\* On 4 May 2009 the Government announced that this target upper level of 15% would be increased to 25%.

When one compares the proposed 2020 reduction targets per capita (compared to 1990 levels), Australia compares favourably with the EU, UK and USA.

The Government's climate change policy is built on three pillars, namely reducing Australia's carbon pollution emissions, adapting to climate change that cannot be avoided, and helping to shape a global solution. The CPRS has been identified by the Government as the primary mechanism through which Australia will seek to meet its emissions reduction objectives.

The Government has determined that it favours an emissions trading scheme, or cap-and-trade scheme, rather than the introduction of a carbon tax. The two approaches can be regarded as different ways of achieving the same objective. A cap-and-trade scheme works by controlling the *quantity* of emissions permitted and allowing the market to set the price. A carbon tax works by controlling the *price* of emissions and allowing the market to determine the quantity of emissions.

---

<sup>45</sup> Page 4 of the White Paper summary. See <http://www.climatechange.gov.au/whitepaper/summary/index.html>

It has been argued by some economists (see Gittins<sup>46</sup>) that in theory a cap-and-trade scheme is slightly more sophisticated because it involves creating a new market for the trading of permits, which facilitates shifting the cost of reducing emissions to those businesses most able to reduce their emissions more cheaply. In his article Gittins states that ‘in practice, however, some economists fear cap-and-trade is too sophisticated. It would be harder to administer than a tax, and the market price of permits could be unstable’.

The Government’s intention, as outlined in the White paper, was to commence an emissions trading scheme, or CPRS, on 1 July 2010. This commencement date has since been delayed one year to 1 July 2011.

#### **4.2.1 Scheme Coverage**

The White Paper proposes that all greenhouse gases included under the Kyoto Protocol will be covered from the scheme commencement. These are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulphur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

The Government has determined that emissions from stationary energy, transport, industrial processes, waste and fugitive emissions from oil and gas production will be covered from scheme commencement. Furthermore it believes that imposing scheme obligations directly at the point where carbon pollution originates creates the clearest possible incentives to reduce emissions. However it recognises that it would be impossible to apply scheme obligations to all emitters, identifying the transport sector as an example where there are many millions of cars that contribute to carbon pollution.

It has been proposed that in general scheme obligations would apply directly to large emitters, that is, to facilities that have direct emissions of 25,000 tonnes of carbon dioxide equivalent per year, or more.<sup>47</sup> Where there are a large number of small emitters, the Government has determined that it is more practical to cover emissions by applying scheme obligations at another point along the supply chain. To cover emissions in the case of fuel use, the Government proposes to apply Scheme obligations ‘upstream’ on fuel suppliers.

Consistent with the target range it has chosen, the Government has decided to set a price cap for five years of \$40 per tonne of carbon dioxide equivalent at scheme commencement, rising at the rate of five per cent per annum.

#### **4.2.2 Fuel Tax Arrangements under the CPRS**

The Australian Government’s White paper which introduces a carbon pollution reduction scheme addresses (in chapter 17) issues relating to fuel tax arrangements under the proposed Scheme. In the case of households and businesses, in order to allow for time to adjust to the Scheme, measures have been outlined for the implementation of transitional arrangements for fuels. As

---

<sup>46</sup> See for example, Gittins, R. *Economists fiddle while climate burns*. Sydney Morning Herald Weekend Edition, 14-15 March 2009.

<sup>47</sup> See <http://www.climatechange.gov.au/whitepaper/factsheets/pubs/012-scheme-coverage.pdf>

identified in the Green paper, it will provide ‘cent-for-cent’ reductions in fuel taxes as a transitional measure. It will also provide transitional assistance to consumers of liquefied petroleum gas (LPG), liquefied natural gas (LNG), and compressed natural gas (CNG).

Unlike other emissions sources, fuels are currently subject to their own tax regime, in the form of an excise tax on certain domestically manufactured fuels and an ‘excise-equivalent’ customs duty on the relevant imported fuels. These include petrol diesel, biodiesel and fuel ethanol. A general fuel tax rate of 38.143 cents per litre applies to these. It is notable that LPG, LNG CNG and certain other fuels are currently outside the fuel tax regime.

The Government will cut fuel taxes on a ‘cent-for-cent’ basis to offset the initial price impact on fuel as a result of introducing the CPRS. For the first three years the Government will assess periodically the adequacy of this measure and ‘adjust the impact accordingly’. This adjustment mechanism will be reviewed at the end of three years.

The Government has determined that the tax cut will be based on the expected rise in fuel prices flowing from the Scheme. As different fuels emit different amounts of carbon when they burn, their prices will increase according to the fuel type. To minimise compliance costs, an across-the-board fuel tax cut will be made, based on the impact of the Scheme on diesel prices. This will provide ‘cent-for-cent’ assistance for diesel users. Basing the fuel tax cut on diesel will ensure that the Government’s ‘cent-for-cent’ commitment is delivered for both diesel and petrol.

The White Paper has indicated that the fuel tax reduction will apply from 1 July 2010<sup>48</sup> to all liquid fuels currently subject to the general 38.143 cents per litre rate. This fuel tax cut will be based on the carbon pollution permit price established in the six months prior to the introduction of the scheme through auctions and market transactions.

The Governments’ policy position on this issue is stated as<sup>49</sup>

### **‘Policy position 17.2**

The Government will initially reduce excise and excise-equivalent customs duty (fuel tax) on 1 July 2010 for all fuels currently subject to the general rate of 38.143 cents a litre. The tax cut will be based on the effect of pricing diesel emissions.<sup>50</sup>

There will be an automatic assessment of the fuel tax rate every six months. This assessment will be based on the average permit price for the previous six months. If the average price exceeds the price used for the previous cut, there will be a further fuel tax cut. Any reductions will take effect on 1 February and 1 August

---

<sup>48</sup> With the one year delay in the commencement date for the CPRS the implementation of the fuel tax reduction will not now apply until 1 July 2011.

<sup>49</sup> Page 16 of Chapter 17 of the White Paper.

<sup>50</sup> As noted the fuel tax reduction will now commence on 1 July 2011.



each year, with a one month lag to occur between the date the new tax rate is calculated and the date the new rate takes effect.

Reductions in fuel tax during the transition period will become permanent after three years. The Government has stated in the White Paper that the fuel tax rate will not increase if the emissions price falls. That is, the Government will only cut the fuel tax rate (not increase it) to ensure that this assistance benefits motorists.

After 1 July 2013, the Government will make a final assessment and, if required, a final fuel tax cut will take effect from 1 August 2013. These proposals are summarised in <sup>51</sup>:

### **‘Policy position 17.3**

The Government will legislate to automatically reduce fuel tax on a six-monthly basis if the average carbon pollution permit price in the six-month period exceeds the previous reduction, including the initial one, in the period to 30 June 2013.’

### **4.2.3 Assistance to LPG, CNG and LNG Fuel Users**

LPG, CNG and LNG are not currently subject to fuel tax, so their users will not benefit from fuel tax cuts. These three fuels are recognised as alternative transport fuels that compete with petrol and diesel.<sup>52</sup> Instead, as in the case of the agriculture and fishing businesses who pay no effective fuel taxes, users of LPG, CNG and LNG will have a new ‘CPRS fuel credit’ which will, in each case, be available to an appropriate entity in the supply chain.

As the White Paper states<sup>53</sup>:

‘As the volume of emissions from these three fuels is substantially lower than the volume from petrol and diesel, the carbon price impact on them will be lower. To reflect this, the amount credit will be less than the full amount of the fuel tax cut.’

CNG users will benefit from a credit of around three-quarters of the fuel tax cut, LPG users will benefit from a credit of around two-thirds, and LNG users will benefit from a credit of around one-half.

Assistance to these three fuel users is summarised in<sup>54</sup>:

---

<sup>51</sup> Page 17 of Chapter 17 of the White Paper

<sup>52</sup> LPG is Australia’s most widely used alternative fuel, comprising over 5 per cent of the transport fuel market.

<sup>53</sup> Page 17 of Chapter 17

<sup>54</sup> Page 19 of Chapter 17 of the White Paper.

### **‘Policy position 17.6**

The Government will introduce legislation to implement a new CPRS fuel credit scheme for LPG, CNG and LNG users that reflects the lower emissions of those fuels.

The CPRS fuel credit scheme for LPG will be in place for three years.

The CPRS fuel credit scheme for CNG and LNG will be in place for one year.’

While it is proposed that CNG and LNG fuel suppliers will not be provided with CPRS fuel credits after 30 June 2012, the Government will review this measure after one year. CPRS fuel credits will cease for LPG on 1 July 2014, with the Government reviewing this measure after three years.

These three policy position summarise the assistance to be offered through fuel tax adjustments and which will impact on the taxi industry.

#### **4.2.4 Overview**

In developing its White Paper for the introduction of a carbon pollution reduction scheme the Government has developed an approach based on an emissions trading scheme, rather than the introduction of a carbon tax. In the case of the taxi industry fuel, including petrol, diesel and LPG will receive reductions in fuel tax, or its equivalent CPRS fuel credit, as a transitional arrangement for a period of three years from the proposed introduction date (of the CPRS) of 1 July 2011.

The background research and development of the White Paper has been carried out in a period of world wide turbulence in financial markets and the commencement of a world wide recession. The impact of this on Australia, and the financial steps the Government has taken to reduce the impact of the recession in Australia, has resulted in a situation where the Government faced strong opposition to the introduction of the CPRS as early as 1 July 2010. Business and industry, as well as many political groups, questioned the Government’s move to introduce the CPRS so quickly. This is particularly so when it is not clear how other countries are going to respond, and in what timeframe, to the introduction of an effective carbon pollution reduction scheme. This has resulted in the Government announcing, on 4 May 2009, that the introduction of the CPRS would be delayed one year, now to commence on 1 July 2011.

The relevant legislation emanating from the White Paper, in the form of five Bills, was tabled in Parliament in March 2009. This resulted in two Senate based Committees being set up to review aspects of the CPRS, one looking at economic issues with a reporting date of one month, and the other, with more broadly based terms of reference, to report in two months.

Given the current state of the economy, business and industry groups, as well as many political groups, have concerns about the effectiveness and/or the impact of the implementation of a CPRS in its current form. These concerns, along with the

findings of the two Senate committees, may well result in further significant changes to the draft legislation.

## **5. Conclusion**

This review has considered the impact of the introduction of emissions trading schemes to combat climate change on the transport industry, including taxis. There is little doubt that, into the future, new vehicle technologies, including hybrid vehicles, and the introduction of alternative fuels (to petrol, diesel and LPG), will have a major impact on the taxi industry.

This has been recognised already with many local jurisdictions moving to introduce hybrid taxis in Australia. Unlike many developed countries, in Australia most taxis in large cities have been converted to operate on a LPG/petrol system for many years. While the impetus for this was driven by the cost of LPG (as it is exempt from fuel (excise) tax) a side benefit has been that it has significantly reduced the carbon footprint for taxis.

Following a major review (Garnaut) and the production of a White Paper, the Australian Government has introduced five Bills into the Federal Parliament (in March 2009) aimed at introducing a CPRS (or cap-and-trade scheme).

There will be an immediate real cost of this scheme through an increase in fuel prices. The Government has recognised this and has introduced a 'cent-for-cent' reduction in fuel tax (or a CPRS fuel credit in the case of LPG users). This will be for a three year period (with reviews and adjustments every six months, when necessary) to reduce the cost of the implementation of the CPRS on the transport sector.

As the taxi industry moves to incorporate the changes which will be inevitable as a result of the introduction of a CPRS, what must be done is to recognise the associated costs and for these costs to be shared equitably across all stakeholders, including customers, owners/operators/drivers and governments. While the Australian Government has addressed the issue of increased running costs, and allowed for this in the first three years, the capital cost of moving to alternative fuel vehicles must also be considered, as has been the case in Victoria and Western Australia. In these states the respective Governments have offered/will offer financial incentives to encourage the introduction of a limited number of hybrid vehicles into fleets. Related to this, vehicle replacement strategies will have to be given consideration; for example large fleets may wish to consider the staggering of the introduction of more environmentally acceptable vehicles through time as the full impact of the CPRS takes effect.

There is no doubt that the introduction of an emissions trading scheme, or CPRS, aimed at, in the case of the transport/taxi industry, reducing the carbon footprint and even achieving carbon neutrality, is going to have a major impact on that industry into the future. What will need to be done is for the industry to be proactive in working with relevant parties to ensure that the costs (both capital and

ongoing) associated with the introduction of a CPRS are shared equitably amongst all stakeholders.

## **6. Acknowledgement**

The author would like to thank Blair Davies, the Executive Director of the ATIA and CEO of the Taxi Council of Queensland, for his advice on a number of issues relating to the background research which resulted in the production of this report.