

**Report of the Chief Constable to the Chair and Members
of the Policy & Resources / Corporate Development Panel
15th January 2009**

**Executive & Presenting Officer: Mrs Ann Hall, Assistant Chief Officer
(Finance & Commissioning)**

Status: For Information

Liquefied Petroleum Gas (LPG)

1 Purpose

1.1 At their meeting on 7th August 2008 Members considered the impact of oil price rises on Force petrol/diesel budgets and requested a report on the potential use of Liquefied Petroleum Gas (LPG) to fuel the fleet.

2 Recommendations

2.1 Members are requested to note contents of the report.

3 Reasons

3.1 The Budget Monitoring Report for July 2008 reported a gross forecast overspending on petrol/diesel of £130k due to the rising prices experienced at the pumps. Although crude oil prices have fallen dramatically, this has not been fully reflected in the petrol/diesel prices charged at the pumps and the market continues to be volatile. Members considered the impact of oil price rises on Force petrol/diesel budgets and requested a report on the potential use of Liquefied Petroleum Gas (LPG) to fuel the fleet.

3.2 LPG is manufactured during the refining of crude oil, or extracted from oil or gas streams as they emerge from the ground. LPG burns cleanly with no soot and very few sulphur emissions. It produces carbon dioxide and water only, posing no ground or water pollution hazards. When LPG is used to fuel

internal combustion engines, it is often referred to as *Autogas*. It burns more cleanly than petrol or diesel and is free of the emitted particles these provide.

- 3.3 The Cleveland Police Fleet Manager has been previously tasked by the Force to assess the impact of adopting LPG vehicles into the existing fleet on two occasions – once in 2000 and again in 2004. Each analysis assessed the experiences of other Forces with the introduction of the new vehicles and fuel and provided a detailed assessment of the savings and benefits as well as the problems and drawbacks incurred by other Force Fleet Managers. On both previous occasions the recommendation was **not** to adopt LPG vehicles.
- 3.4 There are apparent cost advantages of using LPG. LPG vehicle users can save around 40% on fuel costs compared with petrol, and over 20% compared with the equivalent diesel. A typical example is the 2005 Vauxhall Vectra for which the figures are:

Fuel Type	Model Details	Euro Emission Level	MPG*	Fuel Price**	Cost per 1000 miles
LPG	122ps 1.8i 5 speed saloon	iv	29.4	£2.64 per gal 58.1p per litre	£89.79
Diesel	120ps 1.9cdti 6 speed saloon	iv	49.5	£5.95 per gal 131.0p per litre	£120.20
Petrol	122ps 1.8i 5 speed saloon	iv	38.6	£5.34 per gal 117.5 p per litre	£138.34

* Source – Vehicle Certification Agency imperial combined mpg

** Source – Fleet News – 19/6/2008

- 3.5 On the basis of the above figures the following savings could be achieved over a Cleveland Police vehicle average lifespan of 100,000 miles.
- Diesel Vehicle - £3,041
 - Petrol Vehicle - £4,855
- 3.6 However, Members are asked to note that these savings assumed a petrol price of £117.5p per litre and a diesel price of £131p per litre, now that pump prices have started to fall these savings will have eroded.
- 3.7 LPG also has a lower energy density than either petrol or diesel, so the equivalent fuel consumption is higher.
- 3.8 In addition, the savings assume that the vehicles will run on LPG 100% of the time. However, in operational conditions vehicles may have to operate on petrol/diesel some of the time as there are a limited amount of fuelling stations that stock and promote the use of LPG.
- 3.9 However, these savings may prove illusory as there are additional costs associated with the use of LPG:

- There is an increase in the purchase cost of vehicles away from NPIA frameworks. Current comparisons show a £2,000 increase for the cost of purchasing an LPG vehicle.
- There are conversion costs of between £1,500 and £2,000 per vehicle.
- LPG's lack of engine lubrication can damage valves and shorten the life of vehicles as well as the residual value of converted vehicles. There will be a potential loss in lifetime and return on each vehicle as a result of LPG conversion.
- There are increased servicing costs for LPG vehicles as the gas tanks have to be serviced by an LPGA Approved Contractor.
- Manufacturer's warranties become void on all secondary gas conversions in related components.
- LPG fuel tanks are regularly mounted into a vehicle's boot reducing storage capacity. Hampshire Police had to increase the size of its vehicles from Ford Fiesta to Ford Focus because of the need to accommodate an LPG tank and Force equipment. Other forces have indicated that they now need to upgrade to estate versions of saloon vehicles.

3.10 Three other Forces have trialled the use of LPG fuelled operational vehicles within their Force Fleet:

- Wiltshire Constabulary has decommissioned its 6 LPG vehicles and replaced them with diesel vehicles at the end of their vehicle life. Wiltshire is no longer converting to or buying LPG vehicles due to reliability issues.
- Hampshire Police has decided not to add further LPG vehicles to their fleet. It was found that in marked vehicles, officers were not refuelling with LPG and the predicted savings from the use of LPG were not realised.
- Humberside Police has continued to increase its usage of LPG year on year since 1998. In 2008, the number of LPG vehicles in Humberside stands at 463 (70% of the total fleet). We are currently awaiting operational performance data which has been requested from the Humberside Head of Transport.

3.11 Although there are apparent financial benefits of moving to LPG these are unlikely to be delivered. The widespread use of LPG also exposes the Force to some operational risks. For these reasons it is not recommended that LPG be adopted by the Force.

3.12 The *Energy Savings Trust* Green Fleet Review was carried out in Cleveland Police in February 2008. This report makes pragmatic recommendations for the Force to reduce its carbon footprint including:

- Reducing mileage of fleet
- Reducing the number of journeys
- Improving driver education
- Reducing vehicle size to match operational need.

3.13 Although the Force's conversion from petrol to diesel is consistent with HMIC recommended practice, the Green Fleet Review recommends assessing the adoption of alternatively fuelled vehicles, including biodiesel, bioethanol,

electric, hydrogen and hybrid vehicles. However, it does not highlight the adoption of LPG or recommend its increased use.

- 3.14 Proposals for implementing these recommendations will be brought forward in the updated fleet strategy.

4 Implications

4.1 Finance

There are no financial implications other than those mentioned above.

4.2 Diversity & Equal Opportunities

Diversity considerations are kept under constant review in line with Force policies and 'Putting People First'. There are no issues arising from this report to bring to Members attention.

4.3 Sustainability

The *Energy Savings Trust* Green Fleet Review makes pragmatic recommendations for the Force to reduce its carbon footprint.

4.4 Risk

The risks associated with the adoption of LPG include

- Validity of the warranty of LPG converted vehicles.
- Rear *Crumple Zones* in vehicles will contain LPG fuel tanks which are flammable. Current petrol cars are not designed for fuel tanks to be stored in the boot.
- There is currently only one manufacturer on the present NPIA (National Police Improvement Agency) Procurement Frameworks that will support a factory fitted LPG conversion that is fully warranted.
- Potentially if LPG is not adopted more widely across the UK, there is a danger and risk of supply of this fuel in the future.

5 Conclusion

- 5.1 Although there are apparent financial benefits of moving to LPG these are unlikely to be delivered. The widespread LPG also exposes the Force to some operational risks. For these reasons it is not recommended that LPG be adopted by the Force. However, the recommendations of the *Energy Savings Trust* Green Fleet Review will be brought forward in the updated fleet strategy.

Sean Price
Chief Constable