Measuring scope 3 carbon emissions

Transport

January 2012/02

A guide to good practice

Contents

Executive Summary

Purpose

This guidance document provides higher education institutions (HEIs) with information on how to calculate scope 3 carbon emissions generated by work-related travel. The guidance aims to help HEIs to adopt efficient and effective data collection practices, and includes examples of good practice within the HEI sector.

Key Points

Specifically, the document provides guidance to HEIs on:

- The core principles of calculating emissions generated by work-related travel;

- Which scope 3 travel emissions should be included in an HEI's scope 3 travel carbon reporting boundary;

- What information sources can be used to calculate scope 3 travel emissions in the most efficient, effective and accurate manner; and

- Internal and external stakeholders who may be able to support emissions calculation.

The guidance also describes the proposed Higher Education Statistics Agency's (HESA) Estate Management Statistics (EMS) data definitions for scope 3 travel emissions. A report, 'Measuring scope 3 carbon emissions – transport. Report to HEFCE by JMP Consultants Ltd'[1], has been produced in conjunction with this guidance to justify the proposed EMS travel definitions and to explain the consultation process that informed them.

Action Required

HEIs will be able to report scope 3 carbon emissions from transport through the Estate Management Statistics, collected by HESA, from 2012-13.

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1   Introduction

1.1   This document provides higher education institutions (HEIs) with information on how to calculate scope 3 carbon emissions ('emissions') generated by work-related travel. The guidance also describes the proposed Higher Education Statistics Agency's (HESA) Estate Management Statistics (EMS) data definitions for scope 3 travel emissions.

1.2   This document provides guidance to HEIs on:

• The core principles of calculating emissions generated by work-related travel;

• Which scope 3 travel emissions should be included in an HEI's scope 3 travel carbon reporting boundary;

• What information sources can be used to calculate scope 3 travel emissions in the most efficient, effective and accurate manner; and

• Internal and external stakeholders who may be able to support emissions calculation.

1.3   The guidance also includes best practice case studies from HEIs.

1.4   A report, 'Measuring scope 3 carbon emissions – transport. Report to HEFCE by JMP Consultants Ltd',[2] which justifies the proposed EMS travel definitions, has been produced in conjunction with this guidance.

How Does this Guidance Align with Existing Carbon Reporting Protocols?

1.5   This guidance aligns with best practice carbon accounting and reporting protocols, namely:

• World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI), 'The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard' (2001, revised edition 2004);[3] and

• Department for Environment, Food and Rural Affairs (Defra) and Department for Energy and Climate Change (DECC), 'Guidance on How to Measure and Report Your Greenhouse Gas Emissions' (2009).[4]

1.6   We have also taken account of relevant information in the draft WBCSD and WRI 'Draft Scope 3 Accounting and Reporting Standard' (2011). This guidance was finalised and published in autumn 2011.[5]

1.7   Alongside this, the Department for Transport (DfT) has developed a carbon calculation and reporting spreadsheet tool based on the WBCSD/WRI Greenhouse Gas Protocol (the GHG Protocol) to enable organisations to calculate and manage emissions from business and commuter travel. The Carbon Calculation and Reporting Tool for Work-Related Travel – Version 1.5 (December 2010)[6] can be used by HEIs to calculate scope 3

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2 Available at www.hefce.ac.uk.

3 Available at www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf.

4 Available at www.defra.gov.uk/publications/files/pb13309-ghg-guidance-0909011.pdf.

5 Available at www.ghgprotocol.org/feature/download-new-ghg-protocol-corporate-value-chain-scope-3-standard.

6 Link at: www.dft.gov.uk/publications/measuring-and-reporting-greenhouse-gas-emissions.

travel emissions. Please note that you need Microsoft Excel 2007 or above for this tool to function correctly. You should ensure that the DfT Reporting Tool uses the latest conversion factors to calculate emissions (see below).

Conversion Factors

1.8   The conversion factors used to convert fuel used or distance travelled data into emissions are those provided by Defra/DECC. The scope 3 travel emissions conversion factors are updated by Defra/DECC on an annual basis. Further information and the latest factors can be found within the 'August 2011 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting'.[7]

Structure of this Guidance

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7 'Available at www.defra.gov.uk/environment/economy/business-efficiency/reporting/.

2   Core Principles of Calculating Emissions from Travel

2.1   This section outlines the core principles of reporting and calculating scope 3 emissions from travel. It provides guidance on how emissions are calculated and summarises the conversion factors used to calculate emissions.

Emissions Scopes

2.2   To avoid double counting, emissions are classified into three scopes. These are:

- **Scope 1 (direct emissions)**: Activities owned or controlled by an HEI that release emissions straight into the atmosphere. They are direct emissions. Examples of scope 1 emissions include emissions from combustion in owned or controlled boilers, furnaces, vehicles; emissions from chemical production in owned or controlled process equipment.

- **Scope 2 (energy indirect)**: Emissions being released into the atmosphere associated with the consumption of purchased electricity, heat, steam and cooling. These are indirect emissions that are a consequence of an HEI's activities, but which occur at sources not owned or controlled by an HEI.

- **Scope 3 (other indirect)**: Emissions that are a consequence of the HEI's actions, which occur at sources which are not owned or controlled by an HEI and which are not classed as scope 2 emissions. Examples of scope 3 emissions are business travel by means not owned or controlled by the organisation, waste disposal, or purchased materials or fuels.

Source: 'Guidance on How to Measure and Report Your Greenhouse Emissions', Defra/DECC, 2009[8]

Allocating Emissions from Work-Related Travel to Scopes

Business Travel

2.3   Allocating some types and modes of travel to emission scopes is relatively simple. For instance, if the mode of transport is owned by the reporting body and used for business travel, the emissions are scope 1 emissions (e.g. an owned pool car). If a mode of transport is not owned or controlled by the reporting body and is used for business travel, the emissions are scope 3 emissions (e.g. air travel or hire car).

Leased Vehicles

2.4   The emissions from a leased transport asset are more complex to allocate to emission scopes. The emissions from a leased transport asset that is used for business purposes can be classified as either scope 1 or scope 3, depending on how the leased asset has been accounted for.

2.5   If the leased asset is considered a wholly owned asset in financial accounting terms, and recorded as such on a balance sheet, then emissions associated with its use should be classified as scope 1. If not, the emissions should be classified as scope 3.
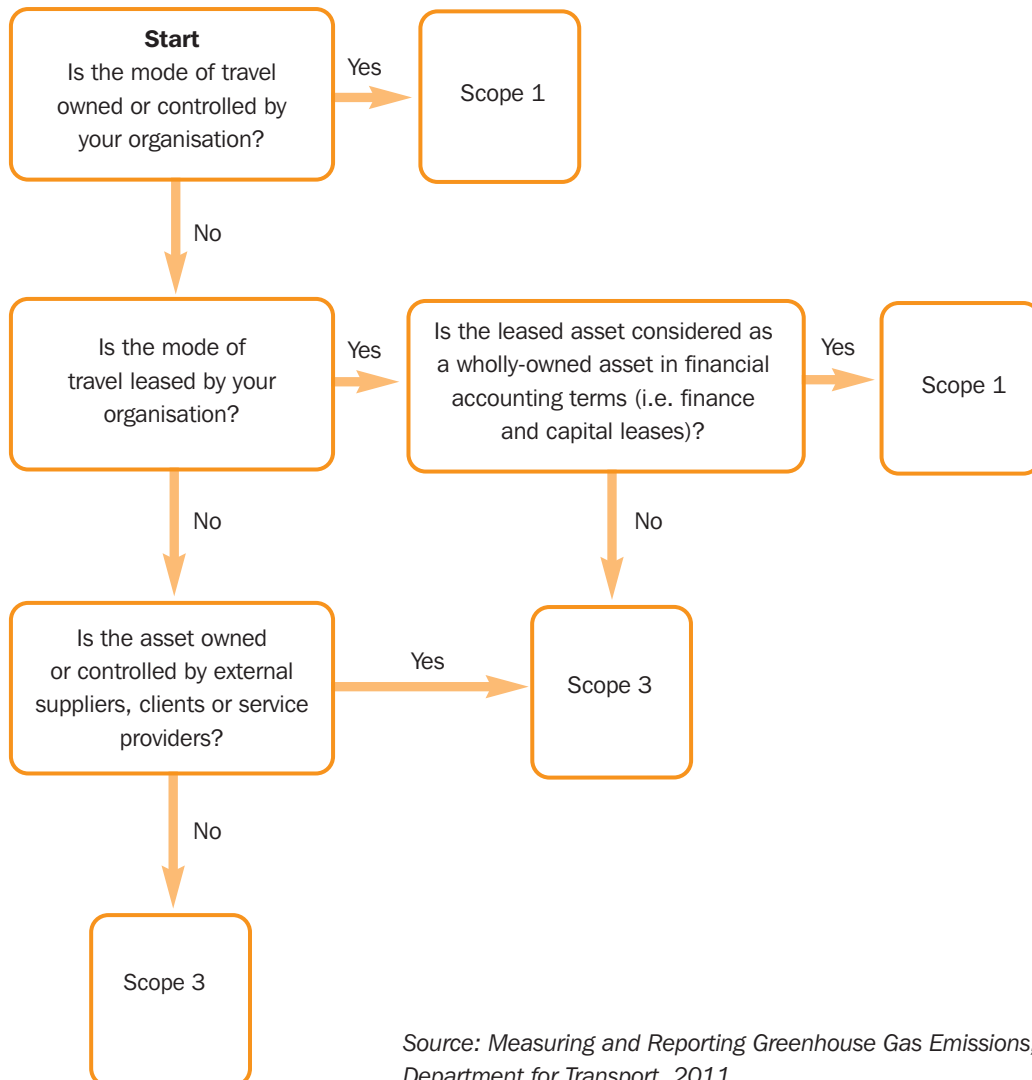
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[8] Available at www.defra.gov.uk/publications/files/pb13309-ghg-guidance-0909011.pdf.

Commuting

2.6   The emissions associated with commuting are almost always allocated as scope 3 emissions, although there are exceptions. For example, the emissions resulting from the use of a leased asset in commuting will be scope 3 emissions, unless the fuel costs are borne by the HEI and the asset is considered as wholly owned and recorded as such on the balance sheet. In this case, the emissions will be classed as scope 1.

Q How should I allocate emissions to scope 1 and scope 3?

A As scope 2 primarily relates to the purchase and consumption of electricity, work-related travel will fall into scope 1 (direct) or scope 3 (indirect) emissions. The chart below will help to allocate emissions to scope 1 and scope 3.

Start
Is the mode of travel owned or controlled by your organisation? — Yes → Scope 1
↓ No

Is the mode of travel leased by your organisation? — Yes → Is the leased asset considered as a wholly-owned asset in financial accounting terms (i.e. finance and capital leases)? — Yes → Scope 1
↓ No   ↓ No → Scope 3

Is the asset owned or controlled by external suppliers, clients or service providers? — Yes → Scope 3
↓ No

Scope 3

Source: Measuring and Reporting Greenhouse Gas Emissions, Department for Transport, 2011
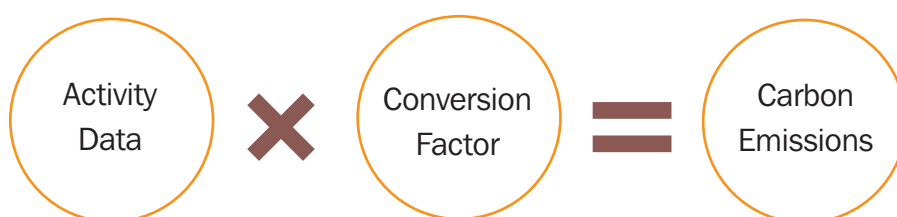
Emissions Calculation

2.7   To calculate emissions, three types of information are required:

- The mode of travel;

- Activity data (either fuel consumption or distance travelled); and

- An appropriate conversion factor.

2.8   The formula for calculating emissions using the above information is provided in Figure 2.1.

Figure 2.1 **Carbon emissions calculation**

Activity Data

2.9   Activity data will be either fuel consumption or distance travelled.

2.10   Using fuel consumption data is the most accurate way to calculate emissions, but this data may not always be available or appropriate.

Fuel Consumption

2.11   The fuel consumption methodology can be used to calculate emissions from car, van and motorcycle travel.

2.12   Fuel consumption cannot be used for travel undertaken by air, rail and other modes of public transport. Emissions from these modes are calculated on a per passenger kilometre (ppkm) basis.

2.13   Exceptions to this might be scope 3 leased buses, coaches, rail engines and private jets where fuel consumption data may be available.

Distance Travelled

2.14   If fuel consumption data is not available, or public transport is used, then emissions should be calculated using distance travelled data.

Conversion Factors

2.15   HEIs should use the most up-to-date Defra/DECC conversion factors. The current conversion factors for travel can be found at Annex 6 of the 'August 2011 Guidelines to Defra/DECC's Greenhouse Gas Conversion Factors for Company Reporting'.[9] If you have any questions on how to use the conversion factors, further information can be requested from Defra by emailing ghgreporting@defra.gsi.gov.uk.

2.16   The August 2011 Defra/DECC conversion factors can also be found in this guidance document, in Annex A.

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[9] See link at footnote 7.

Updating conversion factors used to calculate emissions

2.17   A change in conversion factors can impact on earlier reporting periods. Only in certain circumstances will there be a need to update previous calculations.

2.18   Defra/DECC advise that, *"A company **should not** generally recalculate their emissions for all previous years using the newer factors. The most recent factors should only be applied for reporting on years up to 2 years prior to the most recent dataset. In most cases the fuel conversion factors in general are unlikely to vary very significantly between different years"*.[10]

2.19   However, specific transport conversion factors generally do change on an annual basis, and the new conversion factors should only be used for the most recent year of reporting. The conversion factors provided by Defra/DECC are for the most recent year available. This is generally two years behind the update year (the 2011 update is based on 2009 data).

2.20   Defra/DECC advise that previous years' emissions should only be recalculated for a year consistent with the data basis of the new update. The Defra/DECC guidance states that, *"For example, if you are now reporting emissions for financial year 2009-10, you should also recalculate the 2008-9 emissions using the 2010 update data, as these are for the most part based on 2008 datasets. Figures reported for 2007 should use emission factors from the 2009 update, which are mostly based on 2007 data"*.

2.21   It can sometimes be difficult for organisations to recalculate emissions. For example, transport classifications are becoming more detailed (for instance, the inclusion of flight classes in addition to average emission factors in the air passenger transport conversion factors in the 2008 update).

2.22   Therefore, it may not always be possible to recalculate emissions using more recent conversion factors in an efficient and effective manner. HEIs should explain how emissions have been calculated and performance has been baselined.

2.23   Further guidance on recalculating emissions can be found in Defra/DECC's 'Guidance on How to Measure and Report Your Greenhouse Gas Emissions', and the 'August 2011 Guidelines to Defra/DECC's Greenhouse Gas Conversion Factors for Company Reporting'.

Accuracy of Emissions Calculations

2.24   The accuracy of emissions calculations will depend on the quality of the data available and the conversion factors used. The four classifications of emissions calculation – primary, secondary, extrapolated or proxy data – are explained in Figure 2.2.

2.25   If fuel consumption data for a vehicle is available from a fuel card supplier or internal reporting system, this is *primary* data. Similarly, distance travelled from fleet management software or a vehicle's odometer is *primary* data.

2.26   If distance travelled is estimated using journey planning software, then this is *secondary* data. Similarly, if Defra/DECC conversion factors for fuel type and engine size are used to calculate emissions, this is *secondary* data.
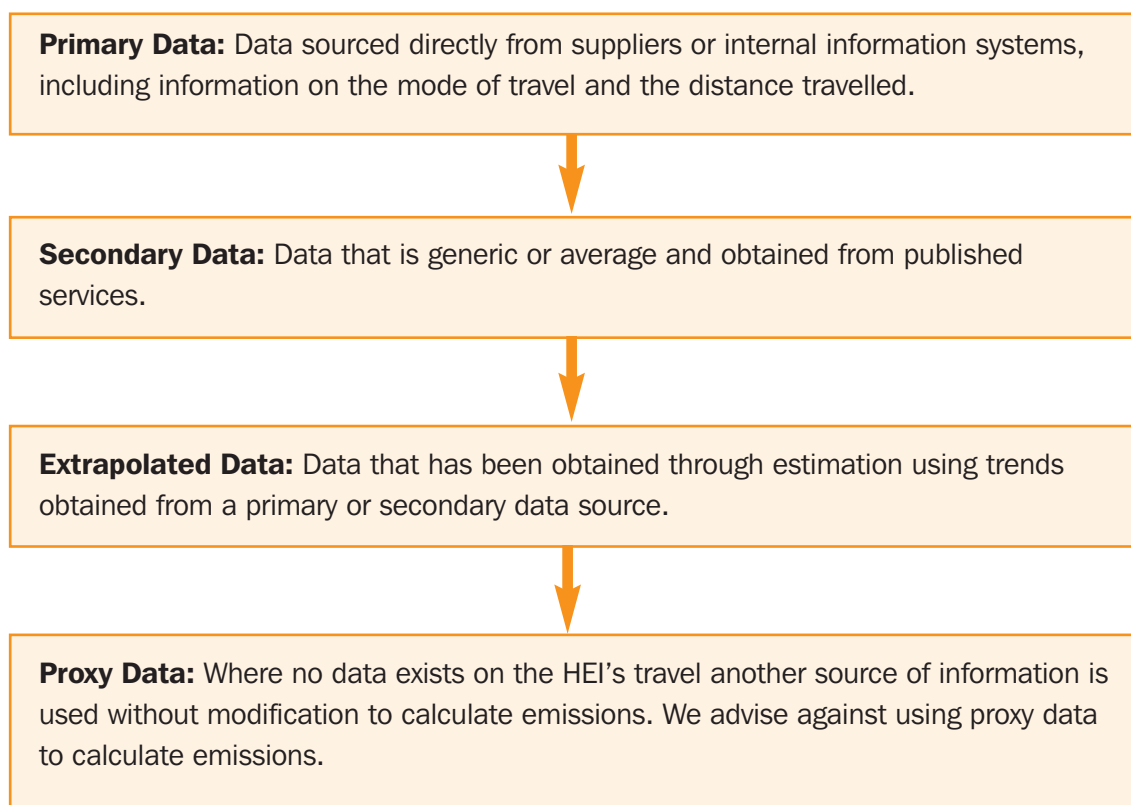
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10 See footnote 7.

2.27   If a proportion of emissions from air travel is calculated using the missing data methodology (see Section 6), then this is *extrapolated* data.

2.28   If the distance travelled by taxi is estimated using average taxi industry pricing models, this is *proxy* data. *We strongly advise HEIs to avoid using proxy data.*

Figure 2.2 **Emissions calculation classifications**

Primary Data: Data sourced directly from suppliers or internal information systems, including information on the mode of travel and the distance travelled.

Secondary Data: Data that is generic or average and obtained from published services.

Extrapolated Data: Data that has been obtained through estimation using trends obtained from a primary or secondary data source.

Proxy Data: Where no data exists on the HEI's travel another source of information is used without modification to calculate emissions. We advise against using proxy data to calculate emissions.

Data errors

2.29   There is a potential for errors to arise during the sourcing, interpretation and conversion of data. As a general rule, if a data gap or error represents 5 per cent of the emissions inventory, then it should be classed as a material discrepancy.[11]

2.30   Assessing the significance of data gaps and errors must also consider the impacts on decision-making. For example, a data gap or error of less than 5 per cent could still be material if it affects the monitoring of key performance indicators. In other words, materiality should be a quantitative and qualitative measure of significance.

- **Materiality** – Information is considered to be material if, by its inclusion or exclusion, it can be seen to influence any decisions or actions taken by users of it.

- **Material discrepancy** – An error (for example from an oversight, omission, or miscalculation) that results in the reported quantity being significantly different to the true value to an extent that will influence performance or decisions.

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11 'The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (revised edition)' (WRI/WBCSD, 2004). Available at www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf.

- **Materiality threshold** – A concept employed in the process of verification. It is often used to determine whether an error or omission is a material discrepancy or not. It should not be viewed as a de minimus for defining a complete inventory.

Source: WBCSD and WRI, 'The Greenhouse Gas Protocol: A Corporate Reporting and Accounting Standard' (2004)

Q I have mode of travel, fuel consumed and distance travelled data for some travel, but I only have expenditure data for the remaining travel. Is it possible to calculate a carbon footprint?

A It may be possible to estimate distances and emissions from expenditure data. An estimate can be determined by extrapolating known expenditure data. The missing data methodology in Section 6 describes how this data can be extrapolated and emissions calculated.

Benefits of Reporting Emissions

2.31   Some of the benefits of reporting emissions from travel include:

- **Saving money** – the total cost of travel is often challenging to identify. Reporting emissions from travel is an opportunity to consolidate expenditure across all modes and types of travel, and capture the total cost of travel. Using this information HEIs can identify how to save money.

- **Understanding the need for travel** – management information on travel patterns is required to calculate emissions. This data can also be used to understand the need to travel, and how policies and processes can be developed to promote sustainable and low carbon travel.

- **Promoting flexible and mobile working** – understanding your emissions from travel can support flexible and mobile working which in turn reduces estate and travel costs.

- **Improving procurement and management of travel** – by understanding the need for travel HEIs can procure the right types of services to support the delivery of objectives.

- **Promoting active travel** – the promotion of active travel (walking and cycling) has been shown to improve the health of individuals and, in turn, reduce illness and levels of absenteeism. It also reduces emissions.

- **Improve engagement** – all staff and students need to travel in order to carry out their work, whether commuting or travelling on business. Travel can be a powerful medium to communicate climate change commitments and engage staff/students.

How the University of Nottingham tackles carbon emissions through sustainable procurement

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

The University of Nottingham has a long-standing commitment to environmental sustainability, through its world-class research and teaching and the way it manages its operations. Now its commitment to institution-wide environmental excellence is linking travel and transport with procurement, introducing innovation and improvements.

"Purchasing decisions have major socio-economic and environmental implications," says Jeannette Harrison, Contracts and Projects Manager for Travel. "This University has developed a sustainable procurement policy as part of its environmental strategy."

Sustainable transport initiatives have been implemented across university campuses, including free hopper bus travel, a Ucycle bike hire and maintenance scheme, cycle storage, campus cycle lanes, car sharing and reduced-cost bus tickets on local transport links for staff and students. Car-parking charges for commuting staff are based on vehicle CO_2 emissions.

"Business travel is a significant contributor to our overall travel footprint," says Jeannette. "Revising our travel and expense policy and procedures is a step towards achieving one key project objective: 'To enable the University to work towards reducing the carbon footprint of environmental impact of business travel where practical'."

"These changes have significantly reduced the amount of manual processes involved in booking travel and claiming expenses. All staff expenses are now claimed online, and travel booking online is at 77 per cent (the UK average is 40 per cent). Through the online booking tool, staff see the impact of each trip's CO_2 emissions, allowing them to make an informed decision on the overall cost and impact of each journey they undertake. By introducing a dedicated online 'Workspace' for travel and expenses, we actively promote alternatives to travel where appropriate, such as videoconferencing and conference calling."

"The University of Nottingham can now see and interpret its travel profile. This will enable us to plan for the future and achieve our objectives."

Five features of sustainability at the University of Nottingham:

- Significant internationally recognised research strengths and course provision in environment-related fields such as renewable energy and sustainable architecture.

- The University is taking forward its strategic objective to embed sustainability, as a subject, method and ethos, into the curriculum.

- Estates operations are built upon a strong environmental ethos.

- All new capital projects have sustainability included throughout all stages of their development, from design through to post-occupancy.

- The University has committed itself to becoming a leading green university, and uses its research, teaching and operational excellence to achieve this.

3   Proposed EMS Travel Definitions

3.1   On the basis of its research, JMP recommend that the following scope 3 travel data definitions are included in the EMS.

3.2   These recommended data definitions can also be used to describe the emissions reporting boundary for scope 3 travel emissions generated by HEIs.

Business Travel

3.3   This is business travel undertaken by academic and support staff, and students, and that is paid for by the HEI. Some modes of HEI business travel are classed as mandatory reporting items for emissions, whereas other modes are optional. HEIs should make every effort to report emissions from optional travel modes where possible.

3.4   It is proposed that scope 3 emissions from the following modes of business travel are classed as mandatory reporting items:

- Air;

- Rail;

- Company car;

- Hire car;

- 'Grey fleet' (employees reimbursed for using their own vehicles);

- Motorcycles and mopeds;

- Vans; and

- Leased buses.

3.5   It is proposed that scope 3 emissions from the following modes of business travel are classed as optional reporting items:

- Public bus;

- Underground;

- Tram;

- Taxi;

- Coach; and

- Ferry.

Commuter Travel

3.6   This is travel undertaken by academics, support staff and students to and from their home (or for students, their term-time residence) to the HEI. It is proposed that reporting of emissions from all modes of commuter travel is optional, but every effort should be made to report emissions.

3.7   It is proposed that commuter emissions generated by staff (including academic and support staff) and students are recorded separately.

Other Types of Travel

3.8   JMP's report, 'Measuring scope 3 carbon emissions – transport. A report to HEFCE by JMP Consultants Ltd',[12] which forms the evidence base for our recommendations, explains why other types of travel have been excluded from the proposed EMS data definitions.

3.9   The proposed EMS definitions for carbon emissions from travel are in Table 3.1.

Table 3.1 Proposed EMS travel definitions

Note: Reference numbers to be agreed as part of the HESA review of EMS.

Scope 3 travel emissions	**Definition**
	Scope 3 travel emissions include emissions resulting from academic, support staff and students travelling for business purposes, and commuting to and from their home address or term-time residence to the HEI.
	Identifying Scope 1 and Scope 3 Travel Emissions
	In order to avoid double counting, scope 1 travel emissions need to be identified and reported separately from scope 3 travel emissions. Scope 1 travel emissions should be provided under EMS reference [to be determined following HESA review of EMS].
	Determining the scope of emissions from HEI travel will depend on a range of factors including:
	• The type of travel being undertaken (e.g. if it is business travel or commuter travel);
	• Whether the mode of transport is owned or leased by the HEI; and/or
	• How the transport asset has been accounted for by the HEI.
	Business travel emissions resulting from the use of any mode of transport that is not owned or leased by an HEI, and virtually all modes of commuter travel, should be recorded as scope 3 emissions.
	Scope 1 travel emissions may include those generated by academics, support staff or students travelling for business purposes using modes of transport that are owned or leased by an HEI. Modes of transport that are owned by an HEI and used for business travel should always be recorded as scope 1 emissions, while the scope of emissions from leased modes of transport used for business purposes will depend on how the asset has been accounted for. Leased modes of transport used for business purposes will be recorded as either scope 1 or scope 3 emissions.

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[12] See footnote 1.

Emission Conversion Factors

Scope 3 travel emissions should be reported in tonnes of carbon dioxide equivalent (CO_2e) using the Defra and DECC latest emission conversion factors (currently August 2011, so using these or any subsequent updates).

Calculating Emissions

To calculate emissions from different modes of travel, multiply activity data (e.g. fuel used or distance travelled) by the appropriate conversion factor.

Emissions can be calculated using fuel consumption or distance travelled data. Distance travelled data uses average emission factors for different modes of transport and is not as accurate as fuel consumption data.

For public transport (like rail travel) emissions are reported on a per passenger kilometre basis, rather than per vehicle kilometre (pvkm), which is how emissions from motor cars or vans are reported. HEIs should use the most accurate emission conversion factors possible based on the data they have available.

Further information on how to source information, choose the most accurate emission conversion factors and calculate emissions can be found in 'Measuring scope 3 carbon emissions – transport. A guide to good practice' [this document].

The DfT and Defra have published a work-related travel emissions reporting spreadsheet to help organisations calculate emissions and allocate them to emissions scopes. This spreadsheet tool uses the Defra/DECC conversion factors (2010 update) and can be found at www.dft.gov.uk/pgr/sustainable/greenhousegasemissions/. We understand that the tool will be updated to reflect changes to conversion factors in future years. Please note that you need to have Excel 2007 or above installed on your computer for this spreadsheet to open.

Reporting Boundary for Scope 3 Travel Emissions

HEIs are asked to provide scope 3 emissions information for the following types of travel.

HEIs' business travel: this is business travel that is paid for by an HEI and undertaken by academic and support staff, and by students. Some modes of HEI business travel are classed as mandatory and should be reported, whereas other modes are optional. HEIs should make every effort to report emissions from optional travel modes where possible.

HEIs' commuter travel: this is travel undertaken by academics, support staff and students to and from their home (or for students, term-time residence only) to the HEI.

REFERENCE NUMBER PART A	**HEI's Business Travel** This is business travel that is paid for by the HEI and includes travel by academics, support staff and students. For example, it includes travel undertaken by academics to attend conferences or events, support staff meeting with suppliers, or students travelling to fulfil course requirements. The emissions from business travel which is paid for by a third party should not be included within the HEI's scope 3 travel emissions reporting. Similarly, business travel that is paid for by students independently should also be excluded.	
	HEI's Business Travel Scope 3 Mandatory Modes of Travel	**Total Greenhouse Gas Emissions (Tonnes)**
REF # PART A/ PART A	Air travel (domestic, short haul and international)	
REF # PART A/ PART A	Rail travel (domestic and international)	
REF # PART A/ PART A	Vehicle – grey fleet (individuals reimbursed for using their private vehicles)	
REF # PART A/ PART A	Vehicle – leased pool cars classed as scope 3 travel emissions	
REF # PART A/ PART A	Vehicle – leased company cars classed as scope 3 travel emissions	
REF # PART A/ PART A	Leased motorcycles or mopeds classed as scope 3 emissions	
REF # PART A/ PART A	Leased vans classed as scope 3 travel emissions	
REF # PART A/ PART A	Leased buses classed as scope 3 emissions	
REF # PART A/ PART A	Total scope 3 travel emissions from mandatory modes	
REFERENCE NUMBER PART B	**HEI's Business Travel Scope 3 Emissions (Optional)**	**Total Greenhouse Gas Emissions (Tonnes)**
REF # PART B/ PART B	Public bus	
REF # PART B/ PART B	Underground	
REF # PART B/ PART B	Tram	

REF # PART B/ PART B	Taxi	
REF # PART B/ PART B	Coach	
REF # PART B/ PART B	Ferry	
REF # PART B/ PART B	Total HEI business travel scope 3 emissions from optional modes	
REFERENCE NUMBER PART C	**HEI's Commuter Travel** This is academic and support staff, and students travelling to and from their term-time address to the institution. Reporting emissions from staff and student commuter travel is optional, but we would encourage institutions to report as much up-to-date information as possible. We anticipate, however, that scope 3 commuter travel emissions data may not be readily available on an annual basis for all HEIs. It is therefore acceptable for HEIs to carry over from one year to the next between surveys, but commuter emissions data should not be older than 2 years. HEI commuter travel information is to be collected for academic and support staff, and for students separately. Students' travel from their home address to their term-time residence should not be included.	
	HEI's Staff (Academic and Support) Commuter Travel Scope 3 Emissions (Optional)	**Total Greenhouse Gas Emissions (Tonnes)**
REF # PART C/ PART C	Air (domestic, short haul and international)	
REF # PART C/ PART C	Rail travel (domestic and international)	
REF # PART C/ PART C	Tram	
REF # PART C/ PART C	Underground	
REF # PART C/ PART C	Public bus	
REF # PART C/ PART C	Coach	
REF # PART C/ PART C	Car	
REF # PART C/ PART C	Taxi	

| REF # PART C/ PART C	Motorcycle/moped	
REF # PART C/ PART C	Ferry	
REF # PART C/ PART C	Total emissions: academic and support staff commute	
REFERENCE NUMBER PART C	**HEI's Student Commuter Travel Scope 3 Emissions (Optional)**	**Total Greenhouse Gas Emissions (Tonnes)**
REF # PART C/ PART C	Air (domestic, short haul and international)	
REF # PART C/ PART C	Rail travel (domestic and international)	
REF # PART C/ PART C	Tram	
REF # PART C/ PART C	Underground	
REF # PART C/ PART C	Public bus	
REF # PART C/PART C	Coach	
REF # PART C/ PART C	Car	
REF # PART C/ PART C	Taxi	
REF # PART C/ PART C	Motorcycle/moped	
REF # PART C/ PART C	Ferry	
REF # PART C/ PART C	Total emissions: student commute	
REF # PART C/ PART C	**Total Commuter Emissions: Academic and Support Staff, and Students**	
	Total HEI commuter travel scope 3 emissions from optional modes	

4 Sourcing Corporate Information

4.1   Finding and bringing together information on travel is recognised as one of the hardest aspects of calculating emissions. The source and availability of information can be influenced by the size of the HEI and the amount of travel that is undertaken, as well as the systems and processes used to procure and manage travel and record information.

Stakeholders

4.2   This section identifies stakeholders who can provide different types of data that can be used to calculate emissions.

4.3   A list of potential stakeholders is provided in Figure 4.1.

Figure 4.1 Potential stakeholders
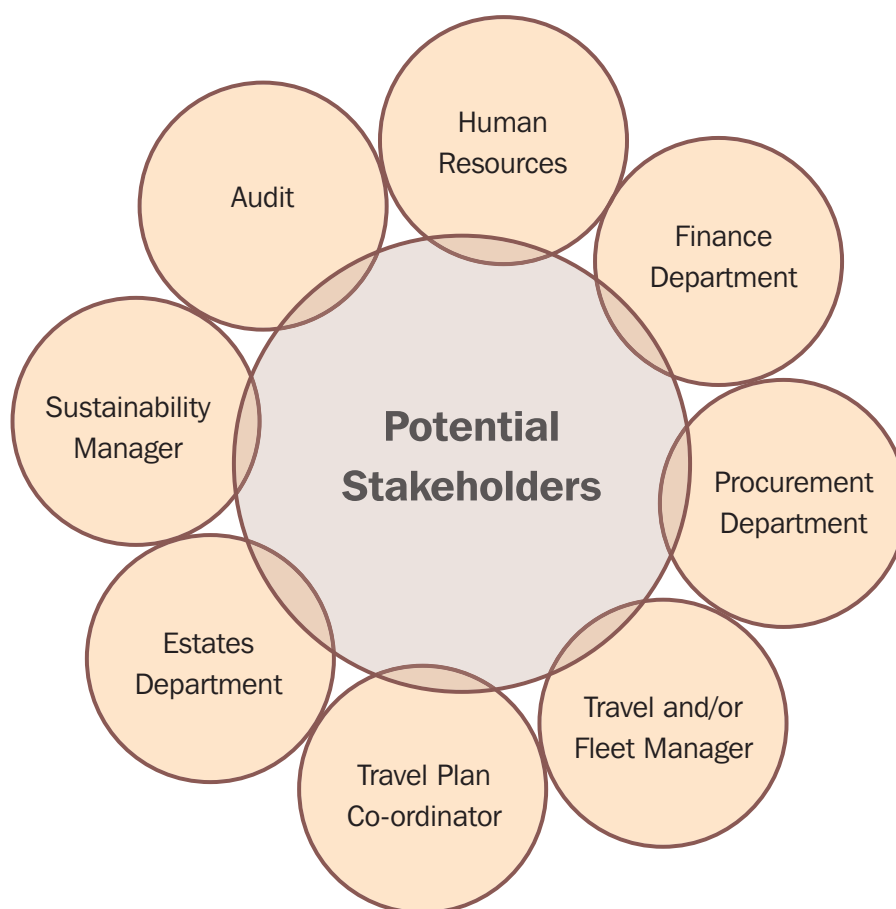
Human Resources

4.4   Human resources (HR) may be responsible for the HEI's travel, expenses, health and safety policies and day-to-day management of travel. HR representatives may manage relationships with suppliers or manage internal management information systems.

Finance Department

4.5   The finance department may hold a financial breakdown of expenditure on business travel. It may also be responsible for the HEI's asset register, which may include information on leased transport assets.

4.6   For certain modes and types of travel it is possible to calculate emissions from financial expenditure. Access to financial information is also important if the missing data methodology is used (see Section 6).

Procurement Department

4.7   The procurement department may be responsible for managing day-to-day business travel and travel contracts. The procurement team may receive management information on travel booked via suppliers, which could include information on emissions.

Travel and/or Fleet Manager

4.8   The travel and/or fleet manager may be responsible for the day-to-day management of all forms of HEI travel. As central figures in travel management in HEIs, travel and fleet managers may have access to multiple sources of data from suppliers and internal stakeholders that could be used to calculate emissions.

Travel Plan Co-ordinator

4.9   The travel plan co-ordinator may be responsible for devising and implementing strategies that promote more sustainable patterns of travel. They may hold information on staff and student travel from surveys and other data sources.

Estates Department

4.10 The estates department may be responsible for managing the HEI's buildings and travel requirements. The department may be able to provide information on how staff and students travel to and from work.

Sustainability Manager

4.11 The sustainability manager may have information on the HEI's strategy for managing and reducing emissions. This could include information on where travel data can be sourced.

Audit

4.12 Internal or external audits may have reviewed travel policy, procurement and/or management of business and commuter travel. An audit report could contain information on the amount of travel undertaken, sources of data and stakeholders.

Data Sources

4.13 The stakeholders identified in Figure 4.1 may be able to provide you with advice and data. Alternatively, they may be able to identify other stakeholders who could provide useful information.

4.14 Information on scope 3 travel emissions could be sourced from a wide range of suppliers, particularly for business travel. Alongside information from suppliers, data may be sourced from internal management information or reporting systems.

Internal data sources

4.15 Information on scope 3 travel emissions could be sourced from internal management information and reporting systems, which could include the finance and accounting system, asset register, travel and subsistence forms, expenses systems and bespoke travel databases, spreadsheets or files.

Supplier data sources

4.16 The HEI may use suppliers to book, manage or pay for business travel. There may be one or multiple suppliers for different types of travel. HEIs' may also employ data analysts and independent third parties to review business travel data.

4.17 Suppliers may be able to provide information on fuel consumption, distance travelled and other types of management information on travel. This could include details of travellers and their business unit, the cost of travel, the purpose of trips and the origin and destination of journeys.

Reviewing supplier data

4.18 If a supplier provides information on fuel consumption and/or distance travelled, you need to understand the source(s) of data they have used. The supplier should be asked to outline:

- How fuel consumption has been calculated;

- Fuels used – i.e. for vehicles, whether the fuel is petrol, diesel, liquefied petroleum gas (LPG) or compressed natural gas (CNG);

- How the distance travelled has been calculated; and

- How emissions have been calculated.

4.19 You will need to ensure that if suppliers provide emissions data, the factors used to calculate emissions align with the most recent Defra/DECC guidance. If a number of different suppliers are used (for example, if two agents are used to book air travel), it is important to ensure that both suppliers are using the same methodology to calculate distance flown and emissions.

Q I employ a supplier to assist with my HEI's business travel requirements. Will all suppliers be able to provide information on emissions?

A Many travel suppliers are able to provide their clients with information on emissions. When negotiating with an incumbent, or tendering for a new supplier, request that the supplier provides information on emissions (to the latest Defra/DECC emissions standards) as part of their standard management information reports.

Managing carbon emissions related to business travel – Leeds Metropolitan University

Primarily, managing business travel came from the need to reduce costs from air travel and ensure that travel abroad delivers the maximum value in terms of academic return. It also meant compliance with financial procedures. With the introduction of scope 3 emissions and HEFCE's commitment to set sector-level scope 3 target(s) by December 2013, we took the opportunity to ensure that all business travel by rail and air was purchased centrally by a dedicated travel management company, and that carbon emissions were included in our monthly management information pack.

As a result of including this requirement in the tender, and externally auditing the calculation methods used, the University has a high level of confidence that its carbon figures for air and rail travel are as accurate as they can be at this moment in time.

The University is in the process of including carbon figures in its car hire contracts and has a scope 3 steering group to ensure that it has the right level of management information to accurately assess each element of its scope 3 carbon footprint. This allows the University to assess the size of the problem and prioritise its efforts. For example, emissions due to business travel in 2009/10 were 1,320 tonnes, the staff and student commute was estimated at 5,879 tonnes, and the procurement of goods and services was over 18,300 tonnes.

Business travel emissions 2009/10 (tCO$_2$e)

Rail travel 4%

Car travel 11%

Air travel 85%
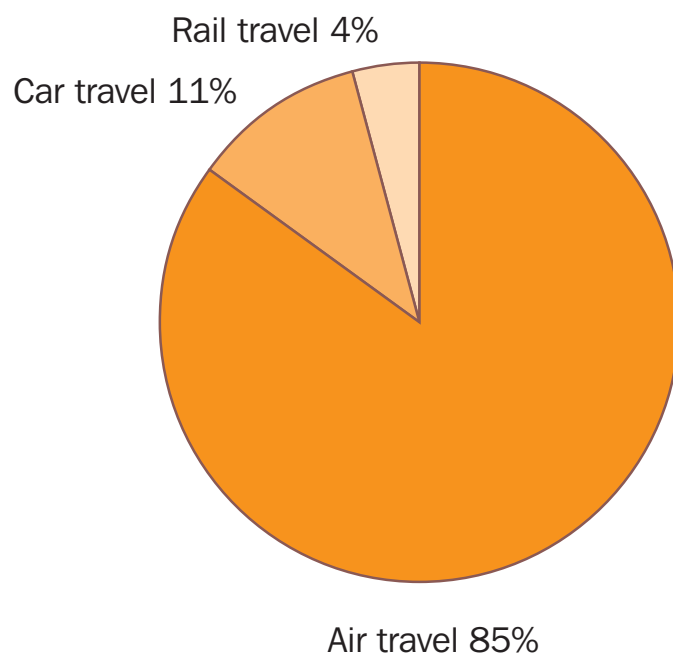
5 Sourcing Information and Calculating Scope 3 Travel Emissions by Mode

Business Travel

5.1 This section provides guidance on how to source data and calculate scope 3 travel emissions for business travel.

5.2 Business travel emissions are classified as scope 1 emissions if the transport asset is owned by the HEI. Business travel on leased assets can be classified as scope 1 or scope 3 depending on how the asset has been accounted for.

5.3 To avoid double counting, it is important to differentiate between scope 1 and scope 3 emissions.

Air Travel

Summary of Air Travel

5.4 Emissions from air travel on commercially owned aircraft are classified as scope 3. Emissions from scope 3 air travel are calculated on a per passenger kilometre basis.

5.5 If an aircraft is owned by an HEI, the emissions it generates are classified as scope 1. For emissions from leased aircraft, which can be classified as either scope 1 or scope 3, it may be possible to use fuel consumption data to calculate emissions. Fuel consumption data is a more accurate way to calculate emissions than distance travelled.

Data Sources for Air Travel

5.6 External suppliers are likely to be able to provide the most accessible and accurate source of data on air travel. Figure 5.1 shows suppliers that may be able to provide information.

Travel Management Company

5.7 Travel management companies (TMCs) provide organisations with a wide range of travel services, including booking and managing air travel. TMCs may be able to provide a wealth of data, including information on flights taken, costs, distances travelled and emissions generated.

Self Booking Tool

5.8 Self booking tools (SBTs) enable air reservations to be made online via a TMC. An SBT is able to provide similar information to a TMC.

Global Distribution System

5.9 A global distribution system (GDS) is a database used by TMCs and SBTs to access information on flights and make reservations. An HEI may receive a data feed directly from a GDS containing information on flights taken, distances travelled and emissions generated.

Airlines

5.10 HEIs may have a preferred supplier relationship with one or a number of different airlines. Airlines may provide management reporting containing information on flights taken and resulting emissions, among other things.

Figure 5.1 Sources of external information for air travel

Third Party Data Analysts

5.11　A third party data analyst collates information on business flights and assists organisations to better procure and manage their air travel requirements. Data analysts are able to provide HEIs with a wealth of data on flights undertaken, including distance travelled and, potentially, emissions generated.

Expenses and Subsistence Systems

5.12　A specialist expense management system or credit card provider may be contracted to manage payments to suppliers and employees, or provide other financial services relating to procurement and management of air travel.

5.13　Card suppliers rarely provide information on distance travelled or emissions generated, but can be a valuable source of financial information.

Internal Information Systems

5.14   In addition to external suppliers, internal information systems may hold data on air travel. These include:

- **Central records** – flights may be recorded centrally or by a business unit on spreadsheets. This may be because of a requirement to know the whereabouts of all employees in the event of an incident.

- **Travel and expense claim forms** – travel and expense claim forms may include information about the origin and destination of flights. Consequently, the finance team may be able to provide this information.

Calculating Emissions from Air Travel

5.15   The four steps to calculating emissions from air travel are outlined in Figure 5.2.

5.16   The conversion factor used to calculate emissions is determined by the type of data available. The use of average conversion factors should be avoided where possible, as this reduces the accuracy of emissions calculation.

5.17   A carbon grading table outlining the accuracy of conversion factors is given in Figure 5.3. The table provides the different types of conversion factors available for each flight type. Conversion factors to the left-hand side (for example, 'cabin class of travel' for short and long haul flights) provide the most accuracy when calculating emissions.

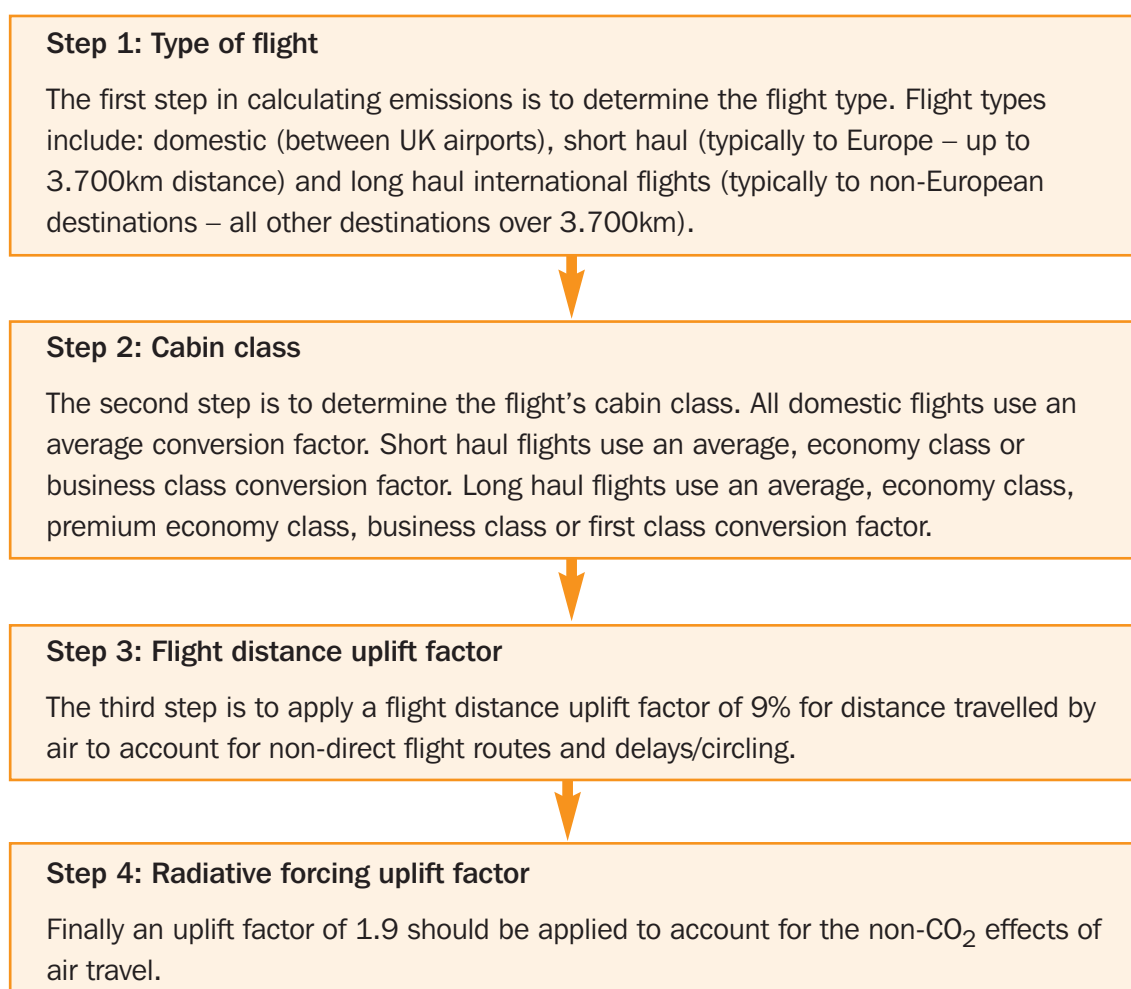### Figure 5.2 Four steps to calculating emissions from air travel

Step 1: Type of flight

The first step in calculating emissions is to determine the flight type. Flight types include: domestic (between UK airports), short haul (typically to Europe – up to 3.700km distance) and long haul international flights (typically to non-European destinations – all other destinations over 3.700km).

Step 2: Cabin class

The second step is to determine the flight's cabin class. All domestic flights use an average conversion factor. Short haul flights use an average, economy class or business class conversion factor. Long haul flights use an average, economy class, premium economy class, business class or first class conversion factor.

Step 3: Flight distance uplift factor

The third step is to apply a flight distance uplift factor of 9% for distance travelled by air to account for non-direct flight routes and delays/circling.

Step 4: Radiative forcing uplift factor

Finally an uplift factor of 1.9 should be applied to account for the non-CO_2 effects of air travel.

Figure 5.3 Carbon grading table for air travel

Flight type	Accuracy	
	Most accurate ← Least accurate	
Air (domestic)	Average cabin class	
Air (short haul and long haul international)	Cabin class of travel	Average cabin class

---

Q **I have origin and destination data. How can I calculate distance flown?**

A Information may be available from suppliers and should be requested. Flight distance calculations should be based on great circle distances calculated using the International Air Travel Association (IATA) airport codes.
The International Civil Aviation Organisation (ICAO) has designed a carbon calculator that also provides flight distance using IATA codes. The calculator and instructions on how to use it can be found on the ICAO website (www.icao.int).
Please Note: Whilst distance data can be generated by the ICAO calculator, the ICAO calculator does not use Defra/DECC methodology or conversion factors to calculate emissions. As a result, HEIs should use distance data to calculate emissions using Defra/DECC conversion factors.

Road Vehicle Travel – Cars and Vans

5.18   A range of different categorisations of cars and vans may be used to travel on business, for which the associated scope 3 emissions should be recorded. These include:

•   Leased pool cars and vans;

•   Company leased cars and vans;

•   Hire cars and vans;

•   Employees using their own private vehicles for business (the grey fleet); and

•   Car/van clubs.

Types of Vehicle

5.19   A number of car and van types can be used for business travel, as follows.

Pool Car or Van

5.20   A vehicle can only be classified as a pool car if all the following conditions are satisfied:

(a)   It is available to, and is actually used by, more than one employee or student;

(b)   It is made available, in the case of each of those employees, by reason of their employment;

(c)   It is not ordinarily used by one employee to the exclusion of other employees;

(d)   Any private use by an employee is merely incidental to their business use of it; and

(e)   It is not normally kept overnight at or near the residence of any employee unless it is kept at premises occupied by the provider of the car.

5.21   For further information, please refer to Her Majesty's Revenue and Customs (HMRC) advice on this topic.[13]

Company Car or Van

5.22   A company car or van is a vehicle that is allocated to an employee and, as such, is classed as a 'benefit in kind' for the purposes of taxation. In these cases, an organisation is required by HMRC to submit a P11D form for each individual with details of their vehicle, mileage travelled and emissions. The P11D can provide a valuable source of information for emissions calculations.

Hire Car or Van

5.23   A vehicle that is rented from a supplier.

Private Vehicles

5.24   This relates to employees (or potentially students) who use their own vehicle to travel for business and are reimbursed by the HEI. The use of private vehicles on official business is commonly referred to as 'grey fleet' travel.

Car/van Club Vehicles

5.25   These are cars or vans provided by a supplier on a pay-as-you-go basis.

Accounting for Vehicle Emissions

5.26   Emissions generated by car or van travel are classed as either scope 1 or scope 3. The scope of the emissions is dependent on whether the car or van is owned or leased by the HEI, and how the asset and emissions are accounted for. For information on how to allocate emissions to scopes, see paragraphs 2.3-2.6 and the question and answer that follows them.

Data Sources for Road Vehicles

5.27   In order to calculate emissions generated by road vehicles, the sources shown in Figure 5.4 may be able to provide information on fuel consumption, vehicle specification, fuel type and engine size, or market segment for owned, leased or hired cars and vans.

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[13] Available at www.hmrc.gov.uk/guidance/480_chapter15.pdf.

Figure 5.4 Sources of supplier information
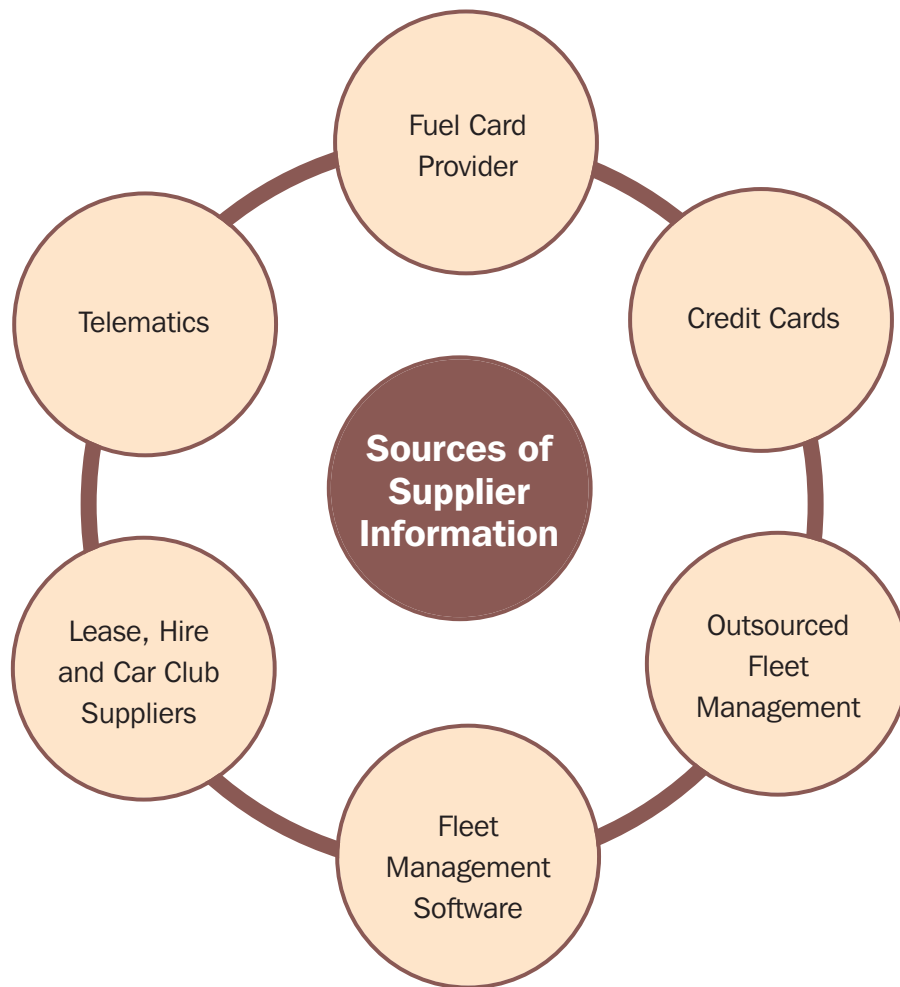
Fuel Card Provider

5.28   A fuel card is a payment card used primarily for pool, company and hire vehicles to pay for petrol, diesel, LPG and CNG at filling stations. A fuel card provider will be able to supply information on litres of fuel purchased and possibly also on vehicle types, emissions and distance travelled.

Credit Cards

5.29   Staff may use a credit card to purchase fuel. However, fuel data will not necessarily be linked to a particular vehicle.

Outsourced Fleet Management

5.30   The management of a fleet of vehicles could be outsourced to a specialist provider who retains information on fuel consumption and vehicle specification.

Fleet Management Software

5.31   Fleet management software enables the operational management of fleet vehicles, including their acquisition, maintenance and disposal. Software may include vehicle specification, mileage and fuel type.

Lease, Hire and Car Club Suppliers

5.32   Suppliers of vehicles may provide monthly or quarterly reports on vehicles used by an HEI. Management information could include details on vehicle specification, fuel usage and distance travelled.

Telematics

5.33   Vehicle tracking systems can provide real-time information on the location of a vehicle and its fuel consumption. Suppliers may be able to provide information on vehicle specification and distance travelled.

Internal Information Systems

5.34   Information on cars and vans may also be held on internal management information systems such as travel and expense forms, or centrally controlled spreadsheets and/or databases. Additional internal sources of information for cars and vans could include:
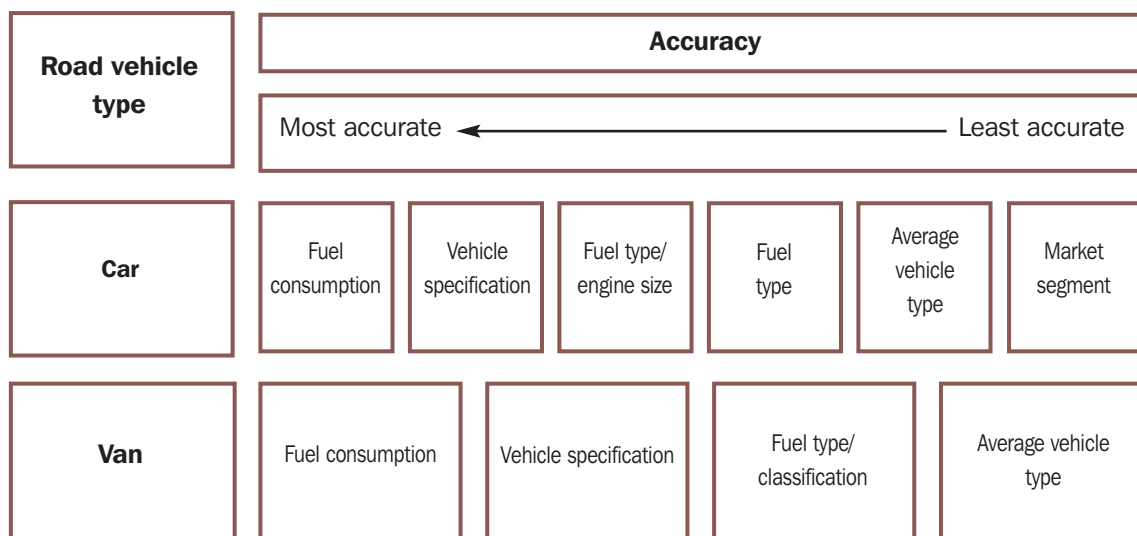
* Vehicle specification details being collected during driving licence checking procedures;

* Vehicle specification details being collected during grey fleet business insurance checking; and

* Pool vehicle logbooks and other vehicle records, including VAT receipts, could hold vehicle specification and fuel consumption data.

Calculating Emissions from Road Vehicles

5.35   The conversion factor used to calculate emissions from cars and vans is determined by the type of data available.

5.36   Fuel consumption is the most accurate conversion factor, followed by vehicle specification. The fuel type and engine size (or for vans, classification) conversion factor is the next option. A carbon grading table for road vehicles is provided at Figure 5.5.

Figure 5.5 Carbon grading table for road vehicles

| Road vehicle type	Accuracy					
	Most accurate ←——————————————— Least accurate					
Car	Fuel consumption	Vehicle specification	Fuel type/ engine size	Fuel type	Average vehicle type	Market segment
Van	Fuel consumption	Vehicle specification	Fuel type/ classification	Average vehicle type		

Fuel Consumption

5.37   Fuel consumption is the preferred option for calculating emissions generated by road vehicles. It is the most accurate source of data from which emissions can be calculated. Fuel consumption can be sourced from fuel card suppliers or fuel receipts.

5.38   If fuel consumption data is not available, but expenditure is known, it is possible to estimate fuel consumption. However, actual fuel consumption is a more accurate way to calculate emissions.

Q   How can I calculate the volume of fuel purchased from expenditure data?

A   To calculate the volume of fuel purchased from expenditure data will require the data to be split by fuel type. You will also require average prices for each fuel type for the period in question. The volume of fuel purchased can then be calculated using the formula shown below:

$$\text{Expenditure on fuel type} \div \text{Average price of fuel} = \text{Fuel consumption}$$
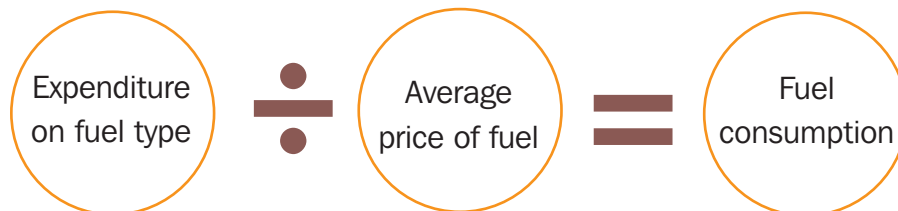
Q   Where can I find historical fuel prices?

A   Monthly fuel price reports can be accessed on the AA website for petrol, diesel and LPG (www.theaa.com/motoring_advice/fuel/index.html).

Vehicle Specification Information

5.39   Manufacturers of all cars registered since 2001 in the UK are required to record the emissions of the vehicle per kilometre, and, since 2002, Company Car Tax rules have also been based on the emissions of the vehicle. Manufacturers of vans have been required to record the emissions of the vehicle per kilometre since 2009.

5.40   If vehicle specification is used to calculate emissions, then mileage data is needed. Emissions should also be uplifted by 15 per cent to take into account further real world driving effects relative to test-based cycle data. This calculation is shown in Figure 5.6.

Figure 5.6 Calculating emissions using vehicle specification

$$\text{Vehicle kilometers} \times \text{Vehicle specification (uplifted by 15 per cent)} = \text{Carbon emissions}$$
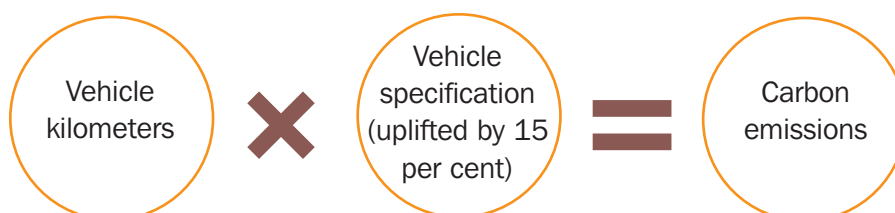
A Since 2001 a system of graduated vehicle excise duty (VED) has been in operation for all new cars based on emissions. Information on emissions for the vehicle will be documented on the V5 Vehicle Registration Document. Since 2002 Company Car Tax rules have also been based on the emissions of the vehicle. Therefore for company cars, whether they are owned or leased, HMRC require a P11D or P9D form to be submitted. Emissions data can therefore be sourced from these forms.

Q Are there any websites which provide CO_2 emissions for road vehicles?

A If the vehicle specification is known, emissions for new cars can be found on the Vehicle Certification Agency (VCA) website (www.dft.gov.uk/vca/fcb/new-car-fuel-consump.asp).
The emissions from new vans can be found elsewhere on the VCA website (www.vca.gov.uk/vandata/vehicles.aspx).
The VCA database also provides information on vehicle fuel consumption, Euro standards and emissions of particulates.

Fuel Type and Engine Size

5.41   If information on fuel consumption or vehicle specification is not available, emissions can be calculated using fuel types and engine sizes (or for vans, classification) together with distance travelled.

5.42   If fuel type and engine size (classification for vans) data is not available, then an average conversion factor can be used.

Market Segment

5.43   Emissions can also be calculated using fuel type and market segment together with distance travelled. If fuel type is unavailable, it is possible to calculate emissions by market segment alone.

5.44   **Note:** This approach is not preferable, and Defra/DECC recommend the use of vehicle specification over market segment.

Q How can I calculate distance travelled in a road-based vehicle?

A The distance between an origin and destination can be calculated using the Transport Direct website. Other journey planning websites for travel by road vehicles include the AA Route Planner, RAC Route Planner and Google Maps.

A The 'grey fleet' is defined as the use of the private vehicles on official business. In order to calculate the miles travelled in the grey fleet, you will require the mileage rate paid to staff (and information on any other supplementary one-off or mileage payments). This information may be held by the HR or finance department.

If the rate paid varies depending on the mileage travelled, fuel or engine size, actual distance will need to be calculated using individual reimbursement claims. Mileage can be calculated using the formula shown below:

$$\text{Expenditure on grey fleet} \div \text{Rate per mile} = \text{Distance travelled (in miles)}$$
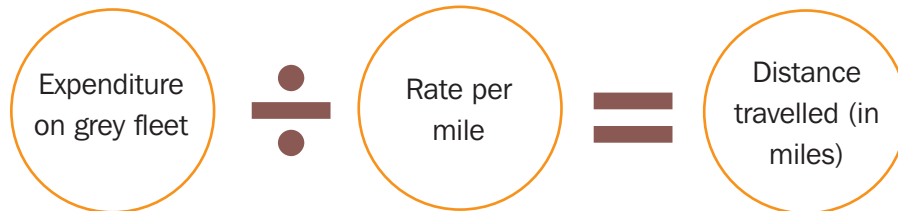
Rail

Summary of Rail Travel

5.45   Emissions from travel by rail are calculated on a per passenger kilometre basis. Rail travel for business trips is classed as a scope 3 emission.

Data Sources for Rail Travel

5.46   Information on rail travel could be sourced from travel suppliers, similar to those identified for flights in Figure 5.1. Information on UK-based rail journeys is not held on global distribution systems, but some international rail information can be obtained from GDS providers.

5.47   Potential sources of data from internal management information systems are similar to those used for air travel, as shown in paragraph 5.14.

Calculating Emissions from Rail Travel

5.48   Calculating the emissions from rail travel depends on the type of rail travel used. Emissions are broken down into the following classifications:

*   National rail;

*   International rail (Eurostar);

*   Light rail; and

*   Underground.

5.49 The conversion factors for rail travel, unlike air travel, are not split by class of travel.
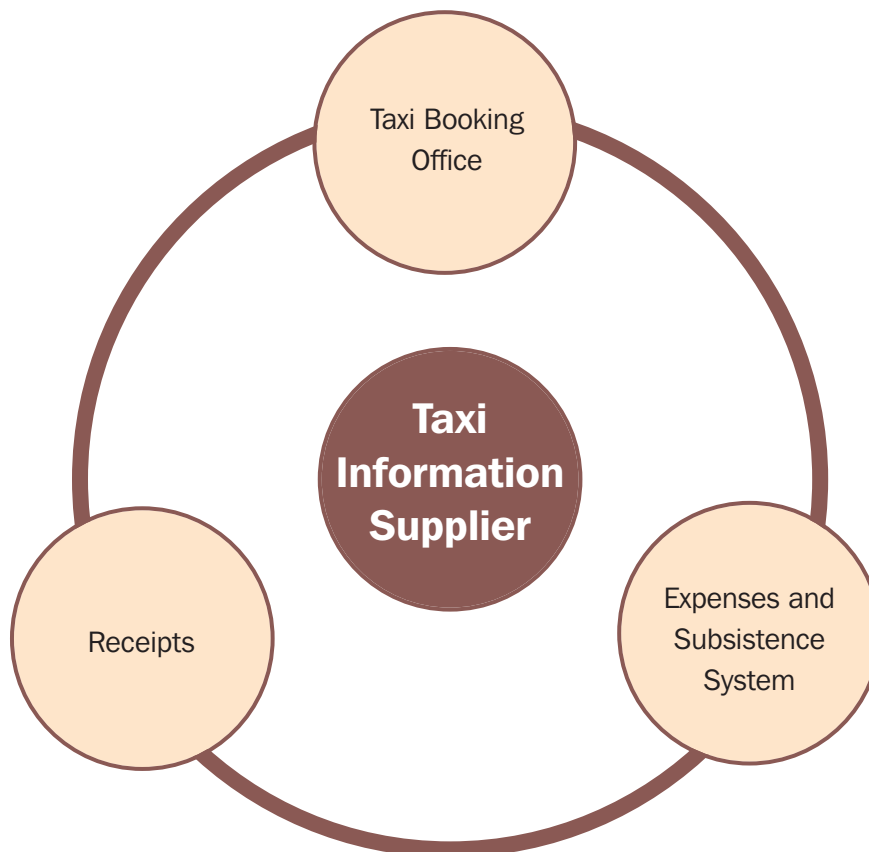
Taxi

Summary of Taxi Travel

5.50   As travel is in commercially owned vehicles, emissions are calculated on a distance basis. Conversion factors are provided per vehicle kilometre and per passenger kilometre.

5.51   Since the ppkm conversion factor is based on average vehicle occupancy, the pvkm conversion factor provides a greater level of accuracy.

Data Sources for Taxi Travel

5.52   The classification of taxi travel and distance travelled may be available from a taxi supplier or booking agent. Suppliers that may be able to provide information are shown in Figure 5.7.

Figure 5.7 Taxi information suppliers

Taxi Booking Office

5.53   Taxi journey details may be booked and logged at the taxi booking office, and the supplier may be able to provide reports on the vehicle used, distance travelled and emissions.

Expenses and Subsistence System

5.54   A specialist expenses and/or subsistence provider may be contracted to manage payments to suppliers and employees. This system may hold detailed information on taxi journeys.

Receipts

5.55   If the HEI does not have a supplier, or if taxi travel is booked outside of supplier agreements, it may be possible to source data from travel and expense claims or taxi receipts. This may only be possible for taxis with a smart meter.

Calculating Emissions from Taxi Travel

5.56   The emissions from taxi travel are broken down into the following classifications:

•   Regular taxi; and

•   Black cab.

Note: Two question and answers on taxi travel follow paragraph 5.60.

Bus and Coach Travel

Summary of Bus and Coach Travel

5.57   Emissions from public bus and coach travel are calculated on a distance basis. Defra/DECC conversion factors are based on ppkm to account for the average vehicle occupancy.

5.58   Bus and coach travel emissions are classed as scope 3, unless a vehicle is owned or leased by an HEI and used by staff or students, for example to travel between campuses. The emissions will either be scope 1 or scope 3. If the HEI leases a bus, fuel consumption data is required to calculate emissions instead of ppkm. If fuel consumption data is not available, financial data on fuel spend may be used (see the missing data methodology, Section 6, for more information).

Data Sources for Bus and Coach Travel

5.59   If buses and coaches are hired or leased, a supplier may be able to provide information on fuel consumption, vehicle classification and distance travelled.

5.60   If travel by bus and coach is undertaken on public transport, then data will be harder to source. If bus and coach travel costs are reclaimed through the travel and expenses system, this may require a claimant to record the origin and destination of a journey, mode of travel and distance travelled. From this information it is possible to calculate emissions.

Q I have information on the origin and destination of taxi journeys. How can I calculate the distance travelled?

A Taxi journey distance can be calculated using journey planning websites such as Transport Direct (www.transportdirect.info/Web2/Home.aspx). The distance travelled is provided in miles or kilometres and can be calculated for each journey by entering the origin and destination.

If taxi journeys are undertaken for common routes, a distance matrix could be compiled to ease future reporting burdens. An example matrix is shown below:

	Destination		
Origin	University of Manchester	Manchester Airport	Manchester Piccadilly Rail Station
University of Manchester	–	8.9m/14.3km	1.9m/3.1km
Manchester Airport	8.9m/14.3km	–	10m/16.1km
Manchester Piccadilly Rail Station	1.9m/3.1km	10m/16.1km	–

Q I only have expenditure data. Can I calculate emissions from taxis?

A Distance travelled in taxis can be estimated using financial expenditure and an average taxi pricing structure based on existing contracts.

The resulting figures should be treated with caution, as there is no standard pricing structure for taxi services across the UK and fares are influenced by the time of day, journey time and items of luggage.

An example of the calculation can be seen below:

| Taxi journey information			Source
Taxi emissions	=	0.386 kg CO_2 per mile	London Black Cab – Defra/DECC Conversion Factors
Average journey distance	=	4.702 miles	DfT Personal Travel Factsheet No. 5
Average journey cost for 4 mile journey	=	£17	Transport for London – Average taxi fares, Tariff Code 1
Average taxi cost per mile	=	£3.62	Average journey cost/ Average journey distance
Kg CO_2 per £ taxi spend	=	0.11 kg	Conversion factor/ Average cost per mile

Calculating Emissions from Bus and Coach Travel

5.61   Calculating the emissions from bus or coach travel depends on the type of vehicle. Emissions are broken down into the following categories:

•   Local bus;

•   London bus;

•   Average bus;

•   Coach; and

•   Average bus and coach.

5.62   A carbon grading table outlining the accuracy of conversion factors for bus travel can be found at Figure 5.8.

Figure 5.8 Carbon grading table for bus travel

Journey type	Accuracy	
	Most accurate ⟵—————————————— Least accurate	
Bus	Bus journey type	Average (bus and coach)
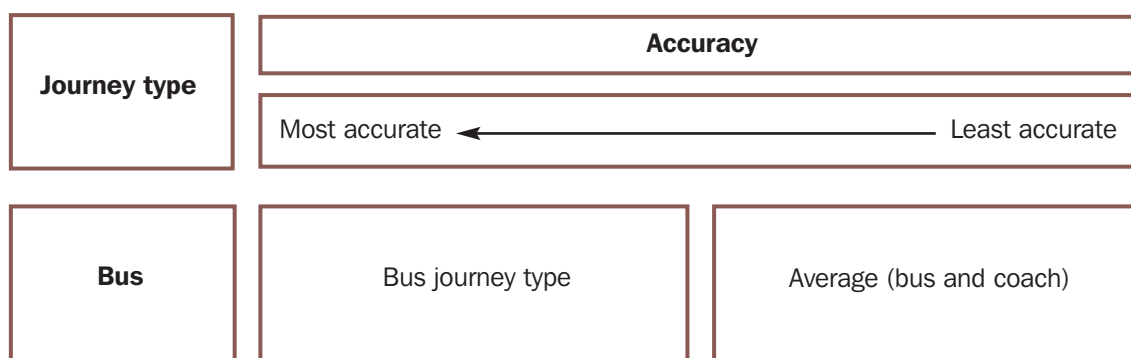
> **Q** I have information on the origin and destination of bus/coach journeys. How can I calculate the distance travelled?
>
> **A** Bus and coach journey distance can be calculated using journey planning websites such as Transport Direct (www.transportdirect.info/web2/Home.aspx)
>
> The distance travelled is provided in miles or kilometres and can be calculated for each journey by entering the origin and destination. Journey distance information may also be available from your travel supplier.

Ferry Travel

Summary of Ferry Travel

5.63   Emissions from ferry travel are calculated on a distance basis. Defra/DECC conversion factors are based on ppkm. The emissions from ferry travel are classed as scope 3.

Data Sources for Ferry Travel

5.64   The TMC or ferry operator may be able to provide information on the number of journeys, distance and cost associated with ferry travel. Records may also be held on internal management reporting systems such as travel and expenses claim forms.

Calculating Emissions from Ferry Travel

5.65   Travel by ferry is separated into the following categories:

*   Foot passengers;

*   Car passengers; and

*   Average (all passengers)

5.66   A carbon grading table for ferry travel can be found at Figure 5.9.

Figure 5.9 Carbon grading table for ferry travel

Journey type	Accuracy	
	Most accurate ⟵———————————— Least accurate	
Ferry	Type of passenger	Average (all passengers)
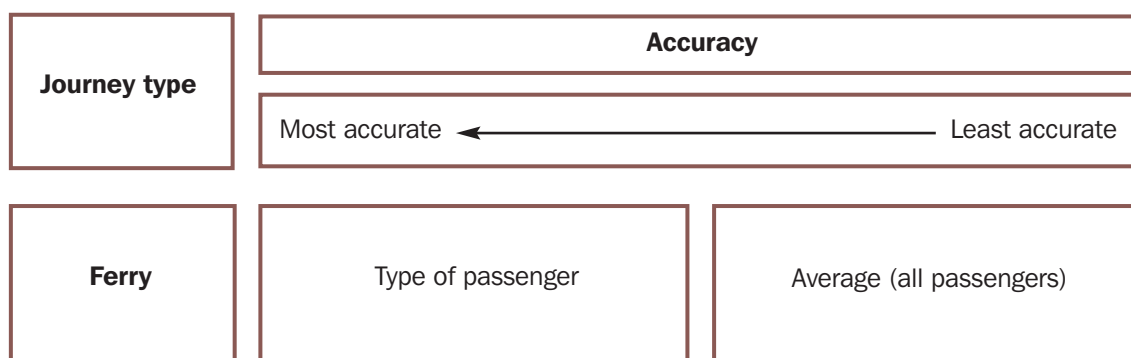
> **Q** I have information on the origin and destination of ferry journeys. How can I calculate the distance travelled?
>
> **A** The ferry operator will be able to provide journey distance information. Alternatively, information on the distance between ports may be available from your travel supplier.

Motorcycles

Summary of Motorcycle Travel

5.67   Emissions associated with motorcycles are calculated on a pvkm basis. The emissions from motorcycle travel are classed as either scope 1 or scope 3. The scope depends on whether the motorcycle is owned or leased, and how the asset and emissions have been accounted for.

Sourcing Data for Motorcycles

5.68   The suppliers and sources of management information identified in the car and van section (paragraphs 5.27-5.33) may also be able to provide information on fuel consumption, fuel type/engine size and distance travelled for motorcycles.
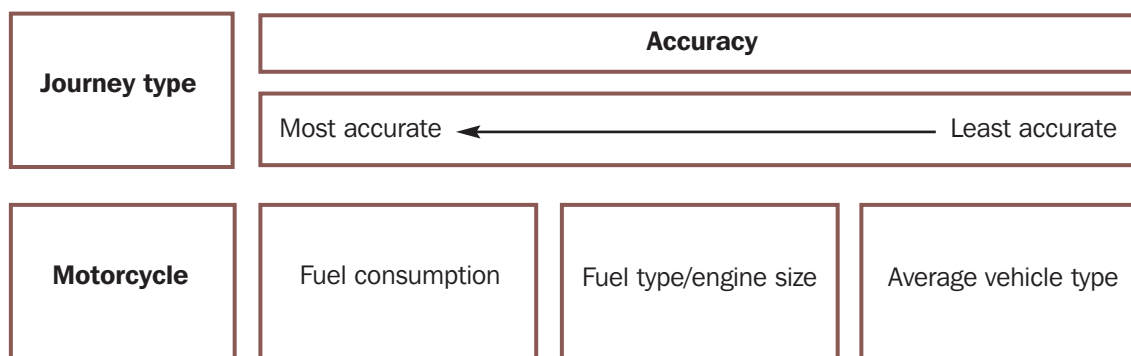
Calculating Emissions from Motorcycle Travel

5.69   The conversion factor to be used is determined by the following:

•   Whether actual fuel consumption data is available;

•   Whether fuel consumption data is available for a specific motorcycle; and

•   Whether motorcycle engine size is available.

5.70   A carbon grading table for motorcycle travel can be found at Figure 5.10.

Figure 5.10 Carbon grading table for motorcycle travel

Journey type	Accuracy		
	Most accurate ⟵——————————— Least accurate		
Motorcycle	Fuel consumption	Fuel type/engine size	Average vehicle type

---

Q I have some information about motorcycles used for business travel, but not fuel consumption. How can I find out fuel consumption figures for motorcycles?

A The motorcycle manufacturer will be able to provide fuel consumption data. Alternatively this information will be available in the motorcycle's manual and might also be available from motorcycle dealers.

Q How can I calculate distance travelled by motorcycle from expenditure data?

A If mileage travelled on motorcycles is reimbursed through a mileage allowance payment, but you only have expenditure data, it is possible to estimate emissions. The mileage payment allowance authorised by HMRC for motorcycles is 24 pence per mile. This is not a set reimbursement rate and employers can pay more or less per mile but 24 pence represents the tax-free amount.
If payment per mile is in excess of 24 pence, then a P11D or P9D form should be submitted. The submission of a P11D or P9D is a valuable source of information on mileage travelled by motorcycle and can be used to calculate distance travelled and emissions.

Commuter Travel – Academic and Support Staff

5.71   This section defines commuter travel and provides guidance on capturing and calculating emissions from commuter travel undertaken by both staff and students.

EMS Definitions – Commuter Travel

5.72   The following definitions have been recommended for the purposes of EMS reporting:

- *Staff commuter travel:* this is travel undertaken by academics and support staff to and from their home address to the institution. Inclusion of emissions from staff commuter travel is optional within the EMS, but – where possible – every effort should be made to capture and report emissions in the manner described below.

- *Student commuter travel:* this is travel undertaken by students to and from their home address during term-time to the institution. Inclusion of emissions from student commuter travel is optional within the EMS, but – where possible – every effort should be made to capture and report emissions in the manner described below.

Sourcing Commuter Travel Data

5.73   In order to calculate emissions generated by commuter travel, it is necessary to source data on both the mode of travel used and the distance travelled by commuters.[14]

5.74   Travel surveys are commonly used to gather data on travel patterns, including information on choice of mode and distance travelled. Commuter travel at HEIs is complex and requires carefully designed travel surveys to ensure that all results are as accurate as possible.

5.75   An example of a staff travel survey is provided at Annex B. Additional questions examining the benefits and barriers to behavioural change can be found at Annex C.

5.76   Ideally, commuter travel data would include all variations in commuter travel patterns. In practice, however, capturing this data would be a very complex exercise involving considerable time input and financial outlay. Therefore, a balance needs to be struck between quality and cost.

Research Design

5.77   The research question that should guide the design of commuter travel surveys is: *"What emissions are generated annually by staff and students commuting to this institution?"*

5.78   Therefore, the primary aim of staff and student commuter travel surveys is to gather sufficient information to enable the annual emissions associated with commuter travel to be calculated in a transparent and robust manner. In addition, the results should be comparable year on year and, ideally, facilitate benchmarking across different institutions of emissions generated by commuter travel.

5.79   Two primary and discrete target populations are therefore relevant. These are:

1.   All individual members of staff; and

2.   All individual students who commute to your institution (e.g. excluding distance learners).

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[14] While fuel use data could also be used to calculate emissions from commuter travel, it is assumed that this would be extremely difficult to source; therefore, this approach has not been included.

5.80　In some cases it may be necessary to create further sub-divisions within these two primary populations. For example, where different buildings within your estate have very different levels of accessibility by different forms of transport, it is important to consider commuter travel patterns to each of these buildings in isolation.

Sampling Techniques

5.81　Sampling techniques can be used to identify a representative sub-set from primary target populations, or from each of their sub-divisions (e.g. 'all students who commute to building X' plus 'all students who commute to building Y'), allowing smaller samples to be surveyed rather than total populations. This technique helps to reduce costs, minimise research biases, streamline management processes and improve the efficiency of the research process.

5.82　Sampling techniques draw on a range of statistical theories and processes which are beyond the remit of this document. Rather, it is assumed that HEIs can, if required, access expertise from the sector to facilitate and bring rigour to this process. However, the following text assumes that in most cases generating a simple random sample should produce sufficiently robust results for the purposes of this exercise.

5.83　In summary, to identify a simple random sample from a target population,[15] individual elements (i.e. individual members of staff or individual students) need to be selected using a mathematically random process. For example, a random number generator[16] can be used alongside HR or student records to randomly select a sample of staff or students to survey. Researchers can then issue their survey directly to the identified individuals.[17]

5.84　Sample size calculations are not covered in detail here. However, a number of free-to-use sample-size generators are available online.[18] Ideally, the sample size calculation should aim to generate a confidence interval of plus or minus 5 per cent (i.e. the chance that the true value will be within this range) and a confidence level of 95 per cent. These factors should be reported alongside the survey results.

5.85　For example, for a survey to achieve these confidence levels from an HEI with a student commuter population of 10,000 it would be necessary to obtain valid responses from 370 randomly selected students.[19] Doing this would enable you to identify the commuter-related carbon footprint of the sample, but – importantly – would also enable you to generalise these findings to the entire population, within certain parameters (e.g. being 95 per cent confident that the commuter-related carbon footprint of the population is X, plus or minus 5 per cent).[20]

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[15] That is, all members of staff and all students who commute to your institution, or one or more sub-divisions of these primary populations.

[16] Random number generators are available at various internet sites.

[17] Over-sampling may be necessary to account for levels of non-response to the survey.

[18] For example, see www.m-research.co.uk/sample-size-calculators.php.

[19] Sample size generated at:
www.nss.gov.au/nss/home.nsf/pages/Sample+Size+Calculator+Description?OpenDocument.

[20] Non-sampling errors can lead to a decrease in the level of confidence in results.

5.86   The survey should seek to identify the mode/s of transport used by the randomly selected commuters on their journeys to and from the institution. The survey should cover all commuter travel over the course of a week. It should also:

- Include all modes of transport (based on the categories identified in Defra/DECC conversion factors, using average rather than detailed factors for car travel);

- Focus primarily on the main (motorised) form/s of transport used by individual commuters (e.g. car alone; car + bus; train + bus);

- (Where the main mode of travel is by car) reveal whether the respondent travelled as a driver or a passenger;

- (Where the main mode of travel is by car) reveal the total number of passengers;

- Identify the origin and destination[21] as well as the distance travelled for each main mode of transport used;

- Explore to what extent the recorded travel patterns can be considered representative of all travel over the course of a year.

5.87   The survey should be as simple and concise as possible to encourage high response rates. A range of other strategies can also be used to help encourage high response rates. For example, some organisations have set up surveys so that staff need to answer the survey as they log on to their computer. If they do not complete the survey, they cannot log on to the system.[22] Other institutions have offered incentives like a prize draw to encourage people to complete surveys.

5.88   For the purposes of this exercise, HEIs should assume that results generated by the approach described above are representative of the entire population, and that the results from the surveyed period (one week) can be extrapolated to the entire year.

5.89   It is recommended that commuter travel surveys be conducted at a frequency of not less than every two years (ideally annually), and that surveys be conducted at the same time of the year (i.e. during a period that represents a consistent and regular term-time week). To facilitate comparisons across institutions, we recommend that surveys be carried out during the last two weeks of February each year. The timing of the survey should be reported alongside the results.

5.90   Research findings should include the following:

- The total volume of commuter-generated emissions for both staff and students (reported separately);

- The total volume of commuter-generated emissions for both staff and students (reported separately) divided by the average number of commuter miles travelled annually for each population (i.e. emissions/mile);

- The average (annual) volume of commuter-generated carbon emissions per student (i.e. emissions/student);

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[21] Where accurate postcode data can be provided for origins and destinations, this can enable distance estimates provided by respondents to be cross-checked and verified using geographical information systems (GIS) software.

[22] Paper-based surveys may need to be made available in institutions where some staff do not have ready access to an electronic survey.

- The average (annual) volume of commuter-generated emissions per member of staff (i.e. emissions/staff member); and

- Emissions generated by commuter travel by mode for both staff and students (reported separately – i.e. emissions/student/mode; emissions/staff member/mode).

Calculating Emissions

5.91   The travel survey responses should provide distance travelled data by mode, as well as the frequency of commuter journeys to the institution by day of the week. This data can be uplifted to provide an estimate of the total emissions from commuter travel generated by survey respondents.

5.92   To draw on the example used earlier, assume a valid sample of 370 students was surveyed in an HEI with a total student commuter population of 10,000. Assume also that the size of this sample enables you to generalise your findings to the entire population of student commuters, within certain confidence levels (e.g. you are 95 per cent confident that the commuter-related carbon footprint of the population is X, plus or minus 5 per cent[23]). In addition, assume that the survey identified commuter travel patterns over the period of one week.

5.93   In this case, to uplift the total volume of commuter emissions generated by students from the surveyed sample (CS), the following equation can be used:

Total (institutional) volume of commuter-generated carbon emissions for all 10,000 students $=$ **(CS/370) X 10,000 tonnes CO_2e per week**

5.94   Once this equation has been completed it is necessary to uplift the weekly total to reflect a typical academic year. This can be defined as the total number of weeks in a year that a typical student could be expected to commute to the HEI. Calculating an estimated annual total means multiplying the weekly total by the number of weeks in a typical academic year.

Case study

Staff travel-to-work survey: calculating emissions and cross-checking results

The University of Cambridge carries out a staff travel-to-work survey for one week each October, through the Cambridgeshire Travel for Work Partnership. The survey is open to all staff, with survey responses being generated through self-selection (rather than through simple random sampling). In 2010 the response rate to the survey was approximately 16 per cent of all staff.

Survey analysis includes calculating the emissions generated by respondents' travel. The findings are also cross-checked with available data on car park spaces and permits to help validate the modal split results generated through the survey. Results are then scaled up for all staff.

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[23] These confidence levels relate to sampling uncertainty only; other research errors or uncertainty will also influence overall levels of confidence in the results.

Cross-Checking Survey Results

5.95   Social researchers often try to 'sense-check' their findings by using different methods to examine the same research questions. Several different approaches can be used to explore the extent to which your survey results and findings are consistent with the findings generated by other methods. While it is desirable to carry out cross-checks, it is not essential for the purposes of reporting emissions generated by commuter travel.

The National Travel Survey

5.96   It is possible to apply emission metrics to relevant National Travel Survey (NTS)[24] results. The NTS is conducted on an annual basis, and collects and disseminates data on whom, why, when and how people travel in the UK. NTS data includes statistics such as:

- Commuting trips per person per year by mode;

- Mode share for commuting/business trips;

- Average trip length for commuting trips; and

- Commuting mileage by type of car (e.g. company/private).

5.97   The results derived from applying Defra/DECC carbon conversion factors to NTS datasets can be used to provide an estimate of average national commuter travel emissions for staff and students. These results can then be compared to and contrasted with your own survey findings.

5.98   While your own staff surveys should provide more accurate results than those derived from the NTS, variations between NTS results and your own can highlight areas for further investigation and improvement. In cases where the two datasets vary significantly, it is suggested that you endeavour to explain the reason for this in your reporting. This will help to demonstrate that the institution is following a rigorous methodology and is aware of the variation. It provides an opportunity to inform stakeholders of why you think these datasets vary so significantly.[25]

Geographical Information Systems

5.99   Postcode analysis can be used to cross-check survey respondents' estimates of distances travelled. Geographical information systems (GIS) software is needed to efficiently analyse postcode data for a large number of staff or students. Origin and/or destination postcode data can be requested in staff/student travel surveys. Alternatively, institutions' HR and student records departments may be able to provide postcode data, although there may be data protection issues to consider.

5.100   Once postcode data is secured, GIS software can be used to calculate journey distances via the shortest route between respondents' home addresses and place of work or study; this information can be checked against the estimated distance(s) provided by individual respondents. It may then be possible to adjust the survey results to account for any systematic under- or over-reporting by survey respondents of distances travelled.

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[24] For more information see www.dft.gov.uk/pgr/statistics/datatablespublications/nts/.

[25] For example, variations may be due to campus location, lack of public transport, etc.

5.101 It should be noted that, if individuals use multiple forms of transport on their commute trips, it is likely to be very difficult for them to identify the postcodes associated with the start and finish points of each leg of their journey. In this case, it is suggested that GIS data is only checked against total estimated distance travelled provided by survey respondents.

Stakeholders

5.102 Section 4 (Figure 4.1) identified a number of stakeholders who may be able to provide information on travel. There are some other stakeholders who may also be able to offer specific advice and guidance on commuter travel. These are examined in more detail in Figure 5.11.

Figure 5.11 Commuter travel stakeholders

Local Authorities	Some Local Authorities have a Travel Plan Officer who may be able to provide advice and support on capturing data about and mitigating the impacts of commuter travel.
Highways Agency	The Highways Agency (HA) offers advice and guidance to English organisations on how they can encourage more sustainable commuter travel. The HA local representative may be able to offer additional guidance and support.
Operators (public & private)	Transport operators may be able to provide information on distances travelled on particular routes, along with patronage levels, especially on HEI shuttle buses.
Third Sector	Third sector organisations like the Campaign for Better Transport and National Business Travel Network may be able to provide advice and assistance.

Benefits of Travel Plans

5.103 The commute is an employee's or student's decision and an institution is unable, in the majority of situations, to dictate how its employees and students travel. There are, however, a range of measures that institutions can initiate to influence travel and behaviour (for both staff and students) which can benefit the individual, as well as the institution.

5.104 In particular, travel plans are well proven in terms of their effectiveness in reducing 'drive alone' car use and increasing cycling, walking, public transport use and lift sharing.

5.105 The DfT's 2007 publication, The Essential Guide to Travel Planning,[26] summarises how to develop an effective travel plan. It states that, *"An effective Travel Plan can typically reduce the number of people driving to work by car by an average of 15%"*. Reductions in single occupancy commuter car trips can have significant benefits to an institution, staff and students, society and the environment in general.

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[26] Available at www.dft.gov.uk/pgr/sustainable/travelplans/work/.

5.106 A range of other organisations, including the National Business Travel Network,[27] have also produced advisory notes identifying the key benefits of travel plans. For example, benefits may include:

- **Reducing costs** – by helping to reduce the volume of car travel to and from a site, a travel plan can help to reduce costs, including those associated with car park provision, maintenance and management.

- **Improved road safety** – a travel plan can help to reduce the risk of accidents on and near a site by increasing the awareness and care taken by those accessing the site and by improving its amenity for pedestrians and cyclists.

- **Helping to improve environmental performance** – active support for sustainable transport measures can help to reduce climate change emissions and contribute to achieving and maintaining environmental accreditation, such as ISO14001 Environmental Management Standard Accreditation.

- **Recruitment and retention** – measures that facilitate site access and support affordable travel choices are particularly pertinent in the current economic climate. Opportunities for staff and students to save on travel costs and time can make commuter travel more viable for them. Similarly, supporting and actively promoting a wider range of travel choices can also help staff and students who do not have access to a car to commute to and from an institution. Therefore, travel planning activities can support recruitment and retention activities.

- **Increasing standing among the community** – a focus on accessibility and sustainable transport has the potential to bring significant positive attention to a site and improve standing with the local authority and local stakeholders. Active support for the goals of a travel plan can also help to demonstrate commitment to social and environmental responsibility, for example through reducing local traffic congestion or parking problems.

- **Justifying the costs of improvements to infrastructure** – a commitment to implementing travel plan measures can help to support a dialogue with transport providers and public sector authorities regarding new or improved transport infrastructure or initiatives.

27 For more information see www.nbtn.org.uk/pool/resources/nbtn-advisory-note-4.pdf.

6 Missing Data Methodology

6.1   In order to calculate emissions, the mode of travel and activity data (either distance travelled or fuel consumed) along with a conversion factor are required. However, in the absence of primary or secondary fuel consumption and distance data, it may be possible to calculate emissions using estimated data.

6.2   This section provides a methodology for calculating scope 3 travel emissions using estimated data. To use this methodology you will need information on the mode of travel, fuel consumed or distance travelled and expenditure. If no such information is available, then it will not be possible to calculate emissions.
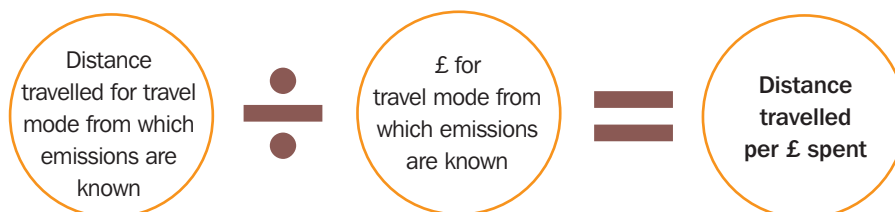

Stage 1: Calculate expenditure data

a)   The first step is to determine the total expenditure for the mode of travel.

b)   Next you will need to isolate the expenditure that can be related to emissions. This information could have been obtained from an HEI's financial reporting system, supplier data or internal management information systems.

c)   The expenditure from which emissions have been calculated will need to be deducted from total expenditure, leaving expenditure from which emissions have not been calculated.

$$\text{Total £ on travel mode} - \text{£ on calculated emissions} = \textbf{£ on emissions not calculated}$$
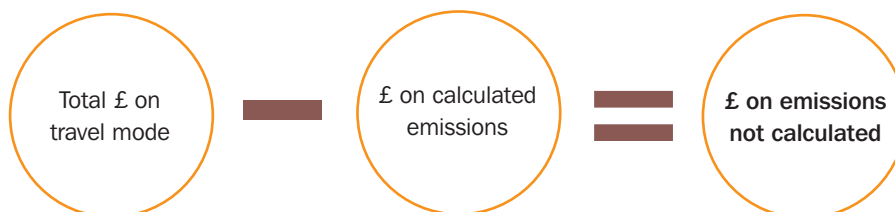
Stage 2: Calculate distance data

a)   The next step involves calculating the distance travelled per £ spent from known data. The formula below shows how to calculate this:

$$\frac{\text{Distance travelled for travel mode from which emissions are known}}{\text{£ for travel mode from which emissions are known}} = \textbf{Distance travelled per £ spent}$$

Stage 3: Apply the estimated data

a)   Once the extrapolated fuel consumption or distance travelled data has been calculated, this can be applied to expenditure data where emissions are not currently known. The formula is given below:

Distance travelled per £ spent

×

Residual £ where emissions have not been calculated

=

Extrapolated distance travelled
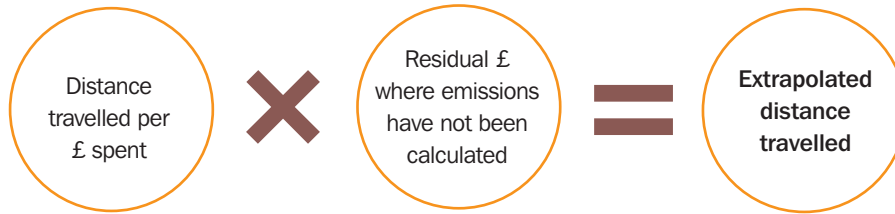
b)   The extrapolated activity data can be applied to the relevant Defra/DECC emissions conversion factor.

List of Abbreviations

CNG	Compressed natural gas
CO$_2$	Carbon dioxide
CO$_2$e	Carbon dioxide equivalent
DECC	Department for Energy and Climate Change
Defra	Department for Environment Food and Rural Affairs
DfT	Department for Transport
EMS	Estate Management Statistics
GDS	Global distribution system
GHG	Greenhouse gas
GIS	Geographical information system
HA	Highways Agency
HEI	Higher education institution
HESA	Higher Education Statistics Agency
HMRC	Her Majesty's Revenue and Customs
HR	Human resources
IATA	International Air Travel Association
ICAO	International Civil Aviation Organisation
NTS	National Travel Survey
ppkm	Per passenger kilometre
pvkm	Per vehicle kilometre
SBT	Self booking tool
TMC	Travel management company
VCA	Vehicle Certification Agency
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute

Annex A – Defra/DECC Emissions Conversion Factors

HEIs should use the most up-to-date Defra/DECC conversion factors. The conversion factors provided in this annex were updated in August 2011.

The latest conversion factors for travel can be found at Annex 6 of the 2011 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting.[28] Further information can be requested from Defra by emailing: ghgreporting@defra.gsi.gov.uk.

				Scope 1 OR Scope 3				Scope 3	All Scopes
Standard Road Transport Fuel Conversion Factors				CO_2	CH_4	N_2O	**Total Direct GHG**	**Total Indirect GHG**	**Grand Total GHG**
Fuel used*	Total units used	Units	x	kg CO_2 per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit
Petrol (retail station biofuel blend)		litres		2.2352	0.0034	0.0064	2.2450	0.4220	2.6670
Petrol (100% mineral petrol)		litres		2.3018	0.0034	0.0065	2.3117	0.4110	2.7227
Diesel (retail station biofuel blend)		litres		2.5530	0.0012	0.0183	2.5725	0.5348	3.1073
Diesel (100% mineral diesel)		litres		2.6480	0.0012	0.0184	2.6676	0.5085	3.1761
Compressed Natural Gas (CNG)		kg		2.7020	0.0040	0.0016	2.7076	0.3988	3.1064
Liquid Petroleum Gas (LPG)		litres		1.4884	0.0010	0.0023	1.4918	0.1868	1.6786
Total									

				Scope 1 OR Scope 3				Scope 3	All Scopes
Passenger Road Transport Conversion Factors: Petrol Cars				CO_2	CH_4	N_2O	**Total Direct GHG**	**Total Indirect GHG**	**Grand Total GHG**
Size of car	Total units travelled	Units	x	kg CO_2 per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit
Small petrol car, up to 1.4 litre engine		miles	x	0.27378	0.00026	0.00135	0.27539	0.04888	0.32427
		km	x	0.17012	0.00016	0.00084	0.17112	0.03037	0.20149
Medium petrol car, from 1.4 - 2.0 litres		miles	x	0.33972	0.00026	0.00135	0.34133	0.06066	0.40199
		km	x	0.21109	0.00016	0.00084	0.21209	0.03769	0.24978
Large petrol cars, above 2.0 litres		miles	x	0.47970	0.00026	0.00135	0.48131	0.08563	0.56694
		km	x	0.29807	0.00016	0.00084	0.29907	0.05321	0.35228
Average petrol car		miles	x	0.33416	0.00026	0.00135	0.33577	0.05966	0.39543
		km	x	0.20764	0.00016	0.00084	0.20864	0.03707	0.24571
Total for petrol cars									

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[28] 'August 2011 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting'. Available at www.defra.gov.uk/environment/economy/business-efficiency/reporting/.

				Scope 1 OR Scope 3				Scope 3	All Scopes
Passenger Road Transport Conversion Factors: Diesel Cars				CO$_2$	CH$_4$	N$_2$O	Total Direct GHG	Total Indirect GHG	Grand Total GHG
Size of car	Total units travelled	Units	x	kg CO$_2$ per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit
Small diesel car, up to 1.7 litre or under		miles	x	0.23064	0.00008	0.00269	0.23340	0.04424	0.27764
		km	x	0.14331	0.00005	0.00167	0.14503	0.02749	0.17252
Medium diesel car, from 1.7 to 2.0 litre		miles	x	0.28844	0.00008	0.00269	0.29121	0.05535	0.34656
		km	x	0.17923	0.00005	0.00167	0.18095	0.03439	0.21534
Large diesel car, over 2.0 litre		miles	x	0.38877	0.00008	0.00269	0.39154	0.07459	0.46613
		km	x	0.24157	0.00005	0.00167	0.24329	0.04635	0.28964
Average diesel car		miles	x	0.30870	0.00008	0.00269	0.31147	0.05922	0.37069
		km	x	0.19182	0.00005	0.00167	0.19354	0.03680	0.23034
Total for diesel cars									

				Scope 1 OR Scope 3				Scope 3	All Scopes
Passenger Road Transport Conversion Factors: Alternative Fuel Cars				CO$_2$	CH$_4$	N$_2$O	Total Direct GHG	Total Indirect GHG	Grand Total GHG
Type of alternative fuel car	Total units travelled	Units	x	kg CO$_2$ per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit
Medium petrol hybrid car		miles	x	0.18870	0.00014	0.00135	0.19019	0.03370	0.22389
		km	x	0.11725	0.00009	0.00084	0.11818	0.02094	0.13912
Large petrol hybrid car		miles	x	0.33722	0.00018	0.00135	0.33875	0.06021	0.39896
		km	x	0.20954	0.00011	0.00084	0.21049	0.03741	0.24790
Average petrol hybrid car		miles	x	0.22217	0.00017	0.00135	0.22370	0.03967	0.26337
		km	x	0.13805	0.00011	0.00084	0.13900	0.02465	0.16365
Medium LPG car		miles	x	0.30574	0.00055	0.00185	0.30814	0.03829	0.34643
		km	x	0.18998	0.00034	0.00115	0.19147	0.02379	0.21526
Large LPG car		miles	x	0.43172	0.00055	0.00185	0.43412	0.05406	0.48818
		km	x	0.26826	0.00034	0.00115	0.26975	0.03359	0.30334
Average LPG car		miles	x	0.34049	0.00055	0.00185	0.34289	0.04263	0.38552
		km	x	0.21157	0.00034	0.00115	0.21306	0.02649	0.23955
Medium CNG car		miles	x	0.27177	0.00129	0.00185	0.27491	0.03985	0.31476
		km	x	0.16887	0.00080	0.00115	0.17082	0.02476	0.19558
Large CNG car		miles	x	0.38375	0.00129	0.00185	0.38689	0.05626	0.44315
		km	x	0.23845	0.00080	0.00115	0.24040	0.03496	0.27536
Average CNG car		miles	x	0.30265	0.00129	0.00185	0.30579	0.04437	0.35016
		km	x	0.18806	0.00080	0.00115	0.19001	0.02757	0.21758
Total for alternative fuel cars									

| Passenger Road Transport Conversion Factors: Cars (unknown fuel) | | | | Scope 1 OR Scope 3 | | | | Scope 3 | All Scopes |
				CO_2	CH_4	N_2O	Total Direct GHG	Total Indirect GHG	Grand Total GHG
Size of car	Total units travelled	Units	x	kg CO_2 per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit
Average small car (unknown fuel)		miles	x	0.26659	0.00023	0.00166	0.26847	0.04781	0.31628
		km	x	0.16565	0.00014	0.00103	0.16682	0.02971	0.19653
Average medium car (unknown fuel)		miles	x	0.32224	0.00019	0.00187	0.32430	0.05863	0.38293
		km	x	0.20023	0.00012	0.00116	0.20151	0.03643	0.23794
Average large car (unknown fuel)		miles	x	0.43129	0.00016	0.00211	0.43356	0.07936	0.51292
		km	x	0.26799	0.00010	0.00131	0.26940	0.04931	0.31871
Average car (unknown fuel)		miles	x	0.32721	0.00019	0.00185	0.32926	0.05950	0.38876
		km	x	0.20332	0.00012	0.00115	0.20459	0.03697	0.24156
Total for average cars									

| Passenger Road Transport Conversion Factors: Petrol Cars by Market Segment | | | | Scope 1 OR Scope 3 | | | | Scope 3 | All Scopes |
				CO_2	CH_4	N_2O	Total Direct GHG	Total Indirect GHG	Grand Total GHG
Market segment of car	Total units travelled	Units	x	kg CO_2 per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit
A. Mini		miles	x	0.25233	0.00026	0.00135	0.25394	0.04506	0.29900
		km	x	0.15679	0.00016	0.00084	0.15779	0.02800	0.18579
B. Supermini		miles	x	0.27357	0.00026	0.00135	0.27518	0.04884	0.32403
		km	x	0.16999	0.00016	0.00084	0.17099	0.03035	0.20134
C. Lower Medium		miles	x	0.32272	0.00026	0.00135	0.32433	0.05763	0.38196
		km	x	0.20053	0.00016	0.00084	0.20153	0.03581	0.23734
D. Upper Medium		miles	x	0.36799	0.00026	0.00135	0.36960	0.06571	0.43531
		km	x	0.22866	0.00016	0.00084	0.22966	0.04083	0.27049
E. Executive		miles	x	0.43559	0.00026	0.00135	0.43719	0.07778	0.51497
		km	x	0.27066	0.00016	0.00084	0.27166	0.04833	0.31999
F. Luxury		miles	x	0.55593	0.00026	0.00135	0.55754	0.09926	0.65681
		km	x	0.34544	0.00016	0.00084	0.34644	0.06168	0.40812
G. Sports		miles	x	0.40950	0.00026	0.00135	0.41111	0.07311	0.48422
		km	x	0.25445	0.00016	0.00084	0.25545	0.04543	0.30088
H. Dual Purpose 4x4		miles	x	0.46006	0.00026	0.00135	0.46167	0.08214	0.54381
		km	x	0.28587	0.00016	0.00084	0.28687	0.05104	0.33791
I. MPV		miles	x	0.37091	0.00026	0.00135	0.37251	0.06622	0.43874
		km	x	0.23047	0.00016	0.00084	0.23147	0.04115	0.27262
Total for petrol cars									

				Scope 1 OR Scope 3				Scope 3	All Scopes
Passenger Road Transport Conversion Factors: Diesel Cars by Market Segment				CO$_2$	CH$_4$	N$_2$O	Total Direct GHG	Total Indirect GHG	Grand Total GHG
Market segment of car	Total units travelled	Units	x	kg CO$_2$ per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit
A. Mini		miles	x	0.16620	0.00008	0.00269	0.16897	0.03191	0.20088
		km	x	0.10327	0.00005	0.00167	0.10499	0.01983	0.12482
B. Supermini		miles	x	0.22845	0.00008	0.00269	0.23121	0.04387	0.27509
		km	x	0.14195	0.00005	0.00167	0.14367	0.02726	0.17093
C. Lower Medium		miles	x	0.26207	0.00008	0.00269	0.26483	0.05032	0.31516
		km	x	0.16284	0.00005	0.00167	0.16456	0.03127	0.19583
D. Upper Medium		miles	x	0.28868	0.00008	0.00269	0.29145	0.05544	0.34689
		km	x	0.17938	0.00005	0.00167	0.18110	0.03445	0.21555
E. Executive		miles	x	0.33993	0.00008	0.00269	0.34269	0.06527	0.40797
		km	x	0.21122	0.00005	0.00167	0.21294	0.04056	0.25350
F. Luxury		miles	x	0.40069	0.00008	0.00269	0.40346	0.07694	0.48041
		km	x	0.24898	0.00005	0.00167	0.25070	0.04781	0.29851
G. Sports		miles	x	0.27933	0.00008	0.00269	0.28210	0.05364	0.33574
		km	x	0.17357	0.00005	0.00167	0.17529	0.03333	0.20862
H. Dual Purpose 4x4		miles	x	0.42467	0.00008	0.00269	0.42744	0.08155	0.50899
		km	x	0.26388	0.00005	0.00167	0.26560	0.05067	0.31627
I. MPV		miles	x	0.32932	0.00008	0.00269	0.33209	0.06325	0.39534
		km	x	0.20463	0.00005	0.00167	0.20635	0.03930	0.24565
Total for diesel cars									

				Scope 1 OR Scope 3				Scope 3	All Scopes
Passenger Road Transport Conversion Factors: Cars (unknown fuel) by Market Segment				CO$_2$	CH$_4$	N$_2$O	Total Direct GHG	Total Indirect GHG	Grand Total GHG
Market segment of car	Total units travelled	Units	x	kg CO$_2$ per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit	kg CO$_2$e per unit
A. Mini		miles	x	0.25112	0.00024	0.00145	0.25281	0.04406	0.29688
		km	x	0.15604	0.00015	0.00090	0.15709	0.02738	0.18447
B. Supermini		miles	x	0.26866	0.00023	0.00166	0.27055	0.04772	0.31826
		km	x	0.16694	0.00014	0.00103	0.16811	0.02965	0.19776
C. Lower Medium		miles	x	0.30397	0.00021	0.00175	0.30594	0.05539	0.36133
		km	x	0.18888	0.00013	0.00109	0.19010	0.03442	0.22452
D. Upper Medium		miles	x	0.33143	0.00019	0.00187	0.33349	0.06177	0.39525
		km	x	0.20594	0.00012	0.00116	0.20722	0.03838	0.24560
E. Executive		miles	x	0.38945	0.00016	0.00211	0.39171	0.07068	0.46240
		km	x	0.24199	0.00010	0.00131	0.24340	0.04392	0.28732
F. Luxury		miles	x	0.51336	0.00016	0.00211	0.51563	0.08658	0.60222
		km	x	0.31899	0.00010	0.00131	0.32040	0.05380	0.37420
G. Sports		miles	x	0.40472	0.00016	0.00211	0.40699	0.06206	0.46904
		km	x	0.25148	0.00010	0.00131	0.25289	0.03856	0.29145
H. Dual Purpose 4x4		miles	x	0.43787	0.00016	0.00211	0.44014	0.08180	0.52194
		km	x	0.27208	0.00010	0.00131	0.27349	0.05083	0.32432
I. MPV		miles	x	0.34828	0.00018	0.00198	0.35043	0.06481	0.41524
		km	x	0.21641	0.00011	0.00123	0.21775	0.04027	0.25802
Total for cars (unknown fuel)									

Passenger Road Transport Conversion Factors: Vans (Light Commercial Vehicles)				CO₂	CH₄	N₂O	Total Direct GHG	Total Indirect GHG	Grand Total GHG
				Scope 1 OR Scope 3				Scope 3	All Scopes
Type of van	Total units travelled	Units	x	kg CO₂ per unit	kg CO₂e per unit	kg CO₂e per unit	kg CO₂e per unit	kg CO₂e per unit	kg CO₂e per unit
Petrol van (Class I), up to 1.305 tonne		miles	x	0.32292	0.00052	0.00204	0.32548	0.06251	0.38799
		km	x	0.20065	0.00032	0.00127	0.20225	0.03884	0.24109
Petrol van (Class II), 1.305 to 1.74 tonne		miles	x	0.33980	0.00052	0.00204	0.34236	0.06574	0.40810
		km	x	0.21114	0.00032	0.00127	0.21273	0.04085	0.25358
Petrol van (Class III), 1.74 to 3.5 tonne		miles	x	0.41326	0.00057	0.00458	0.41842	0.08035	0.49877
		km	x	0.25679	0.00035	0.00285	0.25999	0.04993	0.30992
Petrol van up to 3.5 tonne		miles	x	0.34287	0.00052	0.00237	0.34577	0.06640	0.41217
		km	x	0.21305	0.00033	0.00148	0.21485	0.04126	0.25611
Diesel van (Class I), up to 1.305 tonne		miles	x	0.25049	0.00009	0.00173	0.25232	0.04846	0.30078
		km	x	0.15565	0.00006	0.00108	0.15678	0.03011	0.18689
Diesel van (Class II), 1.305 to 1.74 tonne		miles	x	0.36201	0.00009	0.00250	0.36460	0.07002	0.43462
		km	x	0.22494	0.00006	0.00155	0.22655	0.04351	0.27006
Diesel van (Class III), 1.74 to 3.5 tonne		miles	x	0.43163	0.00009	0.00298	0.43470	0.08348	0.51818
		km	x	0.26820	0.00006	0.00185	0.27011	0.05187	0.32198
Diesel van up to 3.5 tonne		miles	x	0.40252	0.00009	0.00278	0.40539	0.07784	0.48323
		km	x	0.25011	0.00006	0.00173	0.25190	0.04837	0.30027
LPG van up to 3.5 tonne		miles	x	0.42265	0.00111	0.00325	0.42701	0.05359	0.48060
		km	x	0.26262	0.00069	0.00202	0.26533	0.03330	0.29863
CNG van up to 3.5 tonne		miles	x	0.38239	0.00262	0.00325	0.38826	0.05731	0.44557
		km	x	0.23761	0.00163	0.00202	0.24126	0.03561	0.27687
Average van up to 3.5 tonne		miles	x	0.39882	0.00012	0.00276	0.40169	0.07714	0.47883
		km	x	0.24781	0.00007	0.00171	0.24960	0.04793	0.29753
Total for vans									

<table>
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</table>

Passenger Road Transport Conversion Factors: Motorcycles				CO_2	CH_4	N_2O	Total Direct GHG	Total Indirect GHG	Grand Total GHG
Size of motorcycle	Total units travelled	Units	x	kg CO_2 per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit	kg CO_2e per unit
Small petrol motorbike (mopeds/scooters up to 125cc)		miles	x	0.13678	0.00393	0.00058	0.14128	0.02443	0.16571
		km	x	0.08499	0.00244	0.00036	0.08779	0.01518	0.10297
Medium petrol motorbike (125-500cc)		miles	x	0.16602	0.00436	0.00100	0.17138	0.02964	0.20102
		km	x	0.10316	0.00271	0.00062	0.10649	0.01842	0.12491
Large petrol motorbike (over 500cc)		miles	x	0.22087	0.00332	0.00100	0.22518	0.03945	0.26463
		km	x	0.13724	0.00206	0.00062	0.13992	0.02451	0.16443
Average petrol motorbike (unknown engine size)		miles	x	0.18678	0.00396	0.00097	0.19171	0.03335	0.22506
		km	x	0.11606	0.00246	0.00060	0.11912	0.02072	0.13984
Total for motorcycles									

<table>
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</table>

Taxi, Bus, Rail and Ferry Passenger Transport Conversion Factors				CO_2	CH_4	N_2O	Total Direct GHG	Total Indirect GHG	Grand Total GHG
Method of travel		Vehicle km travelled (vkm)[1]	x	kg CO_2 per vkm[1]	kg CO_2e per vkm[1]	kg CO_2e per vkm[1]	kg CO_2e per vkm[1]	kg CO_2e per vkm[1]	kg CO_2e per vkm[1]
Taxi [2]	Regular taxi		x	0.21040	0.00005	0.00167	0.21212	0.02431	0.23643
	Black cab		x	0.24157	0.00005	0.00167	0.24329	0.04639	0.28968
Taxi [2]	Regular taxi		x	0.15029	0.00004	0.00119	0.15151	0.02886	0.18038
	Black cab		x	0.19871	0.00011	0.00056	0.19938	0.03548	0.23486
Bus	Local bus (not London) [3]		x	0.18433	0.00020	0.00135	0.18588	0.03540	0.22128
	Local London bus [4]		x	0.08566	0.00008	0.00056	0.08630	0.01645	0.10275
	Average local bus		x	0.14754	0.00016	0.00107	0.14877	0.02833	0.17710
	Coach [5]		x	0.03000	0.00007	0.00057	0.03064	0.00576	0.03641
Rail	National rail [6]		x	0.05340	0.00006	0.00303	0.05649	0.00815	0.06464
	International rail (Eurostar) [7]		x	0.01502	0.00001	0.00009	0.01512	0.00200	0.01712
	Light rail and tram [8]		x	0.07101	0.00003	0.00044	0.07148	0.00944	0.08092
	London Underground [9]		x	0.07313	0.00003	0.00045	0.07361	0.00972	0.08333
Ferry (Large RoPax) [10]	Foot passengers		x	0.01912	0.00001	0.00015	0.01928	0.00324	0.02252
	Car passengers		x	0.13216	0.00004	0.00102	0.13322	0.02243	0.15565
	Average (all passengers)		x	0.11516	0.00004	0.00088	0.11608	0.01954	0.13562
Total									

| Air Passenger Transport Conversion Factors[10] | | Passenger km travelled (pkm) | x | km uplift factor [12] | x | Scope 3 | | | | Scope 3 | All Scopes |
| | | | | | | CO$_2$ | CH$_4$ | N$_2$O | Total Direct GHG | Total Indirect GHG | Grand Total GHG |
Method of travel		Passenger km travelled (pkm)	x	km uplift factor [12]	x	kg CO$_2$ per pkm [13]	kg CO$_2$e per pkm	kg CO$_2$e per pkm	kg CO$_2$e per pkm	kg CO$_2$e per pkm	kg CO$_2$e per pkm
Flight type[14]	*Cabin class [11]*										
Domestic[14]	**Average**		x	109%	x	0.16313	0.00010	0.00161	0.16484	0.03034	0.19518
Short-haul international[14]	**Average**		x	109%	x	0.09589	0.00001	0.00094	0.09684	0.01783	0.11467
	Economy class		x	109%	x	0.09138	0.00001	0.00090	0.09229	0.01699	0.10928
	Business class		x	109%	x	0.13707	0.00001	0.00135	0.13843	0.02549	0.16392
Long-haul international[14]	**Average**		x	109%	x	0.11037	0.00001	0.00109	0.11146	0.02053	0.13199
	Economy class		x	109%	x	0.08057	0.00000	0.00079	0.08137	0.01498	0.09635
	Premium economy class		x	109%	x	0.12891	0.00001	0.00127	0.13019	0.02397	0.15416
	Business class		x	109%	x	0.23365	0.00001	0.00230	0.23596	0.04345	0.27941
	First class		x	109%	x	0.32227	0.00002	0.00317	0.32546	0.05994	0.38540
Total											

Annex B – Example Staff Travel Survey

This section is based on the surveys appended to the Department for Transport's publication 'Measuring and Reporting Greenhouse Gas Emissions – A DfT Guide to Work-Related Travel' (2011).[29]

Travel surveys can be designed to capture travel data for one day, or for multiple days (e.g. over the course of a week). They can also be designed to capture data about either the main mode or all modes used during the journey to work. Depending on the geographical location (city, rural or campus based) you may consider amending this survey to reflect the transport options available to staff.

In the example provided the focus is on identifying the key modes of transport (up to three) used by respondents over the course of the previous week, as well as the distances travelled using these modes. Information is requested about the journey to work as well as the journey from work, as these may differ. The travel survey response should provide distance travelled data by mode. This data can be uplifted and multiplied by the relevant conversion factor to provide an estimate of the total emissions from commuter travel. For more information see paragraphs 5.91-5.94.

This sample staff survey can be adapted for use as a student travel survey. We recommend that, wherever possible, electronic rather than paper-based surveys are used to gather data.

Staff Travel Survey

Please complete this survey to tell us about your travel patterns, based on your commuter travel over the most recent five working days.

The purpose of this survey is to learn more about the carbon impact of employees' travel between their homes and usual place of work.

The information you provide will be kept confidential and will be used to develop a carbon statement for our organisation. All surveys should be completed before (INSERT DATE).

Question 1:   Please provide the location of your main place of work.

Question 2:   Please provide your home postcode.

Question 3:   Please complete the tables below to indicate all the modes of transport you have used (or plan to use) on your commute journey today.

Journey distances can be calculated using planning websites such as Transport Direct.[30]

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29 http://www2.dft.gov.uk/pgr/sustainable/greenhousegasemissions/.

30 www.transportdirect.info/Web2/Home.aspx.

Tick one box to indicate the main (i.e. based on distance travelled) type of transport that applies to your journey to work, and another to indicate the main mode used on your journey from work (these may or may not be different). Please repeat this exercise for each leg of your journey, up to a maximum of 3 legs. Please estimate the distance travelled by each mode for each leg for your journey both to and from work.

1st Leg of Journey (i.e. largest distance travelled)

Mode	Type of Journey	Travel to Work (Tick one)	Estimated Mileage to Work	Travel from Work (Tick one)	Estimated Mileage from Work
Car	All vehicles as driver	☐		☐	
Car	As passenger	☐		☐	
Van	All vehicles as driver	☐		☐	
Van	As passenger	☐		☐	
Motorcycle	All vehicles	☐		☐	
Taxi	All vehicles	☐		☐	
Bus	Local bus	☐		☐	
	London bus	☐		☐	
	Average bus	☐		☐	
	Coach	☐		☐	
Rail	National rail	☐		☐	
	International rail (Eurostar)	☐		☐	
	Light rail and tram	☐		☐	
	London Underground	☐		☐	
Ferry	Foot passenger	☐		☐	
	Car passenger	☐		☐	
Cycle		☐		☐	
Walk		☐		☐	

If you travelled in a car or van as driver or passenger, how many vehicle occupants were there in total? Please tick one.

1 ☐

2 ☐

3 ☐

4 ☐

Other – please specify:

2nd Leg of Journey (i.e. second largest distance travelled)

Mode	Type of Journey	Travel to Work (Tick one)	Estimated Mileage to Work	Travel from Work (Tick one)	Estimated Mileage from Work
Car	All vehicles as driver	☐		☐	
Car	As passenger	☐		☐	
Van	All vehicles as driver	☐		☐	
Van	As passenger	☐		☐	
Motorcycle	All vehicles	☐		☐	
Taxi	All vehicles	☐		☐	
Bus	Local bus	☐		☐	
	London bus	☐		☐	
	Average bus	☐		☐	
	Coach	☐		☐	
Rail	National rail	☐		☐	
	International rail (Eurostar)	☐		☐	
	Light rail and tram	☐		☐	
	London Underground	☐		☐	
Ferry	Foot passenger	☐		☐	
	Car passenger	☐		☐	
Cycle		☐		☐	
Walk		☐		☐	

If you travelled in a car or van as driver or passenger, how many vehicle occupants were there in total? Please tick one.

1   ☐

2   ☐

3   ☐

4   ☐

Other – please specify:

3rd Leg of Journey (i.e. third largest distance travelled)

Mode	Type of Journey	Travel to Work (Tick one)	Estimated Mileage to Work	Travel from Work (Tick one)	Estimated Mileage from Work
Car	All vehicles as driver	☐		☐	
Car	As passenger	☐		☐	
Van	All vehicles as driver	☐		☐	
Van	As passenger	☐		☐	
Motorcycle	All vehicles	☐		☐	
Taxi	All vehicles	☐		☐	
Bus	Local bus	☐		☐	
	London bus	☐		☐	
	Average bus	☐		☐	
	Coach	☐		☐	
Rail	National rail	☐		☐	
	International rail (Eurostar)	☐		☐	
	Light rail and tram	☐		☐	
	London Underground	☐		☐	
Ferry	Foot passenger	☐		☐	
	Car passenger	☐		☐	
Cycle		☐		☐	
Walk		☐		☐	

If you travelled in a car or van as driver or passenger, how many vehicle occupants were there in total? Please tick one.

1   ☐

2   ☐

3   ☐

4   ☐

Other – please specify:

Question 4: On how many other days of the previous 4 working days did you use these modes to travel to/from work? (Please tick one.)

---

1   ☐

2   ☐

3   ☐

4   ☐

If you did not travel the same way as today over all of the previous four working days, please respond to the following questions to tell us how you did travel on the days when your travel was different.

Question 5:   Please complete the tables below to indicate all the modes of transport you used on your commute journey yesterday.

1st Leg of Journey (i.e. largest distance travelled)

Mode	Type of Journey	Travel to Work (Tick one)	Estimated Mileage to Work	Travel from Work (Tick one)	Estimated Mileage from Work
Car	All vehicles as driver	☐		☐	
Car	As passenger	☐		☐	
Van	All vehicles as driver	☐		☐	
Van	As passenger	☐		☐	
Motorcycle	All vehicles	☐		☐	
Taxi	All vehicles	☐		☐	
Bus	Local bus	☐		☐	
	London bus	☐		☐	
	Average bus	☐		☐	
	Coach	☐		☐	
Rail	National rail	☐		☐	
	International rail (Eurostar)	☐		☐	
	Light rail and tram	☐		☐	
	London Underground	☐		☐	
Ferry	Foot passenger	☐		☐	
	Car passenger	☐		☐	
Cycle		☐		☐	
Walk		☐		☐	

If you travelled in a car or van as driver or passenger, how many vehicle occupants were there in total? Please tick one.

1   ☐

2   ☐

3   ☐

4   ☐

Other – please specify:

2nd Leg of Journey (i.e. second largest distance travelled)

Mode	Type of Journey	Travel to Work (Tick one)	Estimated Mileage to Work	Travel from Work (Tick one)	Estimated Mileage from Work
Car	All vehicles as driver	☐		☐	
Car	As passenger	☐		☐	
Van	All vehicles as driver	☐		☐	
Van	As passenger	☐		☐	
Motorcycle	All vehicles	☐		☐	
Taxi	All vehicles	☐		☐	
Bus	Local bus	☐		☐	
	London bus	☐		☐	
	Average bus	☐		☐	
	Coach	☐		☐	
Rail	National rail	☐		☐	
	International rail (Eurostar)	☐		☐	
	Light rail and tram	☐		☐	
	London Underground	☐		☐	
Ferry	Foot passenger	☐		☐	
	Car passenger	☐		☐	
Cycle		☐		☐	
Walk		☐		☐	

If you travelled in a car or van as driver or passenger, how many vehicle occupants were there in total? Please tick one.

1   ☐

2   ☐

3   ☐

4   ☐

Other – please specify:

3rd Leg of Journey (i.e. third largest distance travelled)

Mode	Type of Journey	Travel to Work (Tick one)	Estimated Mileage to Work	Travel from Work (Tick one)	Estimated Mileage from Work
Car	All vehicles as driver	☐		☐	
Car	As passenger	☐		☐	
Van	All vehicles as driver	☐		☐	
Van	As passenger	☐		☐	
Motorcycle	All vehicles	☐		☐	
Taxi	All vehicles	☐		☐	
Bus	Local bus	☐		☐	
	London bus	☐		☐	
	Average bus	☐		☐	
	Coach	☐		☐	
Rail	National rail	☐		☐	
	International rail (Eurostar)	☐		☐	
	Light rail and tram	☐		☐	
	London Underground	☐		☐	
Ferry	Foot passenger	☐		☐	
	Car passenger	☐		☐	
Cycle		☐		☐	
Walk		☐		☐	

If you travelled in a car or van as driver or passenger, how many vehicle occupants were there in total? Please tick one.

1   ☐

2   ☐

3   ☐

4   ☐

Other – please specify:

Question 6: Please complete the tables below to indicate all the modes of transport you used on your commute journey **three days ago**.

1st Leg of Journey (i.e. largest distance travelled)

[In this way, survey question number five can be repeated to cover the remaining three days of a five-day survey period.]

Annex C – Additional Questions for Staff Travel Surveys

This section is based on the surveys appended to the Department for Transport's publication 'Measuring and Reporting Greenhouse Gas Emissions – A DfT Guide to Work-Related Travel (2011)'.[31]

While the survey questions in Annex B seek to gather mode and distance data that can enable calculation of a carbon footprint for commuter travel, the questions in this section are designed to identify the benefits of and barriers to changing travel behaviour. In addition to these questions, institutions may choose to ask a range of other questions that are of interest and relevance.

These sample questions are designed for use with staff, but they can be readily adapted for use in a student travel survey. We recommend that, wherever possible, electronic rather than paper-based surveys are used to gather data.

Question 1: Why do you travel to and from work the way you do? (Number key reasons in priority order; 1 = most important reason)

Convenience ☐

Time savings ☐

Cost availability ☐

Satisfy work need/commitments ☐

Personal safety ☐

Environmental reasons ☐

Health – disability reasons ☐

Health – fitness reasons ☐

Other (please specify) ☐

Question 2: If you drive or car share to work, where do you park? (Please tick one, but if you do not arrive in a car to work, please ignore this question)

On-site car park (no parking charges) ☐

On-site car park (with parking charges) ☐

Public car park (no parking charges) ☐

Public car park (with parking charges) ☐

On-street parking (no parking charges) ☐

On-street parking (with parking charges) ☐

Not applicable – I am dropped off ☐

Other (please specify) ☐

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31 http://www2.dft.gov.uk/pgr/sustainable/greenhousegasemissions/.

Question 3:

What would encourage you to walk, cycle, use public transport or car share to travel to work? If you already use these modes, what would encourage you to continue using them? (Place a tick against the three best motivators for each mode.)

Walk

Walking buddies (i.e. someone to walk with) ☐

Free pedometers ☐

Safer crossing facilities en route to work ☐

Improved lighting/security en route to work ☐

More lockers and storage facilities at work ☐

Improved shower and changing facilities at work ☐

Free taxi home in emergencies ☐

Personalised travel planning advice ☐

Nothing would encourage me ☐

Other (please specify) ☐

Cycle

Free cycle confidence training ☐

Better cycle parking facilities ☐

Improved showers and changing facilities ☐

Cycle to work scheme (tax-free bicycle) ☐

Improved information on cycle routes ☐

Availability of pool bikes ☐

Option of trialling a bike ☐

Discounts at local cycle stores ☐

Cycle buddies ☐

Personalised one-to-one cycling advice and help ☐

Nothing would encourage me ☐

Other (please specify) ☐

Public transport

An interest-free loan for a season ticket ☐

Improved ticket and timetable information ☐

More secure/better quality waiting facilities ☐

Improved security on public transport ☐

More frequent/reliable services ☐

Less crowded services ☐

Nothing would encourage me ☐

Other (please specify) ☐

Car share

Free online car share services ☐

Finding car share partners with similar work/travel patterns ☐

Free transport if let down by a car share partner ☐

Incentives for car sharers (e.g. priority car parking) ☐

Nothing would encourage me ☐

Other (please specify) ☐