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FUEL STRATEGY **WHAT IS YOURS?**

WHITE PAPER



Fuel Strategy What is yours?

In these tough financial times, cost control has risen to the top of the agenda for companies of all sizes and across all industries. Fuel prices have seen significant fluctuations over the past 12 months, and the uncertainty seems set to continue for the foreseeable future. This White Paper examines what decisions for the future companies can take to manage their exposure to increasing fleet fuel costs.

Note: whilst some reference is made to commercial vehicles, this paper is specifically written with company car fleets in mind.

Operating a fleet of cars is often one of the largest operational costs for a business, and fuel is a major element. A typical 500 car fleet could expect a fuel bill in the region of £1m to £1.25m per annum as the table opposite illustrates. Concerns over the unpredictability and highly fluctuating price of fuel, and the fact it is a finite resource, are very real. The beginning of 2008 saw unprecedented fuel price rises, and although pump prices have since eased (June 2009) the general belief is that the age of cheap fuel is over.

Fleet Fuel Costs		
Fleet Size	Cost per annum diesel @ 45 mpg	Cost per annum petrol @ 35 mpg
250	£520,264	£623,451
500	£1,040,529	£1,246,903
1,000	£2,081,058	£2,493,806
2,000	£4,162,116	£4,987,611
	Diesel 103ppl	Petrol 96ppl

Average UK fuel prices May 2009, assuming 20,000 miles per annum
Costs are VAT inclusive



The beginning of 2008 saw unprecedented fuel price rises, and although pump prices have since eased, the general belief is that the age of cheap fuel is over.

So what can be done about fleet fuel costs? Can you manage your organisation's exposure?

Many commentators suggest alternative fuels might yield cost, environmental and sustainability benefits.

Others point to traditionally-fuelled vehicles utilising new high efficiency technology. So what is the answer?

The truth is there is no single answer, but this paper sets out our thinking on the key options so that you may consider, in the context of your business, what **fuel strategy** may work for you.



Sustainability

How long before the oil runs out?

Many industry commentators and Governments talk about sustainability, but how much oil do we have?

Reserves of oil are notoriously difficult to measure, but BP estimate proven reserves of approximately 1.24 trillion barrels, and their 2008 Statistical Review of World Energy shows daily consumption running at about 85.2 million barrels suggesting the current proven oil reserves will only last about 40 years.

Consumption levels increased by 1.1% in 2007, however, and emerging economies such as China and India are increasing this rate still further. New oil fields are being discovered, but they are typically in more remote areas or in deeper seams, which has an impact on costs, so it is clear, the price of oil **will** continue to rise.

So the question is how will your organisation react and manage its car fleet? Will it look to alternative fuels?



BP's 2008 Statistical Review of World Energy shows daily consumption running at about 85.2 million barrels.

Alternative fuels

Serious contenders or niche players?

Alternatives to petrol and diesel fuels are now being vigorously pursued by Governments and industry in an attempt to address the issues of sustainability, security of supply, the environment and increasing cost.

But are viable alternatives available **now** and how can fleet operators minimise these fuel-related risks?

Here we endeavour to shed some light on the options currently available, using both existing and new cutting edge technologies.

The key benefit of LPG is reduced fuel costs (average UK pump price for May 2009 is 51ppl) although there is a price premium for an LPG car, as to have a car converted typically costs between £1,000 and £1,800. **The cost savings from the cheap fuel should provide an overall cost saving over petrol in the short to mid term, dependent on mileage.**

Other benefits include reduced CO₂ and tailpipe emissions. Downsides of running LPG vehicles include; a limited refuelling infrastructure, limited model availability/ vehicle converters, and some reliability issues.

The largest cost savings are available for depot based fleets (on site bunkering of fuel is even more cost effective). LPG may be making a little bit of a comeback due to high petrol and diesel prices, but will **probably remain very much a niche fuel.**

Liquid Petroleum Gas

LPG, or Liquid Petroleum Gas, has had several attempts to make inroads into the UK fleet market.

LPG numbers peaked in 2003 but declined dramatically in 2004 following the removal of a Government grant scheme. This resulted in most vehicle manufacturers stopping LPG production.



Hybrids

Hybrid cars utilise two power sources, typically petrol and electric. They use traditional high efficiency internal combustion engines but have an electric motor to provide extra power when needed.

Regenerative braking means the cars do not require charging or plugging in to an external electrical supply as they recharge the batteries under braking. Hybrids are most effective in urban stop-start driving environments and can drive in electric mode only at low speeds.

Plug-in hybrids are now coming to market that have larger battery packs and although they require plugging in, their range in electric mode is considerably greater. Plug-in hybrids have a significant price premium, however Government grants are being introduced in 2011 which could offset this.

Due to their fuel efficiency, hybrids have some of the lowest CO₂ emissions of any cars available in the UK. **Significant cost savings are generated for the employer through lower Vehicle Excise Duty, Class 1A National Insurance Contributions, 100% writing down allowances and lower fuel costs.** The employee can also benefit from lower company car tax and lower personal fuel costs.

Hybrids are becoming very cost effective now as their numbers increase, and in the **short to medium term look to be a very cost effective solution.** Expect to see greater model availability in the next few years, as their only real drawback is limited model availability. The current low emission hybrids available in the UK are the Honda Insight, Civic IMA and Toyota Prius.

Bio fuels

Bio fuels can be viewed as a sustainable fuel source, which could help move the world's reliance away from fossil fuels.

The CO₂ benefit of bio fuels is that while the plant or crops that yield the bio fuel are growing, they absorb CO₂ hence offsetting much of the CO₂ that is later emitted from the vehicle's tailpipe.

The key issue with bio fuels is where you source the raw material. Bio fuels can come from many sources including recycled cooking oil, plant matter and crops. Bio diesel or bio ethanol is available through UK forecourts in low blend mixes with standard petrol and diesel but using high bio-blends requires vehicle modification or a suitable vehicle to be obtained in the first place.

Bio fuels provide **environmental and sustainability benefits**, however their cost of production usually offsets the duty rate discounts provided by HMRC. This option therefore targets longer term sustainability and **rarely provides cost saving opportunities** for fleet operators even though there is typically no cost premium for the vehicles.

Electric vehicles

Electric cars have been promoted as potentially being the environmentally friendly vehicle of the future as they produce no tailpipe emissions, and recent improvements in battery and motor technology has made them more practical.

The UK is currently seeing an increase in interest in electric light commercial vehicles but actual sales of electric cars declined in 2008.

Typically, electric cars **cost more than traditionally-fuelled cars to operate** due to the high cost of the batteries even though they benefit from cheap fuel, zero rate VED and other tax breaks. In London however, a 100% discount from the London Congestion Charge and free parking and plug-in points (in some Boroughs) can make them cost effective, and explains why most of the UK's electric cars are operated there.

Electric vehicles are seen by many as the **mid to long term environmental**

solution, although vehicle cost and range limitations mean these vehicles are **only suitable for urban driving conditions**, so again are very much niche players. Government grants to promote electric vehicles are being introduced in 2011, which may help address the cost issues.

Compressed Natural Gas

CNG, or Compressed Natural Gas, is mainly used on commercial vehicles (usually HGVs) as the fuel tanks are typically heavy, large and expensive.

Limited light weight vehicles exist in the UK with the only manufacturer offering being Volkswagen's Caddy van. CNG has always had similar problems to LPG but on a larger scale. Essentially you need to provide your own refuelling facility, hence this option is **only really available for large "return to depot" fleets.**

CNG is therefore not expected to make any significant inroads into the UK car market in the short to medium term.

Hydrogen fuel cells

For many years hydrogen fuel cells have been a future dream, but now some vehicle manufacturers are getting tantalisingly close to a practical working solution.

Currently the cost of the vehicles is prohibitively expensive and there are still issues over range and reliability. The biggest issues to overcome however, will be the provision of a suitable refuelling infrastructure, and the clean and efficient production of sufficient volumes of hydrogen.

In short we believe it will be a minimum of **10 to 20 years** before we can expect to see hydrogen powered vehicles on our streets in any significant numbers, although Honda has already released the "Clarity" hydrogen fuel cell car in Japan and the US.



Most alternative fuels are niche players – what about traditional fuels?

Petrol

Cars running on unleaded petrol have fallen out of favour in the UK fleet market due to the increasing focus on CO₂ for taxation, resulting in diesel cars being the fleet favourite.

However, recently there have been a number of advances with petrol engine technology that are challenging diesel's dominance, with a number of petrol cars actually **outperforming diesel units on a cost basis**. This is helped by the growing fuel price differential between petrol and diesel and the price premium for diesel cars. In addition to the cost savings, petrol models produce lower tailpipe emissions than diesels especially particulate matter and oxides of nitrogen (NO_x).

These technologies are **available now** and are increasing as more models and manufacturers introduce improved technologies.

Diesel

Diesel has been the fleet champion for many years now due to high efficiency common-rail direct injection systems providing low CO₂ emissions and excellent fuel economy.

Whole life cost analysis usually results in some of the **cheapest car running costs**; however the increasing premium for diesel at the pumps is narrowing the cost gap between diesel and petrol. Diesels are much cleaner now than they have been historically, due to particulate traps and ultra low sulphur fuel, but petrol cars will typically produce lower tailpipe emissions.

Diesels are still in the main, the most cost effective no compromise fuel type for company cars.



Petrol models produce lower tailpipe emissions than diesels.

Traditional fuels with cutting edge technology

The focus on saving fuel and reducing CO₂, and hence costs, is yielding a new breed of low emission, high fuel efficiency car.

Advances in engine technology are enabling smaller engines to produce increased power, hence replacing old larger units whilst improving fuel efficiency and emission profiles. This is being achieved via a combination of enhanced engine technologies, regenerative braking, engine downsizing, reducing vehicle weight, improved vehicle aerodynamics, and optimised transmission systems.

Many view the combination of these approaches to be the **short term environmental solution**, with most car manufacturers rushing environmentally-focused products onto the market. These include Efficient Dynamics (BMW), TDle (Audi), BlueMotion (Volkswagen), DRIVE (Volvo), ECONetic (Ford), EcoFLEX (Vauxhall) and Ecomotive (Seat).

These are a **low risk** option which **minimise fuel consumption** and hence **reduce fuel costs and CO₂ based taxation costs**.



Advances in engine technology are enabling smaller engines to produce increased power.



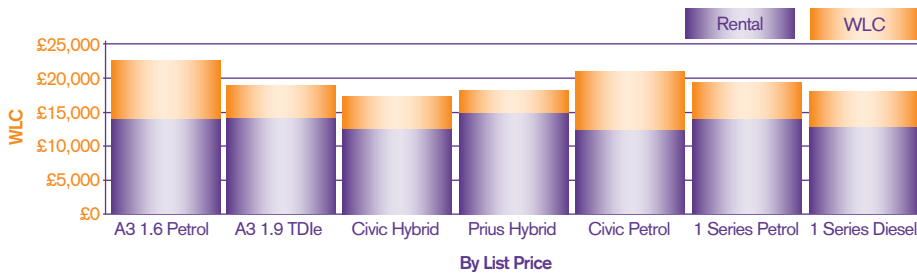


Whole Life Cost Comparisons

The best way to demonstrate the potential cost savings or variances between different fuel types and technologies is by using whole life cost (WLC).

We define WLC as including monthly rental, disallowed VAT, Class 1A National Insurance, fuel and Lease Rental Restriction. Using the WLC basis ensures all costs associated with running the vehicle are considered. We have focused on **petrol, diesel and hybrids** as alternatively-fuelled vehicles' cost profiles often depend on how and where the vehicle will be used, how the fuel is sourced and if bunkering is used, and vehicle conversion costs can vary significantly with many fuel options not available from the car manufacturers.

As the charts below show, the monthly running costs for seemingly similar cars vary significantly, with fuel efficiency and tax playing a significant part in the overall cost profile. The cheapest car by list price has the highest WLC, and while all the cars have similar monthly rentals, there is over a £4,000 difference in WLC terms over three years. Therefore the best advice for cost effective fleet management is to select vehicles using WLC principles. This naturally encourages vehicles which are more fuel and tax efficient. Focusing on CO₂ can reduce tax, fuel costs, VED and benefit the employee by reducing their company car tax bill.



Model (in ascending order of WLC)	Fuel Type	CO ₂ (g/km)	List Price	Monthly Rental	WLC (36 months – 60,000 miles)
Honda Civic 1.4 i-Dsi ES IMA CVT ES Lthr Auto 4dr	Hybrid	109	£17,930	£389	£18,080
Audi A3 Sportback 1.9TDle	Diesel	119	£17,720	£394	£18,569
BMW 118d 2.0 SE 5dr	Diesel	119	£20,923	£395	£18,731
Toyota Prius 1.5 VVT-i T3 Hybrid CVT Auto 5dr	Hybrid	104	£18,118	£415	£18,818
BMW 116i 1.6 122 SE 5dr [Dynamic Pack]	Petrol	139	£19,369	£396	£19,738
Honda Civic 1.8i VTEC EX Glass Roof i-SHIFT 5dr	Petrol	152	£18,283	£398	£20,391
Audi A3 1.6 Sport 3dr	Petrol	162	£16,780	£392	£22,085

Source: Lex database



Summary

There are no simple solutions to our future transport requirements, and there will probably be no single fuel solution, but a combination of different technologies for different applications.

The short term

We anticipate petrol and diesel vehicles will maintain their pre-eminence in the UK fleet market, and the technology will become more efficient. The fossil fuel based infrastructure has taken years to build and will not be replaced quickly nor will it be a cheap exercise.

New add-on technologies such as regenerative braking and stop-start transmission, are likely to yield incremental benefits with the EU and Governments legislating for lower CO₂ emitting vehicles. We are also likely to see an expansion of hybrid technologies to complement traditional power sources.

The medium term

As oil prices increase, alternative fuels such as bio fuels, electric vehicles and gaseous fuels are more likely to enter mainstream use. Electric vehicles might well be a viable alternative, as soon as battery range improves to allow the vehicles to become more suitable for use in everyday conditions (i.e. not just in urban areas). Bio fuels need to be produced from truly renewable sources.

The long term

Technologies such as hydrogen might well become the norm, however at this stage it is too early to say how this fuel will be produced and distributed. Different manufacturers have differing opinions as to what will be the fuel of the future but realistically it is likely to be a blend of various fuels and technologies.

So what can fleets do now to provide an effective way of minimising fuel bills, taxation and operating costs?

› Focus on whole life cost

This should naturally encourage lower CO₂ vehicles which use less fuel and are more tax efficient.

› Educate drivers

Correct vehicle maintenance, fuel efficient driving styles and only making car journeys when necessary will all help reduce costs.

› Ensure fuel is managed correctly

A stable, robust and measurable method of fuel management will help cost control. This does not need to be complex but strong data collection and data management is required. Fuel cards can assist in achieving the initial data collection if utilised properly.





About Lex Momentum

Lex Momentum is a strategic consulting team that works with board directors and senior managers to identify how fleet can better impact key business objectives. Our consultancy covers cost reduction, policy, tax, the environment, duty of care and fleet delivery strategy. In addition to core fleet issues, we consult on related areas such as fuel and cash schemes.

Since the team was created in early 2004 we have advised over 350 companies – both clients and non-clients of Lex.

Our consultants have depth and breadth of knowledge in a range of technical areas and have prior experience in major advisory firms or industry. We combine leading edge thinking with the operational experiences that come from being part of Lex, the UK's largest fleet provider.

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