Contents

Contents 2
Executive Summary 3
1. Introduction 4
2. Carbon Footprint 5
3. Recommendations 6
Appendix A: EST CO$_2$e Methodology 14
Appendix B: Integral UK 18
Appendix C: Motorvate 20
Executive Summary

Having reviewed the limited data made available, we have calculated the University of Sheffield (UOS) annual carbon footprint to be 50 tonnes of CO₂. However, the data provided had some gaps so average mileages had to be used, so approximations were used and this means that the annual carbon footprint is not a true reflection of UOS’s carbon impact of business travel.

The first step to improving efficiency is to substantially improve the data set for all fleets. This will enable an accurate baseline to be put in place. UOS needs to accurately monitor business and private mileage for grey fleet vehicles, staff using their own cars and all travel in company cars and vans. In addition, fuel data should be monitored where available, which can then be used alongside the mileage to provide accurate vehicle mpg on a regular basis.

A system needs to be in place to allow fuel use to be aligned with mileage for all staff with fuel cards in conjunction with the business and private mileage split apportioned to it where staff are not on private fuel benefit. In addition staff claiming mileage rates should be identifiable as to the actual miles they have claimed, what car they are driving (company car, grey fleet or vans), what the registration is, and whether or not they have a fuel card.

Once information is accurately and regularly collated, measures can be implemented to ensure that fuel use and mileage are minimised and staff are encouraged not to travel where possible. If a journey is necessary there should be a robust decision making process which enables staff to travel in the most efficient mode for their journey. Over 100 miles staff should consider either trains for city to city journeys, or daily rental hire cars which can be specified as low emission and for these longer journeys are cost effective.

For the vans the process is similar in encouraging staff to only drive where necessary. For the mileage which must be undertaken, monitoring mpg and targeting improvements is vital. Encouraging staff to improve their driving style through training, UOS should be commended for developing driver training courses which will cover the basis of SAFED techniques as well as the other driver training requirements. EST have their own subsidised driver training called Smarter Driving which would be worth UOS investigating. This provides benefits such as lower accident rates and reducing wear and tear on vehicles as well as lower fuel costs and emissions.

Alongside this a robust procurement system, to find the most efficient vehicles and technologies capable of the work required should be put in place. Using a Whole Life Cost methodology which includes the running costs of the vehicle throughout its life on fleet will ensure that only the most cost effective vehicles will be purchased.

University of Sheffield has an opportunity to make significant fuel and mileage cost savings through implementing these measures, and working with the Energy Saving Trust on-going. Further assistance and help is available including the Smarter Driving Programme, Motivate, Fleet Briefing and other consultancy services to monitor and manage the organisation’s travel and emissions proactively.
1. Introduction

The Fleet Health Check [FHC] programme is funded by the Department for Transport [DTT] and looks at vehicles up to a gross weight of 3.5 tonnes. The programme has been designed with the following aims in mind:

- To quantify the carbon dioxide emissions and costs resulting from fleet and staff business travel in vehicles weighing less than 3.5 tonnes.

- To highlight the priority areas within a fleet operation for carbon and cost savings, benchmarking performance wherever possible against fleets in similar sectors.

We use ideas of good practice in fleet management and the experience of many different kinds of fleet in order to highlight what is possible and what is practical.

Our approach to fleet management is based on three principles:

- source fuel efficient, fit-for-purpose vehicles
- use them efficiently
- use them less.

We are grateful to Gary Moore (Fleet and Logistics Manager) for supplying the following information which was used to calculate a carbon footprint and also provide context for our recommendations:

- Fleet List
- Fuel Report
- Work Related Driving Policy
2. Carbon Footprint

Carbon Footprint Summary

A CO₂ footprint is a good proxy for the quality of fleet-related management information as it relies on accurate information for all vehicles which have driven on business in any given period. The less accurate the metric used to calculate a particular part of the footprint, the less well data about these vehicles is managed.

The methodologies employed by EST to calculate the CO₂ footprint for a fleet operation are set out in Appendix A and copies of all the calculations and assumption made have been supplied separately with the carbon summary spreadsheet. But the table below is a useful graphic to show how we employ particular metrics.

<table>
<thead>
<tr>
<th>Methodology No.</th>
<th>Applied When</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Litres of fuel used per vehicle over a given time period is known</td>
<td>Most Accurate</td>
</tr>
<tr>
<td>2</td>
<td>CO₂ rating of the vehicle and annual mileage are known</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Only the fuel type and engine size of the vehicle are known plus the annual mileage.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Only the vehicle’s fuel type and mileage are known</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Only vehicle mileage data is known</td>
<td>Least Accurate</td>
</tr>
</tbody>
</table>

Based on the data available, we have been able to calculate a representative carbon footprint:

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Number of Vehicles</th>
<th>Total Annual Mileage</th>
<th>CO₂e tonnes</th>
<th>EST metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Car</td>
<td>16</td>
<td>85,917*</td>
<td>24</td>
<td>1/2/5</td>
</tr>
<tr>
<td>Light Commercials</td>
<td>34</td>
<td>37,878**</td>
<td>16</td>
<td>1/4</td>
</tr>
<tr>
<td>Grey Fleet</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50</td>
<td>123,795</td>
<td>50</td>
<td>NA</td>
</tr>
</tbody>
</table>

*Where mileage data/fuel litrage was not available (10 cars) the average mileage of 5,370 of the cars with data was used
**Where mileage data/fuel litrage was not available (23 vans) the average mileage of 1,114 , which is very low, of the vans with data was used

Given that this table is calculated including the least accurate metric Method 5 for a significant proportion of the vehicles due to missing data, UOS should view these results with a degree of caution.
3. Recommendations

3.1 Arrange to gather accurate data on-going across all fleets and business travel

Improving the data set will enable UOS to track the effect on emissions of changes made within the fleet profile and its operation, and therefore to see the effect of the implementation of measures put in place in the future to reduce emissions more clearly.

The main issues highlighted by calculating the carbon footprint were that there is no access to the following data currently in the UK:

- Vehicle registration numbers, registered CO₂ emissions and actual annual mileage.
- Business mileage for all company cars, vans or grey fleet vehicles.
- The proportion of business to private use for those with fuel cards.
- Vehicle emissions details, for use alongside mileage, for those grey fleet vehicles which do not have fuel cards.

Although data for the UOS fleet was made available on the individual mileage or vehicles in this fleet that there are crucial gaps in information. If this is the case UOS is taking a significant risk. The main issues here are:

- Risk associated with vehicles in use potentially not being fully roadworthy.
- Higher fuel use through older and larger vehicles being on the Grey Fleets.
- Little control over the mileage and driver style in these vehicles.
- Lack of cost management or control.

Only when a system to analyse the actual business mileage and vehicle information for these vehicles has been implemented will anything approaching the full picture of the carbon footprint be available, therefore it is an important area to address.

To further improve the fuel data set, staff should be asked to provide accurate odometer readings each time they refuel. This will make the steps in the following section possible.

In summary then, the data needed for the carbon footprint to be recognisably best practice is:

- Fuel card litre use data by vehicle with accurate mileage entered at each refuel.
- Company Car, Grey Fleet and Van Fleet business/private mileage split per vehicle alongside the vehicle manufacturer carbon emissions, or engine size and fuel type if no emissions data is available for a vehicle.

One possible solution to gathering mileage is to use an external organisation via a web based system which is completed each month by staff and then fully verified and analysed. This would provide UOS with accurate data on business and private mileage, and allow private fuel costs to be reimbursed accurately at
the same time. Companies which provide this service include Vertivia and The Miles Consultancy, although this is not an exhaustive list.

3.2 Set up processes to monitor and manage business mileage and fuel consumption for all fleet vehicles

The carbon footprint analysis shows that the company car and van fleet vehicles are responsible for approximately tonnes of CO₂ emissions per year, based on the mileage provided by UOS. The cost savings if UOS implemented a fuel management system could provide savings in the region of £2,115 net of VAT (based on an average 21 mpg for vans, 36 mpg (where data not available) for company cars and a cost of £1.18 pence per litre ex-VAT for fuel) and save 5 tonnes of carbon.

Once data is available, it will then be possible to begin to monitor fuel use and mileage and work to reduce them over time. We know from experience that organisations can realistically achieve between a 10-15% reduction in fuel purchases from managing fuel and mileage more precisely. This can be accomplished via approaches such as better data collection and record keeping, monitoring actual fuel economy performance of individual vehicles, and monitoring vehicle mileages to help ensure that the most cost effective and efficient methods of carrying out core business activity are being used. The use of technology such as speed limiters and telematics systems may also bring some benefits as well.

Either monitoring the MPG by driver as a % of the manufacturer combined figure over a rolling 12 months is fair. Combining this with a staff target as described above will allow performance to be influenced in a consistently positive way.

By listing vehicles/staff by their performance, it becomes possible to identify exceptions by vehicle make/model or driver. Ideally action points should be set for those who are identified as being below 80% of the manufacturer combined MPG.

In summary then the areas to monitor for each vehicle are:

- Average pence per mile (monthly and year to date).
- MPG as a % of the manufacturer combined figure.
- Exceptions < 80% identified.
- Set targets between the manufacturer MPG and 15% below it depending upon the area of operation and historical performance indicators.

It is therefore vital UOS reviews how it can monitor actual fuel use and mileage, with wider staff engagement on how individual mpg improvements might be achieved.

Offer Smarter Driving Training to all Fleet Drivers with Fuel Cards

In conjunction with monitoring and targeting vehicle mpg, investing in training drivers in how to drive their vehicles more efficiently will provide a basis for engaging staff in reducing fuel use and costs across the organisation. Therefore,
it is commendable that UOS are in the process of developing a driver training course. From the training we have provided to over 30,000 people, an overall average improvement in fuel economy of 14.9% was achieved on the day. However, studies in Germany have shown that in the longer term savings do drop to between 4 and 7%. The savings in fuel will pay for the training of staff who drive operational vehicles in less than a year based on the long term savings.

The training, which costs just £25 +VAT per driver, consists of two runs: the first is under instruction from the trainer and the second involves the driver putting some of the techniques into practice. This adds up to 50 minutes of on road tuition for each driver.

Energy Saving Trust can provide structured help in monitoring fuel use prior to and following training in order to quantify the actual savings made. For further details about this and the Smarter Driver training itself contact your Fleet Consultant, Tony Greig on 07507 883776 or email tony.greig@est.org.uk

Appendix B of this report contains a case study outlining how the Energy Saving Trust worked with Integral UK to help them reduce business transport costs and emissions.

Make departments aware of the role they play with individual targets

To maintain a focus on mileage management, there is a need to establish accurate carbon emission benchmarks for all fleet mileage at the company and then apportion appropriate targets to each division. This will be very different for the cars and the vans. An overall mileage reduction of 5% per year would be realistic – although clearly, specific operational requirements need to be taken into consideration so not all mileage would be targeted.

If these targets are to be achieved it is important that they are delegated to local management where change can be effected. Meeting the relevant carbon/mileage targets could also form part of the manager’s annual appraisal process and could be further delegated to team members.

3.3 Improve MPG by selecting more efficient vehicles and technology

Challenging the current vehicle specification to bring more efficient models on to the fleet will lead to further cost and carbon savings. Ensuring that the lowest emitting vehicles capable of carrying out the required duties are utilised underpins and supports the overall strategy. Using the Energy Saving Trust approach to Whole Life Costs (WLC) will mean that vehicles incorporating the most efficient engines and new technology will always be selected.

Incorporate a Whole Life Cost Methodology into Vehicle Procurement

Whole Life Costs accurately reflect the actual cost of a vehicle to the organisation over its lifetime on fleet. This will also provide greater transparency with regards to the benefit given and actively encourage drivers to take a more fuel efficient car. It is also very much applicable to vans where fuel use is more important as they use more fuel than most cars.
The basis of this approach is to take account of all vehicle related costs in order to arrive at an overall cost of running the vehicle during its time on fleet. The key factors which are often not taken into consideration are insurance costs and fuel efficiency. It is these factors that can also make a difference when it comes to influencing a 'greener' choice.

The second largest cost by far after the depreciation of a vehicle is the cost of fuel over its lifetime. Given the significant differences in fuel efficiency from one car to the next, factoring this into the cost of a car will significantly impact whether a car fits within the budget and so including the cost of fuel will ensure only the most efficient vans are permitted within the fleet.

Energy Saving Trust has also produced an informal spreadsheet tool to help organisations calculate WLC for vans and cars and compare the outcomes in terms of both cost and lifetime emissions. An example of the output is shown overleaf.

These examples have been calculated using estimated figures for vehicle costs and residual values, and the manufacturer MPG values and show the impact that fuel costs have on the overall cost of operating different vans. They can therefore be replicated using the actual figures quoted in tenders to provide an accurate basis upon which to make purchasing decisions.
### Van WLC Results (pence per mile)

<table>
<thead>
<tr>
<th></th>
<th>Ford Transit 350 LWB 2.4 TDCi 100</th>
<th>Ford Transit 260 SWB TDCi 2.2 85</th>
<th>Ford Transit Connect 220 SWB 1.8 TDCi 75</th>
<th>Ford Fiesta 1.4 TDCi 68</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depreciation</td>
<td>46.9</td>
<td>32.8</td>
<td>28.0</td>
<td>21.7</td>
</tr>
<tr>
<td>Rental</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>VED</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>Servicing, Maintenance &amp; Repair</td>
<td>4.1</td>
<td>4.0</td>
<td>3.9</td>
<td>3.9</td>
</tr>
<tr>
<td>Fuel</td>
<td>22.6</td>
<td>18.8</td>
<td>14.7</td>
<td>9.8</td>
</tr>
<tr>
<td>Insurance</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Class 1A NIC</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total ppm</strong></td>
<td><strong>81.80</strong></td>
<td><strong>63.81</strong></td>
<td><strong>54.82</strong></td>
<td><strong>43.60</strong></td>
</tr>
</tbody>
</table>

### Carbon Footprint (tonnes/yr)

(Business + private - if free fuel provided)

<table>
<thead>
<tr>
<th>Ford Transit 350 LWB 2.4 TDCi 100</th>
<th>Ford Transit 260 SWB TDCi 2.2 85</th>
<th>Ford Transit Connect 220 SWB 1.8 TDCi 75</th>
<th>Ford Fiesta 1.4 TDCi 68</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4.68</strong></td>
<td><strong>3.90</strong></td>
<td><strong>3.04</strong></td>
<td><strong>2.02</strong></td>
</tr>
</tbody>
</table>

UOS has a number of larger vans they could be replaced with more fuel efficient models when due for replacement.

### Select conventional low emission technology

Most manufacturers have had a low emission technology programme within their car ranges, bringing a range of fuel saving technologies such as revised engine management and optimised gearing, tweaked aerodynamics and low rolling resistance tyres to lower the emissions of their vehicles.

Ford extended this into their van range in 2009 starting with the Fiestavan and Transit and now offers the ECO Pack on all Transits (standard on the ECOncetic) which includes Auto-Start-Stop, a switchable speed limiter, twin batteries and trip computer at a retail cost of £200.00 + VAT (£240.00 including VAT). Likewise, Vauxhall has released lower emission ecoFLEX models on its range from Corsavan and Astravan through Combo and Vivaro right up to the large Movano. Another technology becoming more available is stop/start. This switches the engine off when a vehicle is idling in neutral and restarts the engine when put back into gear. Mercedes offer this on Sprinter van and added BlueEFFICIENCY into the Vito model which includes:
- ECO start/stop function (not on automatic transmissions).
- Battery management.
- Minimum Rolling Resistance tyres.
- ECO power steering pump.
- Shift point indicator (not on automatic transmissions).
- Internal engine measures.

The new VW Caddy is another model that offers both BlueMotion and automatic stop/start to offer CO₂ from 134g/km and higher fuel economy.

Specify Speed Limiters on Vans

Liveried vehicles are very visible tools for presenting the UOS image to the general public so the company should not underestimate the negative image presented by vehicles travelling at dangerous and excessive speeds. The fuel consumption and carbon emissions of a vehicle are significantly impacted by speed, Ford has reported that for the Transit there is up to a 9% fuel saving to be made by slowing from 70mph to 65mph and up to 18% from 70mph to 60mph. Therefore including speed limiters in the specification for all new vehicles ongoing would be beneficial in terms of fuel and also company image.

Maximum Speed Limits for Vans and LGVs

<table>
<thead>
<tr>
<th></th>
<th>Built Up Areas</th>
<th>Single Carriageways</th>
<th>Dual Carriageways</th>
<th>Motorways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car-derived vans</td>
<td>30mph</td>
<td>60mph</td>
<td>70mph</td>
<td>70mph</td>
</tr>
<tr>
<td>Small Vans towing trailers</td>
<td>30mph</td>
<td>50mph</td>
<td>60mph</td>
<td>60mph</td>
</tr>
<tr>
<td>Vans over 2.0t (Max weight up to 7.5t)</td>
<td>30mph</td>
<td>50mph</td>
<td>60mph</td>
<td>70mph</td>
</tr>
<tr>
<td>As above, towing trailer</td>
<td>30mph</td>
<td>50mph</td>
<td>60mph</td>
<td>60mph</td>
</tr>
<tr>
<td>Goods vehicles over 7.5t</td>
<td>30mph</td>
<td>40mph</td>
<td>50mph</td>
<td>60mph</td>
</tr>
</tbody>
</table>
Speed limiter case studies

- Tarmac National Contracting have been rolling out a programme of replacement and retrofitting of speed limiters set to 70mph onto their predominantly Ford fleet. Improvements in fuel efficiency have varied from 5 – 20% across the fleet with an overall average of 14%.
- British Gas has been fitting limiters set to 70mph to their 10,000 vans since 2006 at replacement. This has primarily been done for driver safety but also for brand protection for which they have seen a drop in the number of complaints. They are also keen to reduce their £14 Million fuel bill.
- National Grid has set speed limiters to 70mph to its 3,200 vans since 1995
- BT and Computacenter as part of a standard vehicle specification within their joint procurement process limit their vans to 70mph

Keep Track of further developments in alternative fuel vans

UOS should monitor a recently launched independent website and information service to keep track of developments in electric vans in particular.

www.ecovansa2z.com is entirely dedicated to low carbon and zero emission light commercial vehicles together with ancillary products and services that are designed to improve efficiency and fuel economy.

There is a growing range of electric vans available in the UK, some direct from the manufacturer, others that are imported through a distributor. Electric vehicles are already being used in the UK by companies such as Sainsbury’s, Tesco and the University of Birmingham. A wider range of vehicles are on the market and even more are due direct from van manufacturers through 2012.

The first vans to be made eligible for the Government’s new Plug-in Van Grant (20% of list price up to £8,000) are:

- Mercedes-Benz Vito E-Cell.
- Renault Kangoo ZE and variants (Kangoo ZE and Van Maxi Crew ZE).
- Smith Electric’s Edison variants SE2 and SE3.
- Faam’s ECOMILE and JOLLY 2000.
- Mia-electric’s Mia U.

EST is currently working with large companies such as Boots, Network Rail and Morrisons Supermarket, to assess the cost viability of electric vehicles in their fleets. If this is something you would be interested hearing more about please contact your Fleet Consultant.

CO₂ caps

Company Cars

If WLC is too difficult for UOS, we would recommend the implementation of CO₂ caps for its company cars with a limit of 130 g/km.

UOS have an average registered CO₂ emission of 138 g/km, with the current UK average for new vehicle registrations at just over 130 g/km and with the benefit in
kind % level for 130 g/km diesel car about to rise in FY 2013-14 from 19% to 20%. There will be more accelerated rises in FY 2015 onwards; it could be argued that 130 g/km will come to represent in a fairly short period of time the upper end of what a company might allow, rather than a low level of emissions.

Accordingly, while we support the suggested move to a new cap of 130 g/km, we recommend that in future years the Company engages with its staff to consider more radical moves to reduce g/km cap.

3.4 Join Energy Saving Trust’s Motorvate Scheme

Motorvate is a DfT-approved and subsidised scheme to share good practice between fleets on how they might monitor and reduce carbon emissions and costs from operations.

The membership stands at over 200 organisations from both the private and public sectors and its own private on-line forum where members can share experiences and ideas. EST manages the scheme and it is free to join as an Affiliate member.

More details can be found at: http://www.energysavingtrust.org.uk/Motorvate and we have included information about the scheme in Appendix C.
Appendix A: EST CO₂e Methodology

1.1 Summary

The aim is to establish a common approach to estimate fleets’ CO₂e emissions. This will allow for comparisons of fleets’ emissions over time and for comparisons between fleets.

The appropriate methodology to use for a specific fleet will depend on what data are available, so 5 different options are described below. These are presented in order of accuracy and the most accurate methodology should be used. In many cases it will be appropriate to use a combination of methodologies. For example if fuel usage data is available for vans but not for cars then methodology 1 (based on fuel consumed) should be used for the former and a mileage based methodology for the latter.

1.2 Method 1 - Fuel Use Data

If comprehensive fuel use data are available – either through fuel cards &/or consumption of bunkered fuel - then emissions should be calculated by applying the following factors to the quantity of fuel consumed.

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>CO₂e Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel¹</td>
<td>2.58 kg CO₂e / litre</td>
</tr>
<tr>
<td>Petrol¹</td>
<td>2.24 kg CO₂e / litre</td>
</tr>
<tr>
<td>LPG</td>
<td>1.53 kg CO₂e / litre</td>
</tr>
<tr>
<td>Natural gas</td>
<td>2.72 kg CO₂e / kg</td>
</tr>
<tr>
<td>(CNG/LNG)</td>
<td></td>
</tr>
</tbody>
</table>

NB: For Biofuels, Biomethane and Electricity refer to Further Information paragraph 3. For further information on greenhouse gases in addition to CO₂ see Further Information paragraph 4.

1.3 Method 2 - Mileage Data plus Make & Model

Cars

If data are available for each individual vehicle’s mileage as well as its make and official g/km CO₂ emissions figure– and for company cars organisations are obliged to hold the g/km CO₂ information for P11D reporting - then car CO₂ emissions can be calculated. The most accurate source for this information is the individual vehicle’s V5C document (log book). These data are also available from the DVLA website http://www.taxdisc.direct.gov.uk/EvlPortalApp/. You will need the registration number and make of the vehicle to complete the enquiry; from the home page select “Vehicle Enquiry”.

In-use fuel consumption and CO₂ emissions are almost always higher than the official data for various reasons. The New European Drive Cycle (NEDC) is less demanding than most real-life driving conditions and drivers carrying out the tests are selected for their test cycle driving expertise. To account for this an

¹ Retail station biofuel blend see Further Information paragraph 1
additional 15%\(^2\) should be added to CO\(_2\) emissions calculated by this second methodology.

However, if this 15% adjustment is considered to be inappropriate for a specific fleet, then the case could be made for using a different figure. For example, if a fleet of cars operates solely within the M25 during office hours then the fleet’s fuel consumption may be considered to be unusually high and the adjustment factor would need to be higher. If a figure other than 15% is to be used for a specific fleet, this should be agreed by all parties involved and the rationale detailed in any subsequent report.

To convert the CO\(_2\) figures derived from NEDC test results to CO\(_2\)e the figures should be uplifted by 0.78% for a diesel vehicle and 0.44% for petrol.

**Vans**

Official g/km CO\(_2\) emissions figures have only been available for new vans since June 2009. In certain circumstances it may be appropriate to use the figures for current models published on the VCA Van CO\(_2\) and Fuel Consumption database. [http://www.vca.gov.uk/vandata/Default.aspx](http://www.vca.gov.uk/vandata/Default.aspx). An additional 15% should be added to the emissions. It should be noted that vehicles are tested empty and that data may not be available for box van body styles etc. If this data is to be used it should be agreed by all parties involved and the rationale behind any additional uplift considered necessary, detailed in any subsequent report.

### 1.4 Method 3 - Mileage Data plus Car Engine Size & Fuel Type

If official g/km CO\(_2\) emissions figures are not available then the following average figures should be used to estimate g/km CO\(_2\)e. These data already include a 15% uplift to translate from test-cycle to real life.

**Petrol Cars**

<table>
<thead>
<tr>
<th>Small engine (&lt;1.4 litres)</th>
<th>Medium Engine (1.4 – 2.0 litres)</th>
<th>Large Engine (&gt;2.0 litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>165.2</td>
<td>207.7</td>
<td>297.9</td>
</tr>
</tbody>
</table>

**Diesel Cars**

<table>
<thead>
<tr>
<th>Small engine (&lt;1.7 litres)</th>
<th>Medium Engine (1.7 – 2.0 litres)</th>
<th>Large Engine (&gt;2.0 litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>143.0</td>
<td>177.0</td>
<td>235.6</td>
</tr>
</tbody>
</table>

**LPG Cars**

<table>
<thead>
<tr>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>190.1</td>
<td>272.3</td>
</tr>
</tbody>
</table>

**Petrol Hybrid Cars**

<table>
<thead>
<tr>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>116.5</td>
<td>206.7</td>
</tr>
</tbody>
</table>

\(^2\) ARVAL, personal communication with EST, June 06
Motorcycles

<table>
<thead>
<tr>
<th>Small petrol motorcycle (up to 125cc)</th>
<th>Medium petrol motorcycle (125 – 500cc)</th>
<th>Large petrol motorcycle (over 500cc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>87.7</td>
<td>106.4</td>
<td>139.8</td>
</tr>
</tbody>
</table>

Vans

If the vehicle Class (see **Further Information** paragraph 4) and fuel type is known, then the following figures should be used to estimate g/km CO\(_2\)e.

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Class (&lt;1.305t)</th>
<th>Class II (1.305 – 1.74t)</th>
<th>Class III (1.74-3.5t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrol</td>
<td>199.5</td>
<td>212.5</td>
<td>258.7</td>
</tr>
<tr>
<td>Diesel</td>
<td>153.2</td>
<td>226.0</td>
<td>266.4</td>
</tr>
</tbody>
</table>

### 1.5 Method 4 – Mileage Data plus Fuel Type

If fuel type alone (but not engine size) is known, then the following figures should be used to estimate g/km CO\(_2\)e. These data already include a 15% uplift to translate from test-cycle to real-life.

**Cars**

<table>
<thead>
<tr>
<th>Petrol Car (Average)</th>
<th>Diesel Car (Average)</th>
<th>LPG Car (Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>201.9</td>
<td>187.0</td>
<td>214.7</td>
</tr>
</tbody>
</table>

**Vans**

If fuel type alone (but not vehicle class) is known, then the following figures should be used to estimate g/km CO\(_2\)e.

<table>
<thead>
<tr>
<th>Petrol</th>
<th>Diesel</th>
<th>LPG</th>
<th>CNG</th>
</tr>
</thead>
<tbody>
<tr>
<td>213.5</td>
<td>249.0</td>
<td>263.0</td>
<td>238.9</td>
</tr>
</tbody>
</table>

### 1.6 Method 5 – Global Averages

**Cars**

Where only mileage data are available, with no engine size or fuel type information, then the following global average figure should be used to estimate g/km CO\(_2\). These data already include a 15% uplift to translate from test-cycle to real-life.

<table>
<thead>
<tr>
<th>Average Car</th>
</tr>
</thead>
<tbody>
<tr>
<td>194.7</td>
</tr>
</tbody>
</table>
Motorcycles

| Average petrol motorcycle (unknown engine size) | 119.0 |

Vans

| Average Van | 247.2 |

### 1.7 Further Information

1. Retail station biofuel blend assumes 2.9% ethanol by volume for petrol and 3.6% biodiesel by volume for diesel. These estimates have been made based on the most recently available reports on the Renewable Transport Fuels Obligation (RTFO). Further information is available from: [http://www2.dft.gov.uk/pgr/statistics/dataloceptions/biofuels/](http://www2.dft.gov.uk/pgr/statistics/dataloceptions/biofuels/)

2. For fully expensed drivers (those that receive from their company free fuel for private use) it may be impossible to distinguish between company and private mileage. In such cases the entire mileage and CO₂ emissions should be counted towards the fleet total.

3. For organisations wishing to understand the emissions savings where they are operating vehicles on higher concentrations of Biofuel than is allowed in pump fuel or on Biogas or electricity, a carbon footprint which includes the lifecycle or well to wheel emissions of all the fuels consumed can be provided by the Energy Saving Trust Fleet Consultant.

4. Figures for CO₂eq are provided which include the greenhouse gases Methane (CH₄) and Nitrous Oxide (N₂O) which are also produced in small quantities when fuel is burnt.

5. N₁ is the European Union type approval category for Light Goods Vehicles under 3.5t, subdivided into three weight classes as follows:

   - Category N₁ Class I are goods vehicles with an unladen weight plus 100kg not exceeding 1305kg.
   - Category N₁ Class II are goods vehicles with an unladen weight plus 100kg greater than 1305kg but not exceeding 1760kg.
   - Category N₁ Class III vehicles are goods vehicles with an unladen weight plus 100kg greater than 1760kg but not exceeding 3500kg.

For fleets with **LPG vans** please contact Energy Saving Trust since in most cases we will know the model-specific g/km CO₂ data from the PowerShift Register. If PowerShift CO₂ data is used then the 15% uplift should be applied.
Innovative fuel management
Integral

An innovative fuel management programme is an environmental and financial success story for Integral, Britain’s largest and fastest growing national provider of comprehensive maintenance services for commercial and public sector buildings.

The corporate focus on fuel management has resulted in the company using 2,800 litres less fuel a week in 2008 compared with 2005, despite the size of the fleet increasing by more than a third.

Identifying the problem

In 2006 Integral operated a national fleet of around 1,000 company cars and light commercial vehicles, but had no centralised fleet department. As the company was expanding rapidly, they appointed a fleet professional, Craig Watson, to oversee the entire operation. Mr Watson introduced a user-choice company car policy that incentivised the take-up of low emission models through a built-in carbon offset scheme. He then appointed the Energy Saving Trust to undertake a Green Fleet Review. One of the key recommendations from this was to improve fuel management.

Although Integral used fuel cards, they were registered to the vehicle, not the driver. Other problems were that fuel management information had limited mileage data, drivers were not buying fuel at the cheapest outlets and vehicle MPG was not analysed to identify high fuel-use drivers.

Text alert initiative

A massive fuel data gathering exercise was instigated to generate benchmark information. This identified:

- Fuel spend by individual drivers
- Where fuel was being purchased
- Drivers that were buying the most fuel

Additionally, fuel card registration was changed from vehicle to individual drivers.

The key change was to trial mobile phone text alerts to drivers. After staff had purchased fuel they were sent a text telling them if they had filled up at an ‘expensive’ outlet and encouraging them to use a ‘cheaper’ location next time.

During the two-month trial of 250 company car and van users based at the firm’s Birmingham office, an average 1,000 fewer litres of fuel were bought each week. Mr Watson pointed out: “Drivers became aware that they were being monitored and they started to become more responsible.”

In January 2008 the text alert initiative went national with drivers potentially receiving four different texts if they erred from the company’s now established fuel policy. Texts were sent if employees:

- Filled up anywhere other than a supermarket or Shell outlet
- Failed to provide their vehicle mileage when paying with their fuel card
- Bought super unleaded petrol with their Arval or Shell fuel card
- Filled up at a motorway service station

A successful policy

Mr Watson confirmed that initially some staff received a lot of texts. “Although the policy had been communicated to drivers, when they started to receive loads of text messages after filling up they soon conformed. With fuel cards now being linked to individual named drivers and not vehicles, there could be no dispute over who was responsible for any purchase.”

“Our focus is on saving money while ensuring that the fleet runs efficiently and effectively to support the operation of the business. We have already achieved significant cost savings and with the Energy Saving Trust’s help we can achieve even more.”

Craig Watson
Fleet Manager, Integral
Drivers have become more watchful in their fuel purchasing habits. Branch managers are sent comprehensive monthly fuel management reports highlighting which staff have bought the most fuel, who bought the most expensive fuel and other exceptions to company policy.

“Managers receive easy-to-understand fuel purchasing trend reports that they can use to ensure our fuel policy is being followed. Although there is no formal incentive scheme, drivers became competitive between themselves because they didn’t want to be highlighted by their branch manager for being on any ‘list’.”

Throughout 2008 the number of texts sent to drivers dropped as conformity spread. On average the costs of sending texts per month is £150, but the monthly fuel saving amounts to more than £5,000.

“Drivers didn’t understand that Integral was buying millions of litres of fuel a year and 1p a litre saved soon mounts up over 12 months,” said Mr Watson. “We asked employees to take responsibility and have delivered financial savings to the business.”

Now a second text message alert scheme is being piloted at the Birmingham office with drivers told how much fuel they bought, how much it cost and their actual MPG versus the manufacturers’ average figure for their vehicle. This involves cross-checking fuel card data with Integral’s driver id and vehicle database. Mr Watson said: “The new initiative is further maintaining the focus on MPG and in 2009 we will decide whether to roll the programme out nationally.”

Looking to the future

Another initiative has seen an initial eight company car and eight non-company car drivers sign-up to the Energy Saving Trust’s new smarter driving training course, which is designed to encourage people to drive more efficiently.

Finally, Integral has signed up to the Energy Saving Trust’s Motorvate programme, which recognises and rewards achievements in reducing fleet emissions through annual auditing as well as giving them the benefit of ongoing consultancy support.

Mr Watson said: “Our focus is on saving money while ensuring that the fleet runs efficiently and effectively to support the operation of the business. We have already achieved significant cost savings and with the Energy Saving Trust’s help we can achieve even more.”

Need some help and have 50 fleet vehicles or more?

Energy Saving Trust Green Fleet Reviews are funded by the Department for Transport and are available to organisations with 50 or more fleet vehicles under 3.5 tonnes. The service is free, conducted by experts and provides a comprehensive, tailored report with practical advice on how to reduce fleet carbon footprint, cut costs and improve efficiency.

To find out more visit energysavingtrust.org.uk/fleet or call 0845 602 1425

Fact file

Company name
Integral

Key contact
Craig Watson, Fleet Manager

Fleet profile
1,400 company cars and light commercial vehicles

Business
Maintenance service provider for commercial and public sector buildings – including financial institutions, retail outlets, property specialists, corporate premises, government departments, education and health services and social housing landlords

Locations
Headquarters in Bristol with 15 locations across the UK

More carbon-cutting initiatives

Whole life costs
The 2006 company car policy switch to a Whole Life Cost emissions-based system – there is a direct correlation between CO2 emissions and fuel economy – has seen average vehicle fuel consumption improve by 5mpg and average CO2 emissions reduce from 145 g/km in 2006 to 136 g/km by the end of 2008.

Tax awareness
The amount of benefit-in-kind tax payable is listed alongside each model. “This has had the automatic impact of directing staff to choose low emission models because they can make an informed choice based on the amount of tax they are prepared to pay.” Craig Watson
motorvate
working together to cut fleet emissions

Reduce carbon, reduce costs
Energy Saving Trust Motorvate membership, subsidised by the Department for Transport, gives you the specialist advice you need to help you reduce carbon emissions and fleet costs.

There are two types of membership: affiliate and certified.

Affiliate membership
Affiliate membership is free and offers the following benefits:
• Expert advice on how to identify carbon reduction opportunities
• Expert guidance with data gathering
• Networking opportunities at member events
• Access to our members’ website and online forum with the latest news on vehicles, policy, technology, best practice and alternative fuels
• Enhanced environmental credentials
• PR opportunities to showcase your achievements

Certified membership
With certified membership you receive (in addition to the above):
• Annual independent calculation and verification of your carbon footprint
• Objective auditable evidence to support ISO 14001
• Recognition of your carbon reductions
• Use of the EST Motorvate brand

Motorvate affiliate membership is free.
For certified members there is an annual audit fee of £500 +VAT.
“Motorvate has been critical in aiding us to accurately monitor and reduce our carbon emissions. As certified members, we are fully committed to the scheme.”
Lee Wickens, CSR & Quality Manager, Addison Lee Plc

“Energy Saving Trust has been with us every step of our programme, supporting us in our journey to reduce our carbon footprint. It’s an added benefit having the Motorvate team and other members on hand to share ideas via the Motorvate network.”
Simon Graham, Environmental Strategist, Commercial Group

How to become a certified member?
Energy Saving Trust will conduct a baseline audit in which we will measure your carbon footprint and identify opportunities and targets for year-on-year improvements. Any carbon reduction against your baseline will be highlighted in your annual audit and recognised in line with the associated membership levels detailed below:

- **Gold**
  - 15% carbon reduction
- **Silver**
  - 10% carbon reduction
- **Bronze**
  - 5% carbon reduction

**How much does it cost?**
Affiliate membership is free. For certified members there is an annual audit fee of £500 +VAT. The balance-of-scheme costs are funded by the Department for Transport.

**How do I join?**
Contact Energy Saving Trust:
E-mail: transportadvice@est.org.uk
Call: 0845 602 1425

**Why Energy Saving Trust?**
Energy Saving Trust understands that there is more to a fleet than its cars and vans, and that reducing your carbon footprint is about far more than just lowering the average CO₂ emissions per vehicle.

Our independent advice is based on many years’ experience of working with fleets of all sizes across all sectors to help them cut carbon emissions and save money.

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“The online network is a most useful tool for sharing best practice”
Scott Jones, Head of Facilities and Environment, Southern Health NHS Foundation Trust

Call today 0845 602 1425 or email transportadvice@est.org.uk
www.energysavingtrust.org.uk/motorvate