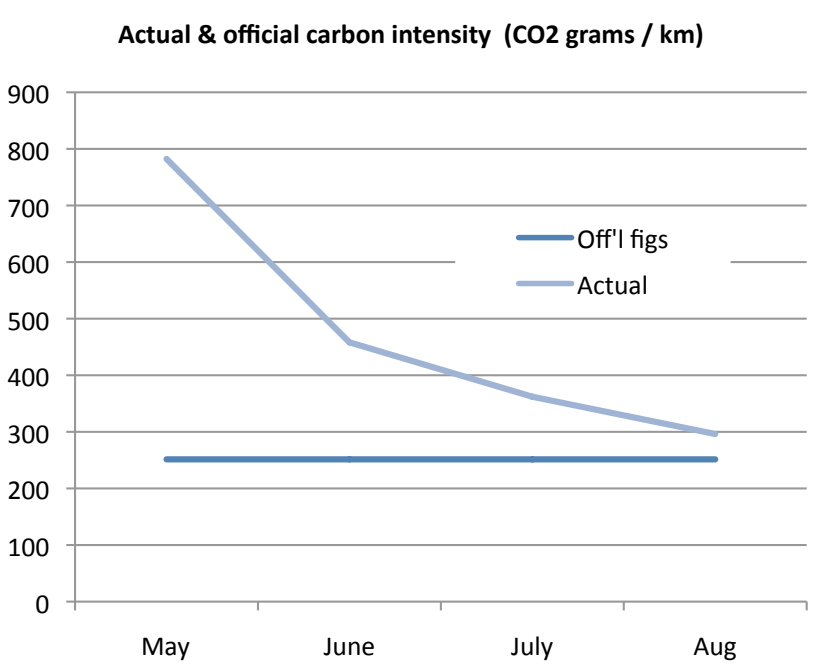
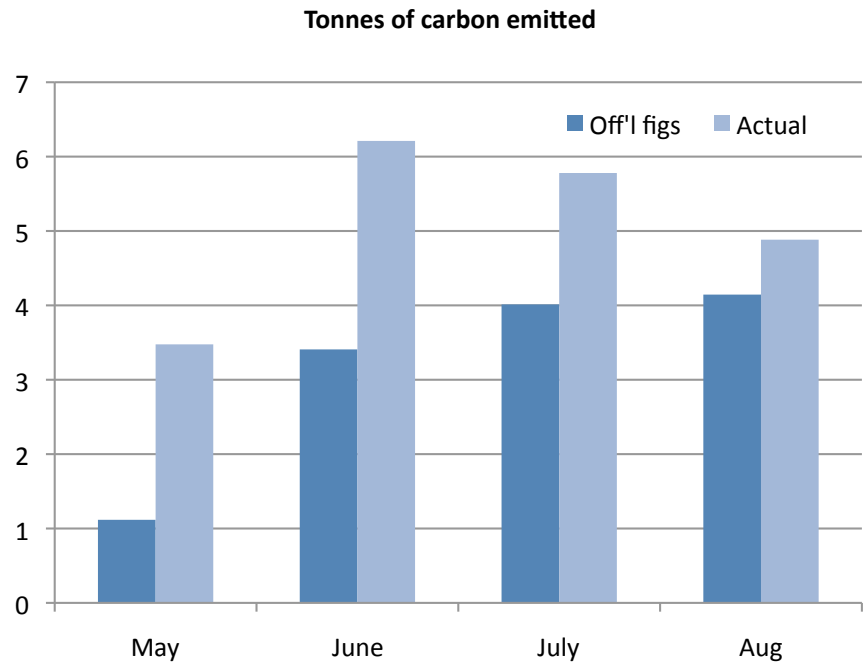
Analysis of the right vehicle

For Eco Movers Ltd

02/07/10

RECENT CARBON PERFORMANCE





- Official figs for a LPG Transit is 251 grams / km, which is 1.8% better than a Ford Transit Diesel Euro 4.
- LPG's environmental credentials seems to be more linked with particulates rather than greenhouse gases.
- The ratio of LPG to petrol use has a big impact on emissions. For the group of drivers who were not given driver fuel consumption awareness training and had no attempted control over driver petrol usage, the ratio was 5:1, resulting in actual emissions of 782 grams per km – more than 3 times the emissions of a diesel equivalent.
- Combine this with the fact that ECO Movers has been taking business across London means that for the group of drivers who were not given driver fuel consumption awareness training , despite good intentions, it is likely that the carbon intensity for this group will have been higher than a typical Man & Van business.
- It is worth noting that for LPG's to be comparable to an efficient diesel engine their petrol usage has to be tightly monitored. For the group where driver fuel consumption awareness training was implemented, petrol consumption dropped by 94% over a 3 month period.

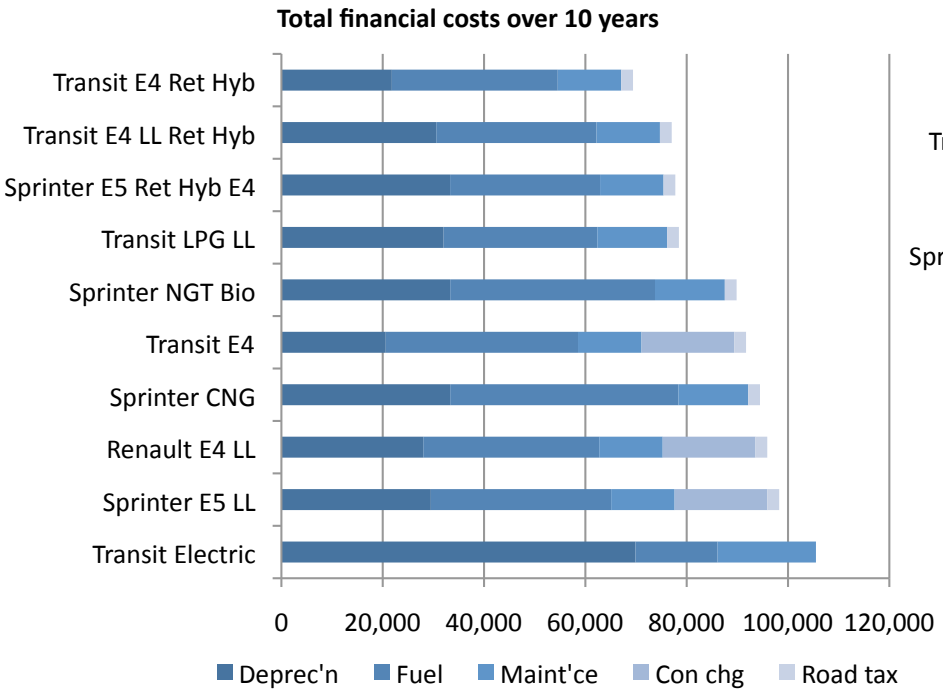
MAIN VEHICLES IN CONSIDERATION

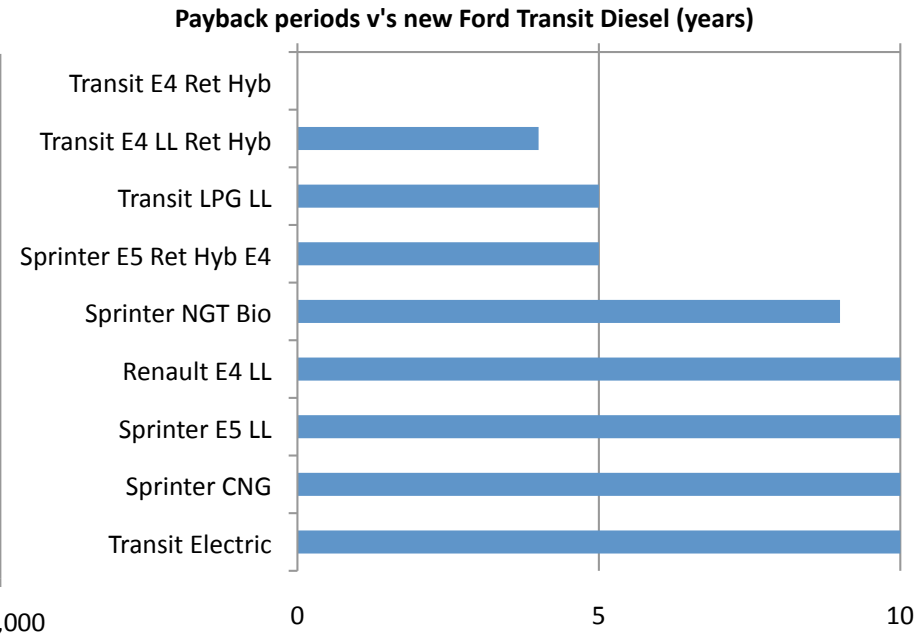
Vehicle	Reference	Fuel	Purchase price	CC exempt (Yes /No)	Reported CO2 g/km (adj'd)	Road Tax	Efficiency Km/litre
Renault Master Low Loader	Renault LL	Diesel	£27,999	No	269	£185	11.1
Ford Transit Euro 4	Transit E4	Diesel	£20,599	No	297	£185	10.1
Ford Transit Euro 4 with Retro Hybrid	Transit Dsl Ret Hyb	Diesel	£21,800	Yes	233	£185	11.8
Ford Transit Euro 4 Low Loader with Retro Hybrid	Transit LL Ret Hyb	Diesel	£30,565	Yes	237	£185	12.2
Mercedes Sprinter Euro 5	Sprinter LL E5	Diesel	£29,500	No	278	£185	10.8
Mercedes Sprinter Euro 5 Low Loader with Retro Hybrid	Sprinter LL E5 Ret Hyb	Diesel	£33,300	Yes	243	£185	13.0
Mercedes Sprinter Euro 5 CNG	Sprinter CNG	CNG / NGT	£33,319	Yes	301	£185	7.0
Mercedes Sprinter Euro 5 Bio methane	Sprinter NGT Bio	NGT Bio methane	£33,320	Yes	172	£185	7.0
Ford Transit LPG Low Loader	Transit LPG LL	LPG	£32,020	Yes	291	£185	6.3
Ford Transit Smith Electric	Transit Electric (Ecotricity)	Electric	£69,885	Yes	0*	£0	0.0

KEY ASSUMPTIONS

Assumption	0	*Notes*
Expected lifespan of vehicle (years)	10	
Diesel annual inflation	7%	*Versus 5% average over past 5 years*
CNG price inflation	7%	
CNG price inflation Gasrec	0%	*Low carbon solution, zero inflation assumed*
LPG inflation	7%	
Electricity inflation (renewable)	0%	
Kilometres / annum / van (km)	25,320	*19,667 miles / yr. Based on 20% less than ave for last 3 months*
Maintenance costs / km - diesel	0.039	*£1,000 per annum - awaiting more figs from Yewcoat*
Maintenance costs / km - CNG	0.043	*Premium because of modifications*
Maintenance costs / km - electric	0.035	*Less moving parts but new technology*
Dsl / CNG / LPG maintenance cost inflation	5%	
Electric vehicle maintenance cost inflation	20%	*Allows for a new battery - £19k over 10 years*
Con charge / day	8.00	
CC inflation	5%	
Days paying CC / week	3.50	
Road tax inflation	5%	
Depreciation years - diesel	8	
Depreciation years - CNG	5	
Depreciation years - LNG	5	
Depreciation years - electric	4	
Cost / tonne of carbon	£38	*Based on McKinsey's view of appropriate price – versus normal offset prices £6-12*

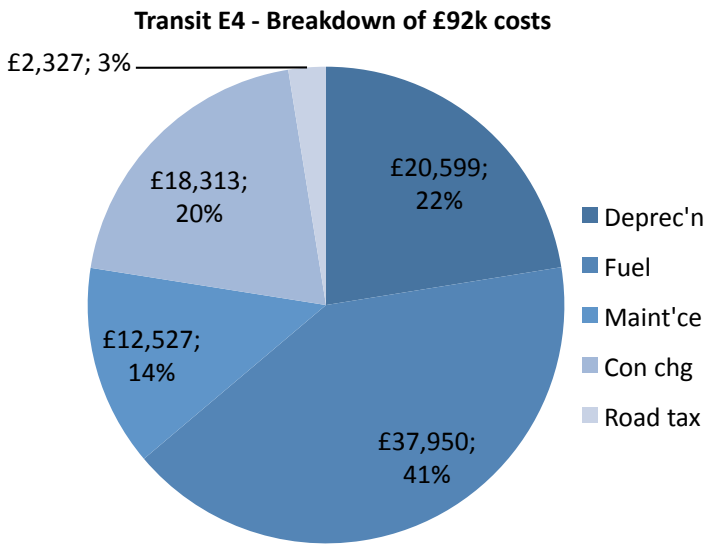
FINANCIAL COMPARISON 1

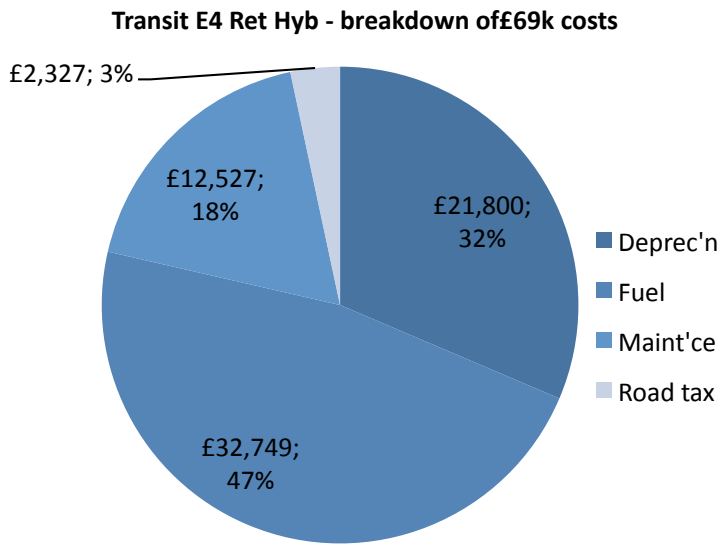




- The three retro fit vehicles in our selection are the cheapest to run, but it should be noted that our assumption that they will become congestion charge exempt is significant. The Ford Transit with a retrofitted hybrid system, based here on the Ashwood system which costs £3,800, has lifecycle costs of £69,400, versus the unmodified version's life costs of £91.7k – a difference of £22.3k.
- Our congestion charge costs are based on an van going into the congestion charge zone 3.5 days / week. With the price increasing at a rate of 5% per annum, congestion charge costs are expected to be £18,313 over the 10 year period.
- It is worth noting that the financial savings of £22.3k less the adaption costs of £3,800 is roughly the same as the congestion charge savings over the period – thus, on pure financial grounds, the decision to add a retrofit hybrid is marginal without congestion charge exemption.
- Following on from the point above, we believe some of our competitors may be recouping the congestion charge more than once in the day, and may therefore making a margin on it. This may dissuade some from retrofitting in the absence of congestion charge exemptions.

FINANCIAL COMPARISON 2

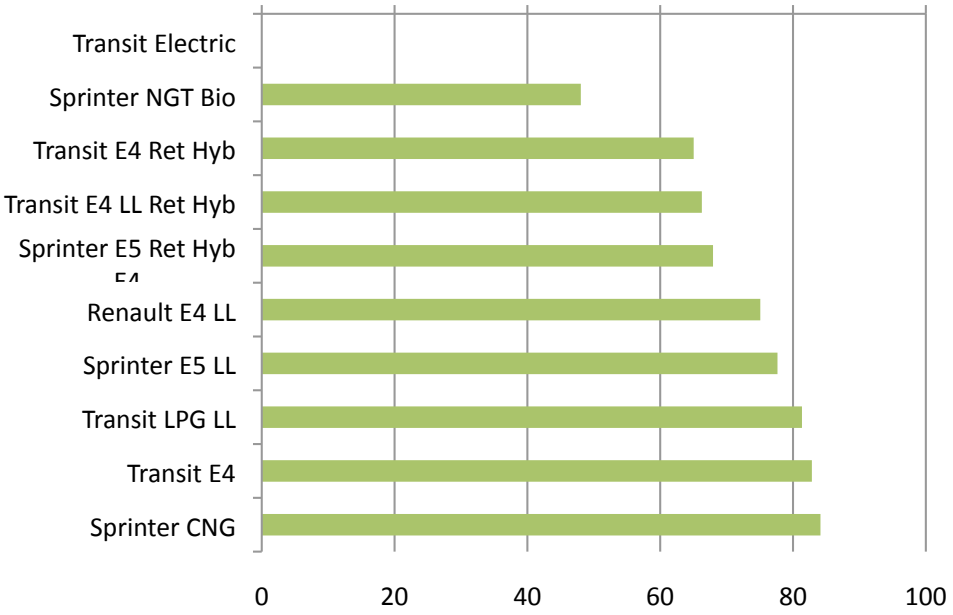




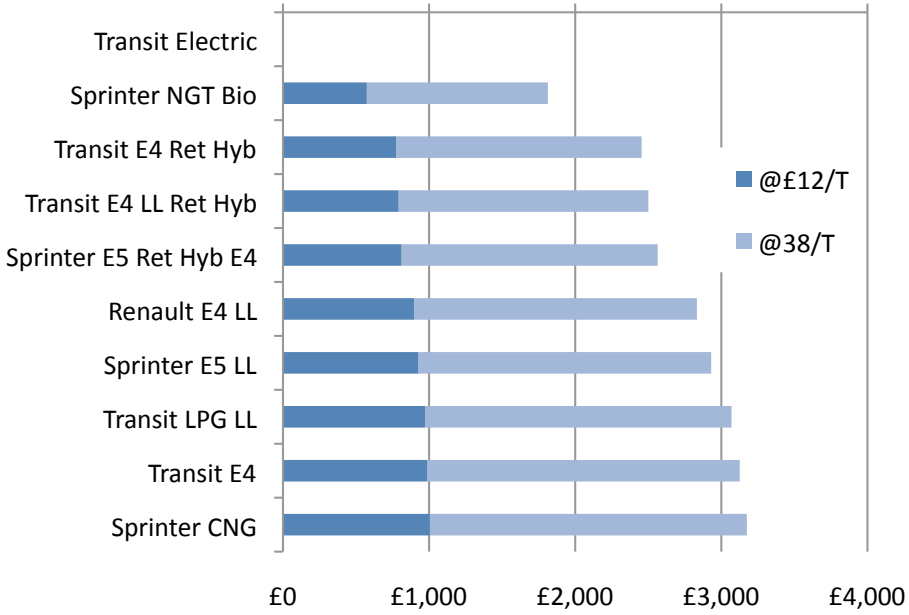
- According to our assumptions, the addition of a retrofit hybrid to a Ford Transit reduces the lifecycle costs by £22.3k. The investment of £3.8k is offset by savings in the following areas;
    i. Fuel costs are £5.2k cheaper
    ii. The congestion charge of £18.3k is avoided
- Based on the above, the fuel costs account for 47% of the total lifecycle costs. Being a variable cost, there are opportunities to reduce this through efficient working practices, which is beyond the scope of this document.

CARBON COMPARISON

Tonnes of carbon emitted over 10 year period

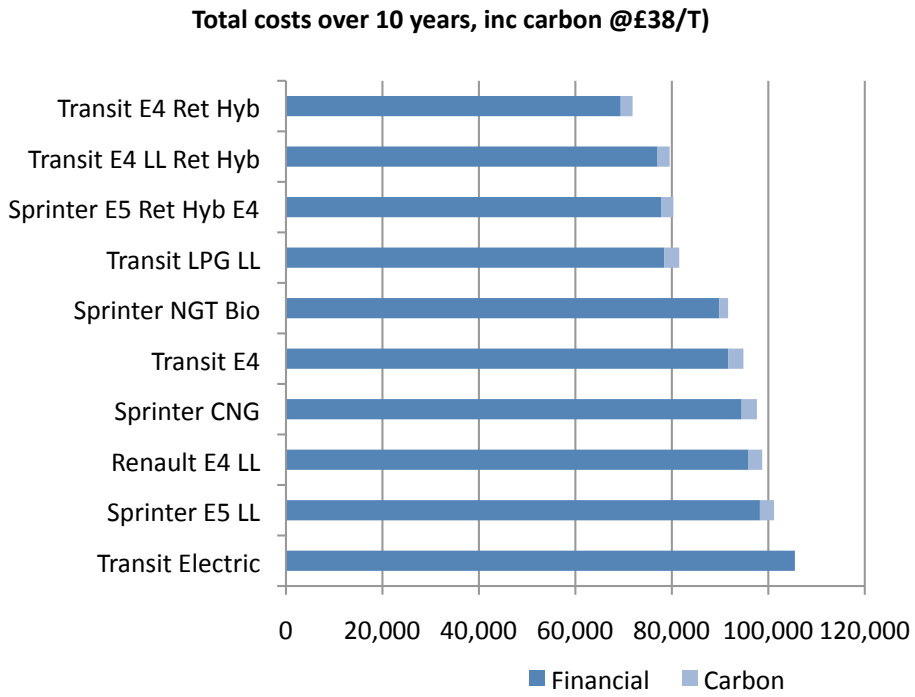


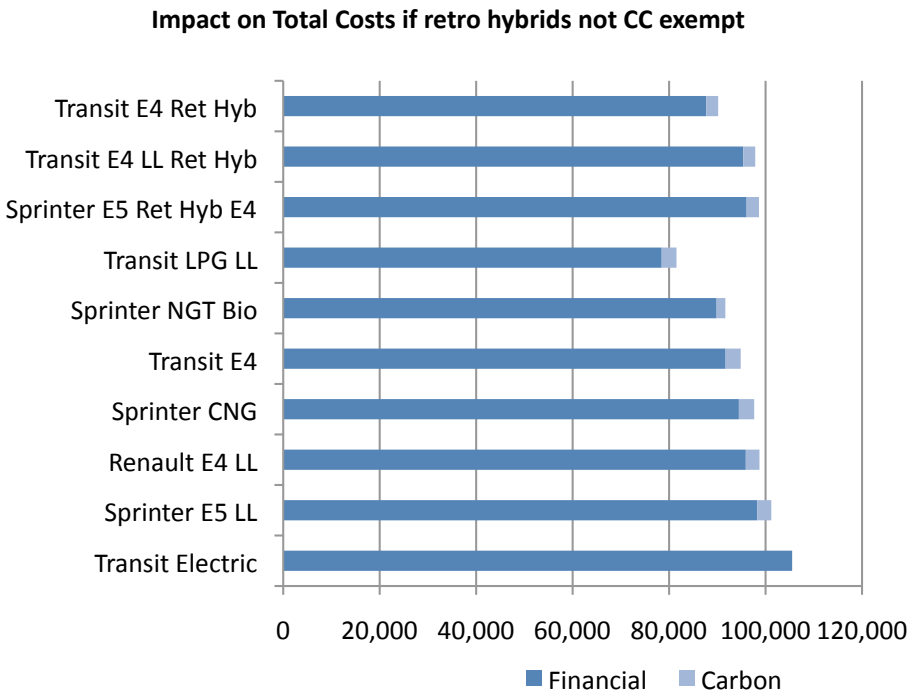
Cost of off-setting 10 year emissions, based on 2 prices



- Man & van / light removals business is not an significantly carbon intensive business , demonstrated by;
  i. A Ford Transit , with Euro 4 engine and no hybrid system, emits around 8 tonnes / annum, less than the average UK adult
  ii. The cost of offsetting 8 tonnes per annum at a the current ETS price of £11.95 is £99 per annum. The cost at McKinsey's recommended £38 / tonne is £315 per annum.
  iii. The cost of offsetting the same vehicle over its expected lifespan is £3.1k.
- The two lowest carbon vehicles has significant operational challenges.
  - Electric Transit : load bearing | range | driver appeal | technology risk
  - Sprinter NGT Bio: limited no of suppliers | needs min fleet of 10 vehicles
- The next 3 lowest carbon vehicles are retro hybrids. The only available Transit figures are for the Euro 4 engine, and it is expected that the newly-available Euro 5 engine will represent a further improvement.

FINANCIAL COMPARISON 3





- Even when we assume a Carbon Price of £38/tonne, around 3x the current Carbon Price, it doesn't change the order of financial costs of the different vehicles.
- If congestion charge savings are removed, the Transit LPG becomes the next cheapest option. This does not take into account issues such as security of LPG supply, LPG infrastructure, maintenance of subsidy, ratio of LPG to petrol use and resell value.
- If vehicles with supply security issues are removed (LPG and CNG), the Transit E4 Ret Hybrid becomes the cheapest over the lifecycle when the congestion charge is included. Given that this charge can be passed onto the customer, the real costs may be less.

CONCLUSIONS

i. A number of factors would seem to point towards the most efficient diesel engines, with retrofitted hybrid systems, as being the most suitable choice. Namely;
   a. Being a common choice of vehicle, they are likely to have a higher residual value than specialist fuel vehicles such as CNG and LPG. There is less investment risk monies associated with this decision.
   b. They do not rely on driver behaviour to achieve financial and carbon savings. We know from experience that petrol conversions can become expensive to run if petrol is used unnecessarily.
   c. Diesel is readily available, and is its commercial use is not dependent on government subsidy that could be withdrawn unexpectedly.
   d. The cost of the retrofit hybrid can be recouped through the fuel savings costs, and becomes an attractive investment if it is congestion charge exempt.

ii. The Ford Transit beats the Mercedes Sprinter comparable on cost, including when carbon emissions are included as a financial cost. It should be noted that we have been comparing the Euro 4 transit against the Euro 5 Sprinter, as emissions data for the Euro 5 Transit is not available. We may be able to make further carbon savings through ordering the Euro 5 Transit that have not been included here.

iii. There is value in having distinctive vehicles that stand out from the market – we may lose some of our “handle” for PR if we have similar vehicles to the rest of the industry. However, this may be containable by having a well-articulated environmental policy based around a metric such as the carbon intensity of a job. Having the electric vehicle to pioneer technology despite the clear cost implications may also be valuable

iv. As the understanding of carbon increases, companies who have gone for seemingly green solutions that aren’t in fact green stand the risk of being found out, and tarred with the “greenwash” brush.

KEY CONSIDERATIONS

i. For the sake of this
    a. Being a common choice of vehicle

ii. Some of the lowest carbon solutions have major shortcomings in other areas, that make them difficult decisions even for a business

iii. Phase 3 of the **Low Emissions Zone**, which affects 3.5 tonner vehicles, was due to come into effect in 2010, but is now likely to be delayed until 2012. It is estimated that 90,000 vehicles would have been paying £100 per day, a disproportionate cost relative to the carbon intensity, but it may increase the likelihood of a carrot being offered through the congestion charge.