



Addressed to Vehicle Emissions Working Group

**RE : Submission to the vehicle emissions working group**

Thank you for your time taken to discuss the Green Truck Partnership and its role as an independent and objective body in evaluating modern technologies for the transport industry.

Furthermore, I take this opportunity to introduce HEMS GLOBAL and its patented technology *Hydrogen based Diesel Reduction System* (HEMS' system) to you and GTPs' steering committee.

HEMS' is an Australian based innovation that commenced development in 2008. The technology consists of a hydrogen control and delivery system which uses hydrogen as a catalyst through the air-intake in any diesel combustion engine. The properties of hydrogen, provides a cleaner and faster burn during the combustion cycle.

Over the last 8 years, the development of the HEMS' system included independent trials of buses conducted in both Germany and Austria. In 2015, the system gained independent certification by Dr Hien Ly, one of Australia's leading experts on CNG. Following this, the company obtained the necessary government approvals in late 2015 and progressed to commercialisation phase of the system.

HEMS' system is targeted at both the bus and truck fleet operators with average annual travelled distance of over 75,000km. Fleet owners who use the system, will see the following benefit;

- ✓ Net savings of diesel costs of 15%
- ✓ 18% reduction in carbon monoxide
- ✓ 15% reduction in CO2 produced
- ✓ Significant reduction in black smoke
- ✓ Noticeable improvement in engine power

The system has been designed with the transport industry's operational requirements in mind. The system is retrofitted on any vehicle with minimal downtime. Hydrogen re-filling is carried out at an accessible hydrogen re-filling station. All installation and maintenance of the system is managed by trained and accredited staff.

HEMS' system retails from \$7000 (excluding GST) for the base model. HEMS' has major supplier partnerships in place which guarantees the supply of hydrogen availability for its customers. The system is an affordable solution with a payback period of less than two years<sup>1</sup>. The suitable vehicles such as trucks with GVM over 4.5 tonnes and buses will experience the best economic benefit from the system.

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<sup>1</sup> Payback period of less than two years applies to vehicles with diesel combustion engines with average annual travelled distance of over 75,000km. This takes into account the upfront cost of the system, cost of hydrogen and maintenance. For vehicles with diesel combustion engines with average annual travelled distance of less than 75,000km, the payback could be longer than 2 years.

**1. What are the likely costs and benefits of adopting Euro 6 emissions standards for light vehicles and/or Euro VI emission standards for heavy vehicles?**

The costs of meeting the standards will be significant on operators

Fuel Standards must be addressed - European vehicle engines have been set up to run with low sulphur content fuels whilst US vehicles use high sulphur content fuels. high sulphur content fuel use in European engines may be detrimental to those engines and vice versa.

Programs for the disposal of the Regenerative Catalytic Converters and exhaust particulate filters must be developed to resolve toxic material disposal issues.

More enablement should be available/provided by the government to developing technologies and products that assist in improving emissions

Benefits to the environment are substantial

Operational constraints such as power loss is an issue. To counter the power loss, there is a tendency to either make up for lost time by exceeding speed limits or introducing a higher fuel flow schedule to the engine. Technologies that maximise fuel efficiencies should be encouraged.

The cost of moving to Euro 6 should not be borne by the operator alone. Tax incentives and grants should be available for operators that are pro-active in moving to Euro 6 emission targets, either in vehicle purchases, fuel cost and adoption of new technologies.

A carbon trading scheme should be introduced to facilitate rewarding activity to improve emissions

**2. If Euro 6/VI standards were adopted, when would be an appropriate start date and why?**

The government appears to be relying on the current new vehicle importation to meet the new standards. Unless a grant/incentive scheme is put in place, this would not increase significantly. Fleet operators would rather keep their older vehicles on the road.

A 36-month implementation period should be sufficient to ensure manufacturers can deliver on the Euro 6.

The vehicle operators and general public will also need an educational period to understand the implications on the financial implications to the Australian economy.

Funding options should be established to encourage Euro 6 adoptions

Subsidies should be available for installation of new technologies that are proven to reduce emissions

3. **To what extent do current Australian fuel quality standards limit the adoption/import of existing technologies and models that meet Euro 6 specifications?**

Fuel standards have improved over the past few years, however, the control of Sulphur content requires addressing as the Euro 6 cannot be adopted universally due to sulphur content.

Measures to ensure fuel property consistency must be introduced

4. **Are there other ways governments could encourage the purchase and supply of vehicles that meet Euro 6/VI emissions standards?**

Tax/duty/import incentives for purchasing

Fuel or Carbon credits

Road Tax variation for fuel efficient vehicles versus inefficient vehicles.

Funding Options

5. **What measures could governments adopt to ensure vehicles continue to comply with noxious emission requirements beyond the point of supply to the market?**

Empower the EPA to carry out tests on new technologies and emissions

Establish approved emission testing stations to enable regular monitoring of vehicle emissions

Establish Fleet average standards

Support new technologies that improve emissions on internal combustion engines

Support aftermarket products proven to reduce emissions

6. **Should the Australian Government conduct a review to consider whether noxious emissions standards for motorcycles should be adopted in Australia?**

Motorcycles should be included in the emission standard reviews; however, manufacturers have not been proactive in adopting emission control features on motorcycles. This would need to be introduced with significant input from manufacturers

This should be redirected to the motorcycle manufacturers to come up with valid proposals to address the emission management and standards that are put in place.

## **Develop Fuel Efficiency (CO2) Standards**

### **7. What are the costs and benefits of adopting a fleet average standard for fuel efficiency (CO2)?**

Fleet Average standards would provide a means of monitoring an operations emission

Operators would be responsible to ensure drivers are operating the vehicles in such a manner to ensure engine efficiency

Incentives should apply for a fleet operator to adopt new technologies proven to reduce emission

Initial program of testing to obtain fleet emission standards must be accomplished for benchmarking. Current fleet operators would be encouraged to participate to ensure that their fleet is included in the equation to ensure fairness and flexibility of the benchmarking

Possible government funding would be required to establish emission testing facilities, driver training, fleet operator training

Establishment of a real time emission testing program and standard must be established to enable standard testing procedures and expectations

Once real time standards for emissions and testing have been established, routine emission testing can be introduced on a user pays basis to ensure operator is still acceptable for any incentive program

The CEFC should be used to provide funding

### **8. If standards were adopted, what would be an appropriate fleet average target for 2020 and why? What would be an appropriate target for 2025 and why?**

2020 should target a 50% of the delta between Euro 5 and Euro 6 standards for in-service vehicles. This will enable operators to understand, accept and prepare for the financial impact to their business

2025 should target 75% of the delta between Euro 5 and Euro 6 standards for all in-service vehicles. This would incorporate the retirement of older vehicles and the fleet refreshment programs with Euro 6 vehicles.

In the meantime, incentives should be made available for operators of older vehicles to adopt emission reduction technologies such as the Hydrogen based diesel reduction system.

### **9. How would standards affect the range of vehicles offered in Australia?**

The introduction of Euro 6 as a minimum will severely affect fleets in Australia. There are a significant number of vehicles that are pre EURO 5 for which the implementation of Euro 6 will force off the roads.

Australian relies on the small business operator to ensure that freight charges are more competitive. If the older vehicles, predominantly owned and operated by small businesses are not permitted to be operated, then the large fleet operators will be able to monopolise the freight industry. This follow on impact to the Australian economy would be significant

Adoption of the Euro 6 would see more new vehicles, however, the range of heavy vehicle types and purpose cannot change. Until appropriate real time testing and establishment of fleet average standards, this will raise issues such as significant cost increases to consumers. We do have a user pays society.

**10. Apart from standards, are there any complementary or alternative measures that could be adopted to encourage the purchase and supply of more fuel efficient vehicles?**

Tax incentives

Carbon trading scheme

Fleet emission testing

**11. What would be the most efficient and effective measures to improve the fuel efficiency of heavy vehicles in Australia?**

Assess current technology and products for implementation to reduce emissions such as the HEMS Global system.

Introduce carbon trading

Introduce road tax and fuel cost incentives for operators who adopt emission reduction options. Based on Carbon Footprint

Establish routine emission testing as part of registration safety check. This would also aid in the establishment of fleet emission average standards

**12. Should the Australian Government conduct a review to consider whether fuel efficiency measures for motorcycles should be adopted in Australia?**

Until an assurance from the motorcycle manufactures has been obtained, motorcycle emission reduction would be impossible to achieve.

### Fuel Quality Standards

- 13. Are there changes to fuel quality standards that could assist with reducing noxious emissions and/or CO2 emissions?**

Low limit to Sulphur content

Monitoring of the fuel produced at the refinery and importation for consistency of standards

- 14. Do you have new information that could assist with the assessment of costs and benefits of adopting more stringent fuel quality standards, in particular for petrol?**

Investigation of a proven emission reduction system, such as the HEMS Global system.

- 15. To what extent, if any, do current fuel quality standards limit the choices of vehicles/technologies in Australia and why?**

High sulphur content fuels may damage Euro 6 European made vehicles.

Fuel standards do not necessarily limit vehicle types, however, the engine options in Australia vary in accordance with application.

With minimal control of fuel standards, there is inconsistency in energy content. Therefore, operators opt for larger engines to ensure power is available.

- 16. Are there other measures that governments could adopt to encourage the supply and purchase of higher quality fuels?**

Tighten fuel standards permitted for sale

Investigate tax application to fuels of known higher standards

Increase tax on lower quality fuels, this would encourage the public to buy high quality fuels.

### Information and Education

- 17. Have you found the information provided on the fuel consumption label and the Green Vehicle Guide website useful in considering the purchase of a new vehicle?**

OK – No real issues.

- 18. How could the information provided on the fuel consumption label and the Green Vehicle Guide be improved to encourage the purchase of more efficient vehicles?**

Include reports from Heavy Vehicles

Include reports from vehicles fitted with new technologies that improve emissions such as the HEMS Global system.

- 19. Have manufacturers and dealers found the information provided on the fuel consumption label and the Green Vehicle Guide useful for product planning and marketing?**

No Comment

- 20. At what point in the decision making process is information on vehicle efficiency most effective in influencing purchasing decisions and what information mediums are most effective?**

Cost of operation per km

- 21. What could governments do to improve the availability of data on fuel efficiency of used vehicles?**

Enforce regular testing

Establishment of Fleet Average standards

Report on new technologies available for retro fitment

- 22. How could governments encourage more efficient driver behaviour?**

Establishment of fleet average standards followed up with driver/operator training

#### **Fleet Purchasing Policy**

- 23. What role, if any, should the Government fleet purchasing policy play in encouraging the supply and purchase of more efficient vehicles?**

The government should provide tax/duty relief for fuel efficient vehicles

## Tax policy

- 24. How could taxes and charges for motor vehicle purchase and/or use be reformed to encourage the purchase and supply of more efficient vehicles?**

Introduction of a tax on less fuel efficient vehicles. This is to be put in place after Fleet Average benchmarking has been established.

Carbon trading for existing vehicles

Fuel/road tax credits

Support of retro fitment of proven emission reduction technologies

- 25. To ensure incentives do not have any unintended consequences on air quality, should incentives include noxious emissions requirements as well as CO2 requirements, or do current noxious emissions standards sufficiently mitigate this risk?**

There is a lot of confusion regarding emissions and carbon Footprint and CO2, Clarification for industry is essential

Incentives should be in place for all emission reduction strategies implemented by operators. CO2 alone does not reflect the true harmful emissions content.

Some of the harmful emission reduction strategies have adverse effects on Co2 reduction and the total of the emission or Greenhouse gas should be used. Just saving the amount of fuel burn contributes to a significant reduction of the carbon footprint.

## Alternative Fuels and electric vehicles

- 26. What measures could be adopted to improve consumer awareness of the benefits of alternative fuelled and electric vehicles, particularly where they complement environmental benefits?**

If the government supported new technology, operators and owners would be more interested. Currently there are many issues in regard to costs that put up barriers that must be overcome.

Alternate fuel technology should also be accompanied by other emission reductions technology.

If the government/EPA provided a review program for developing technology to prove that the technology is valid and deliverables are real, this would go a long way to acceptance of these.

The cost of generation of the power required for electric vehicles must be considered as the environmental issues would be transferred from the road vehicles to the power generation industry.



**27. What measures could be adopted to encourage the supply of alternative fuelled vehicles and supporting infrastructure, to reduce emissions from road transport?**

The CEFC should be more proactive in the low cost funding of projects that must be put in place for the adoption of new technologies. Such as hydrogen filling station networks.

Currently, the CEFC only considers projects for over 20 Million.

The application process to CEFC is inhibitive and must be reviewed to simplify.

Incentives to fuel/alternate fuel and gas companies should be in place to facilitate product supply networks across the country.

**28. How might fuel standards need to be adapted to accommodate alternative fuels?**

The high quality alternate fuel standards must be attained by the suppliers. This should be encouraged by regular testing for compliance. This is very important for fuel cell technology as lesser quality hydrogen rapidly deteriorates the hydrogen fuel cell stack.

Significant duty and sales tax reduction should be available for new tech fuel vehicles and or emission reduction systems.

Review of the Mine industry should be carried out to facilitate new technology acceptance.

**Vehicle Emissions Testing**

**29. Should the Australian Government conduct a testing program to assess the effectiveness of UN Regulations in reducing real-world emissions?**

Regular Safety checks should include emission testing

Establishment of Fleet average standards is essential

New vehicles should be randomly tested for real time emission standard compliance. real time standards would therefore need to be developed for each vehicle type and usage.

**30. How should the costs of a testing programme be met?**

New vehicle testing should be supported by the manufacturer or importer of the vehicle

Routine testing should be included in the safety check of a vehicle and paid for by the vehicle owner and the cost of testing portion to be funded by the Government with a small increase to safety check costs. This aligns current charges for Dual Fuel Vehicles.



Set up of the testing equipment/stations should be 50/50 cost impact to the government and test facility.

**31. How could UN Regulations for vehicle emissions testing be improved**

Real time testing should be easier to perform repeat testing to check compliance

Heavy vehicles emission levels should be specified for specific vehicle use

With regards,

A handwritten signature in black ink, appearing to read "W. Matar".

William Matar  
CEO



A: 119 Willoughby Rd, Crows Nest NSW 2065  
W: [www.hemsglobal.com.au](http://www.hemsglobal.com.au)



HYDROGEN BASED DIESEL REDUCTION SYSTEM

A: 119 Willoughby Road, Crows Nest NSW 2065

P: +61 (0) 2 9642 8282 F: +61 (0) 2 9642 8484 E: [admin@hemsglobal.com](mailto:admin@hemsglobal.com)

W: [www.hemsglobal.com.au](http://www.hemsglobal.com.au)