

1 INTRODUCTION

EcoStation is a joint initiative of the Victorian Environment Protection Authority (EPA) and the Victorian Transport Association (VTA) designed to reduce greenhouse emissions and air pollution from the road freight sector.

A key aim of EcoStation is to promote a sharing of information about the practical actions that can be taken by industry stakeholders to improve the fuel efficiency of road freight operation and to reduce the emissions associated with these vehicles.

With this aim in mind, EcoStation is producing information sheets that will provide commercial vehicle operators with guidance on a number of potential improvement actions with a view to encouraging increased adoption of these programs by industry. This information guide discusses the concept of eco-driving.

2 DESCRIPTION

Eco-driving is a concept that involves working with the operators of heavy vehicles to introduce more fuel efficient driving behaviours.

To date, the concept has been promoted in a very broad sense and includes everything from traditional 'smooth driving' practices to the adoption of practices supported by innovative in-cab information systems – systems that provide information about the optimum throttle position for a given load and speed.

At a practical level, this strategy involves retraining drivers and there are a growing number of commercial providers of eco-driving programs for light and heavy vehicle fleets in Australia.

3 IMPROVEMENT RATIONALE

The theory behind eco-driving is straightforward – by encouraging drivers to adopt more fuel efficient driving practices, the average fuel consumption of the vehicle can be reduced. This in turn delivers reduced fuel costs for fleet operators and lower greenhouse emissions and air pollution for the community.

4 POTENTIAL BENEFITS

Some studies have shown that eco-driving programs can (a) deliver significant fuel savings, (b) reduce driver stress levels, (c) increase driver confidence in vehicle handling, and (d) contribute to greater levels of overall job satisfaction.

Countries such as Canada and the United Kingdom have been running voluntary driver behaviour change programs for a number of years, but the potential to reduce emissions through driver behaviour change in Australia remains largely unexplored.

While some Australian pilot programs have suggested fuel savings in the order of 14%, there is currently very little in the way of reliable information about the real-world economic and environmental benefits that can be realised via eco-driving.

As a consequence, the actual benefits of eco-driving programs are subject to a significant level of uncertainty.

5 ASSESSING FLEET SUITABILITY

Eco-driving programs are most effective for fleets that are operating in urban stop-start conditions, given that driver behaviours can significantly influence fuel consumption rates for vehicles operating under these conditions.

These programs tend to be relatively ineffective if vehicles are predominantly operating at wide-open throttle and/or spending large periods of time operating under cruise control (e.g. linehaul applications).

This initiative is considered to be most effective for vehicle operation that is characterised by:

- low average speeds
- high stopping frequency rates (i.e. stops per hour).

6 IMPLEMENTATION CONSIDERATIONS

The principal advantage of eco-driving programs is that they are cheap. They can be introduced for a relatively low overall cost and, in many cases, can be integrated with existing safe driver programs.

Feedback from the small number of companies already experimenting with eco-driving programs in Australia suggests that one of the principal difficulties is securing the cultural change necessary to ensure that these practices continue well beyond the initial training and that drivers do not revert back to old practices after a short period of time.

The other key challenge relates to the difficulty of measuring the fuel saving benefits of eco-driving programs. Most operators who have trialled these programs have attempted to quantify fuel savings on a gross basis (i.e. by comparing *before* and *after* fuel consumption).

Such an approach is difficult given that fuel consumption can vary substantially on any given day owing to factors that are outside the control of the driver (e.g. traffic congestion).

It is suggested that both of the above issues (enforcing cultural change and measuring benefits) can potentially be overcome by the use of vehicle telematics systems.

Some of these systems allow the collection of detailed fuel efficiency data on an hourly basis, thereby providing a much better base for assessment of real-world benefits.

The installation of data loggers on vehicles also provides an opportunity to monitor driver acceleration practices on a periodic basis, thereby providing a mechanism for identifying the need to conduct driver 'refresher' courses for drivers that may have reverted to previous inefficient driving practices.

While the installation of data loggers increases the cost of these programs, this approach provides an opportunity for more meaningful assessment of the fuel efficiency (and associated emissions benefit) of eco-driving for heavy vehicle fleets in Australia.

7 RESOURCE INFORMATION

Additional information on eco-driving can be obtained from the following sources.

7.1 INTERNATIONAL ROAD TRANSPORT UNION

The International Road Transport Union (IRTU) has produced a free reference guide for eco-driving. This guide can be downloaded at:

<http://www.iru.org/index/bookshop-display-action?id=247>

7.2 LINFOX

Linfox had a 18-month period in which to train all drivers from initial pilot of 180 trained in 2008–09. Results show that staff have measured up to 14% fuel efficiency gains in individual vehicles. Further information about this work can be found at:

http://www.linfox.com/Environment/~/_media/Documents/PDF/2009%20Linfox%20Energy%20Efficiency%20Opportunities%20Reporting%20Public%20Report.ashx

7.3 BLUE CIRCLE SOUTHERN CEMENT

A 12-week study of fully-laden 68-tonne B-double trucks (one of the heaviest vehicles on the road) showed that they reduced their fuel consumption by 27% simply by using eco-driving techniques, which include anticipating traffic flow, skipping gears when changing up, changing gears at lower engine revolutions, and braking less forcefully and less often.

More information about this initiative can be found at:

http://www.eco-driver.com.au/index.php?option=com_content&view=article&id=115:the-cif-sustainability-victoria-and-monash-university-test-drive-the-strategix-ecodriver-program&catid=40:general&Itemid=91

7.4 TOLL-IPEC

The CleanRun program, in partnership with Toll-IPEC, has found companies can save \$300 worth of diesel a year and reduce diesel emissions by up to 200 litres in the same period by having light commercial drivers cut idling times by three hours per week.

The joint initiative was so successful that Toll-IPEC has found 79% of its drivers have extended environmentally friendly practices by turning off lights as well as reducing idling when driving their cars.

More information about this initiative can be obtained by visiting:

http://www.dec.wa.gov.au/index2.php?option=com_docman&task=doc_view&gid=2978&Itemid=797

7.5 AUSTRALIA POST

Australia Post is preparing a pilot Environmental Driver Program that aims to reduce fuel consumption through behavioural change. The organisation is understood to be planning a full-scale roll out of eco-driving from July 2010.

Further information about this initiative can be found at:

http://www.auspost.com.au/GAC_File_Metafiler/0,,4135_2009_eeo_public_report_final,00.pdf

7.6 BOC LIMITED

BOC introduced a driver development package designed in partnership with vehicle and engine manufacturers to improve fleet fuel efficiency. The company reported a fuel saving of 4.3% or 334,000 litres of diesel over a 120-month period.

Further information on this case study can be found at:

www.freightbestpractice.org.uk/reducing-fleet-energy-boc

8 FURTHER INFORMATION

Further information about EcoStation, including program participation, can be obtained by contacting the EcoStation Project Manager on:

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