

Case Study

ENVIRONMENTAL DRIVER TRAINING (PRIME MOVER)



TRIAL SUMMARY

This trial sought to quantify the fuel efficiency benefits of implementing environmental driver training. The trial was conducted for one vehicle running metropolitan urban haul in Melbourne.	Average relative fuel consumption benefit (%)	GHG benefit (g CO ₂ -e/h)	Average relative idle reduction (%)
	8%↑	8%↑	91%↑
<p>↑ performance better than conventional vehicle ↓ performance worse than conventional vehicle</p>			

The *Green Truck Partnership* is designed to be a forum for the objective evaluation of the merits of clean vehicle technologies and fuels by heavy vehicle operators. This report discusses the results of an environmental driver training trial conducted under the program in 2012.

1 ENVIRONMENTAL DRIVER TRAINING

Environmental driver training has the potential to reduce fuel consumption and vehicle wear and tear, as well as have recognised safety and staff morale benefits. The fuel efficiency elements of traditional driver training programs have recently been repackaged under the banner of environmental driving. Environmental driving essentially involves operating the vehicle in certain ways in order to optimise fuel consumption.

Training can be delivered in different formats: online, in the classroom, using simulators or in the vehicle itself (in-cab).

Immediate fuel efficiency results can be realised for a relatively low initial capital expenditure in addition to the driver's time). However, the permanence of the improvement is uncertain, and refresher courses are critical to ensure long-term improved behaviours. Other variables

include the driver's personal commitment as well as the prevailing local driving culture, road conditions and road systems.

While a number of Australian training companies promoting improved driver practices report a 5–20% reduction in GHG emissions, the potential to reduce fuel consumption and emissions in Australia through a change in driver behaviour still remains relatively undocumented.

2 TRIAL OBJECTIVE

The purpose of this trial was to assess the real-world economic and environmental performance of a prime mover vehicle operated by a driver who had undergone environmental driver training.

3 METHODOLOGY

DATA COLLECTION

This trial involved an in-field assessment of a prime mover operating urban haul distribution routes in metropolitan Melbourne. The vehicle was operated over a 10-week period between May 2012 and July 2012.

The driver participating in the trial undertook both simulator and in-cab training. The driver training for this particular trial focused on the following aspects of vehicle operation and behaviour.

- Gear shifting
- Speed
- Acceleration and cruise control
- Steady braking
- Idle time
- Planning and observation
- Route planning
- Driver awareness and attitude.

During the trial period, a data logger was used to collect data from the vehicle to ensure the validity of the fuel comparison. The data collected by the logger during the course of the trial included:

- **DISTANCE:** kilometres travelled
- **IDLE TIME:** time spent at idle
- **AVERAGE SPEED:** average speed (km/h).
- **ENGINE HOURS:** number of hours with engine on.

Other datasets were collected but were not relevant to this particular trial.

During the trial period, fleet fuel records were used to capture fuel consumption data (as this could not be captured from the data logger). The fuel data included:

- **FUEL CONSUMPTION:** total fuel (litres).

DATA ANALYSIS

Key descriptors considered in this analysis included idle time and fuel consumption. This data was used to assess the average fuel consumption of the vehicle 'before' and 'after' driver training. The results of this comparison are discussed in Section 4.

Analysis of the daily distance travelled by the vehicle 'before' and 'after' driver training was considered sufficient to ensure validity of the fuel consumption comparison. Figure 1 shows the recorded average daily kilometres travelled by the vehicle before and after driver training.

4 RESULTS

Figure 1 shows that there was a good correlation between the distance travelled both before and after the driver was trained. The lack of significant variation in the delivery journeys undertaken across the trial period, shows that any difference in fuel consumption was a result of driver influence.

A summary of the results collected for the trial vehicle following driver training is provided in Table 1. Comparison of the fuel consumption results indicate that vehicle fuel efficiency following driver training improved by an average of 8% (Figure 2) with idle time reducing by an average of 91% (Figure 3). The amount of time the trial vehicle spent idling (as a proportion of its total vehicle engine hours) also reduced by an average of 89% (Figure 4).

Analysis of the GHG performance (Figure 5) reveals that the GHG emissions generated by the trial vehicle was 8% lower than before the training intervention occurred.

5 CONCLUSION

The findings of this trial suggest that operation of a prime mover in urban haul applications by a driver who has undergone environmental driver training can achieve:

- a fuel cost saving of approximately 8% relative to vehicle operation without training intervention.
- a net GHG emission benefit of 8% relative to vehicle operation without training intervention.

Table 1 Vehicle performance after driver training intervention

Fuel saving (L/100 km)	Relative fuel saving (%)	GHG benefit (g CO ₂ -e/km)	Economic benefit (\$/100 km)	Idle reduction as a percentage of driving time (%)	Total daily idle reduction (%)
4.63	8	124.8	6.48	89	91

Figure 1
Average daily distance travelled before and after driver training

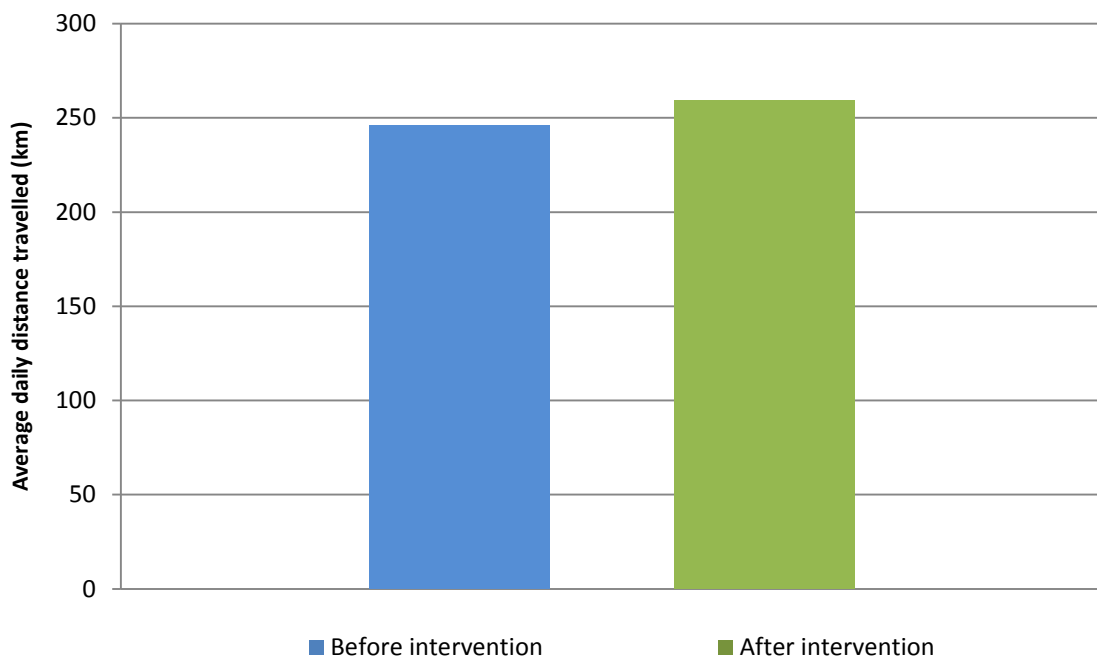


Figure 2
Comparison of vehicle fuel consumption before and after driver training

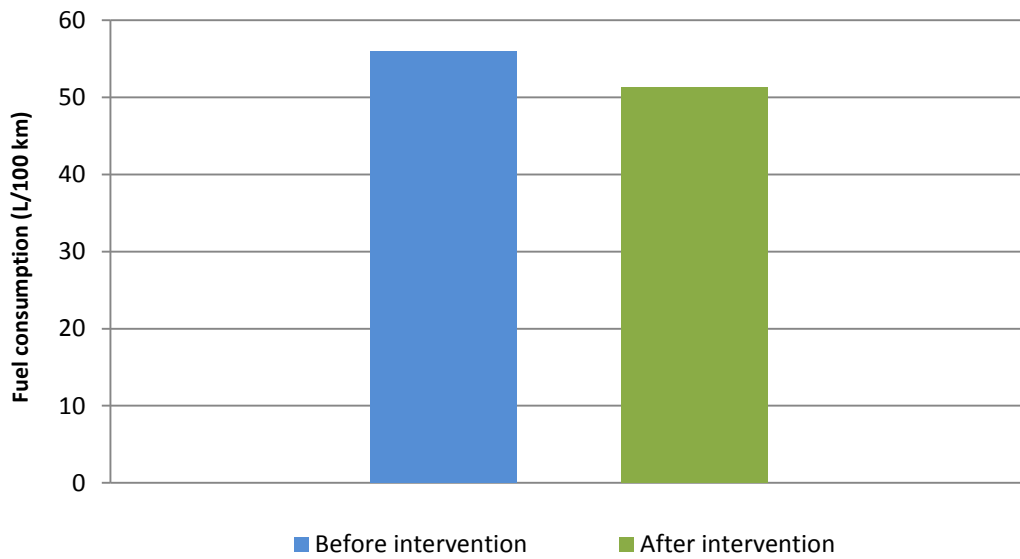


Figure 3
Comparison of total time spent idling before and after driver training

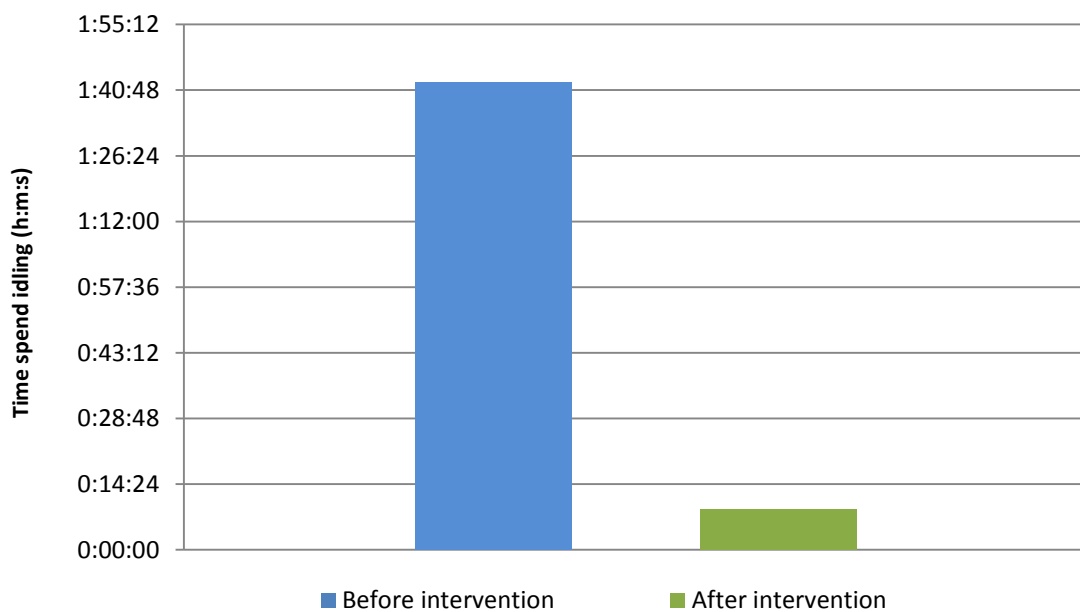


Figure 4
Comparison of percentage time spent idling as a proportion of total engine hours before and after driver training

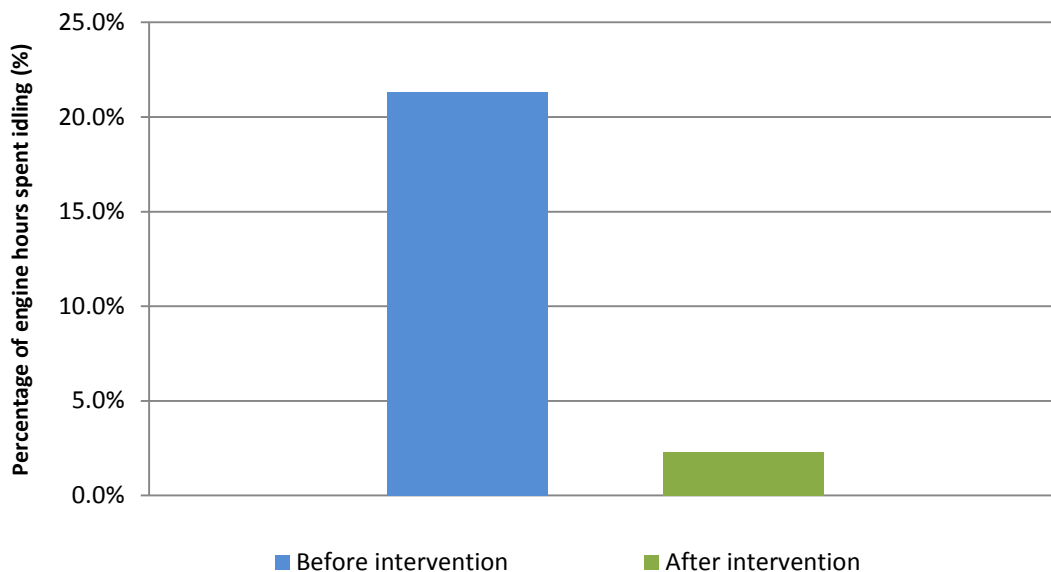


Figure 5
Comparison of vehicle GHG emissions before and after driver training

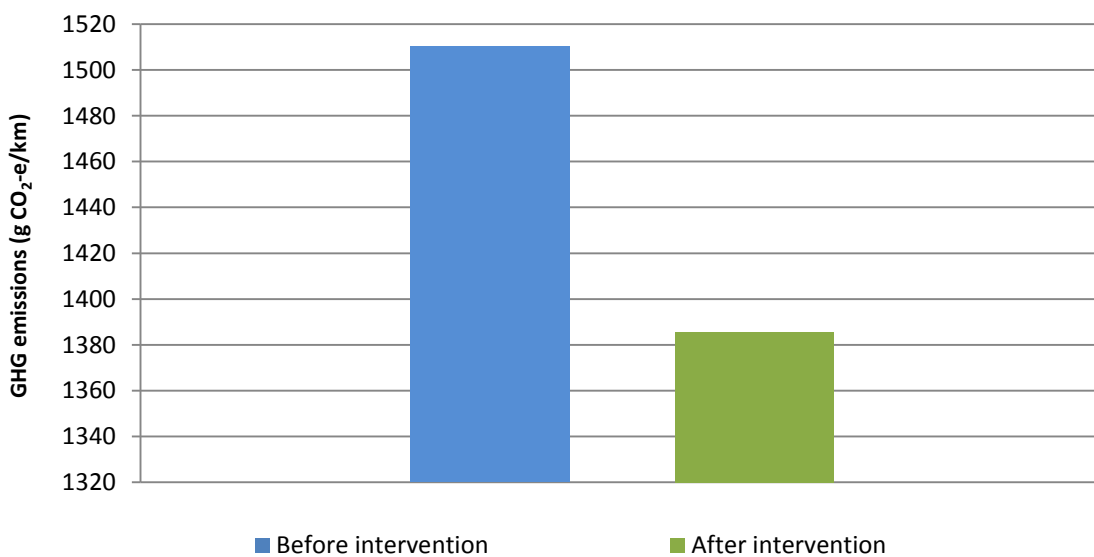


Figure 6
Comparison of fuel cost before and after driver training

