

Rail Delivery Group



Green Travel Data

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Version History

Version	Comments
P-01-00	Updated for approved Phase 1 publication option.
P-02-00	Addition of car emissions data. Addition of 'reference', 'averageEmissionsPerStandardPassengerKGCO2e', and 'averageEmissionsPerFirstPassengerKGCO2e' data to 'Average emission output by journey data'.
P-03-00	Reflect the product name change from 'Green Travel Pledge' to 'Green Travel Data'. Combine rail and car emissions data into one file. Add air emissions data on routes where scheduled air routes exist.
P-03-01	Addition of NLC codes as rail to car/air comparisons both in terms of KGCO2e and 'energy equivalent to boiling x cups of tea'. Addition of all indirect journeys and savings compared with other modes of transport in terms of kgCO2e and contextually.

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Terms and Definitions

Term	Definition
CRS	Computerised Reservation System (predecessor to NRS).
CRS Code	A 3-character code issued to every railway station in Britain (alternative to NLC code).
CSV	Comma Separated Values; a standard file format.
IPR	Intellectual Property Rights.
KGCO2e	CO2e stands for carbon dioxide equivalent and is a standard measurement of greenhouse gas (GHG) emissions. In this instance in kilograms (KG).
NLC	A three to six figure numerical code issued to every railway station in Britain (alternative to CRS code).
NRS	National Reservations Service. Replaced by RARS (Rail Availability & Reservations Service) in 2020.
PDF	Portable Document Format: a file format for encoding documents that preserves the appearance of a document exactly.
RDM	Rail Data Marketplace.

1. Introduction

1.1 Overview

1.1.1 This document provides an overview of Green Travel Data (formerly Green Travel Pledge), its purpose, scope, and usage, along with details of the supporting calculation methodology.

1.1.2 Green Travel Data is a service owned by RDG. The Intellectual Property Rights (IPR) for Green Travel Data belong to RDG.

1.2 Purpose

1.2.1 This document provides information on, and the rules when using the Green Travel Data.

1.3 Scope

1.3.1 This document provides the data specifications of the Green Travel Data which is delivered via the Rail Data Marketplace (RDM).

1.4 Related Subjects and references

Title	Usage
gtd-methodology-YYYY-MM-DD.pdf	<p>This documentation, available from the RDM, serves as an authoritative guide on the methodology behind the Green Travel Data.</p> <p>YYYY-MM-DD indicates the date that the methodology was finalised and the data release it relates to.</p>

2. Data

2.1 General

2.1.1 Green Travel Data feed formats are defined in this section.

2.1.2 Two Comma Separated Value (CSV) files are available for download from the RDM.

2.1.3 Data is updated approximately every six months.

File	Typical size
Average emission output by passenger km.	10 kB
Average emission output by journey: all c.6.5 million possible journeys.	1.1 GB

2.2 Average emission output by passenger km

2.2.1 General

2.2.1.1 The file contains average emission data by passenger km.

2.2.1.2 The fields are comma separated, with empty fields having zero length.

2.2.2 Filename

`gtd-emissions-output-by-passenger-YY-MM-DD-to-YY-MM-DD-all-journeys.csv`

where YY-MM-DD-to-YY-MM-DD indicates the dates for which the data applies.

2.2.3 Data Description

Key	Field	Field Name	Type	Max Length	Description
Y	1	railType	String	2000	The type of rail journey.
	2	emissionsKgCO2ePerPassengerKm	Float	8	Emissions per passenger (KGCO2e) for the type of rail journey.

2.3 Average emission output by journey

2.3.1 General

2.3.1.1 The file contains average emissions data for all possible rail journeys.

2.3.1.2 The fields are comma separated, with empty fields having zero length.

2.3.2 Filename

`gtd-emissions-output-by-journey-YYYY-MM-DD-to-YYYY-MM-DD-all-journeys-with-comparisons.csv`

where YYYY-MM-DD-to-YYYY-MM-DD indicates the dates for which the data applies.

2.3.3 Data Description

Key	Field	Field Name	Type	Max Length	Description
	1	OriginStation	String	2000	The origin station name for the journey.
Y	2	OriginStationCRSCode	String	3	The identification CRS code issued to the origin station.
	3	OriginStationNLCCode	String	6	The identification NLC code issued to the origin station.
	4	DestinationStation	String	2000	The destination station name for the journey.

Key	Field	Field Name	Type	Max Length	Description
Y	5	DestinationStationCRSCode	String	3	The identification CRS code issued to the destination station.
	6	DestinationStationNLCCode	String	6	The identification NLC code issued to the destination station.
	7	Reference	String	2000	The origin station name and the destination station name.
	8	AverageEmissionsPerStandardRailPassengerKGCO2e	Float	7	Average emissions per standard class passenger (KGCO2) for this journey.
	9	AverageEmissionsPerFirstClassRailPassengerKGCO2e	Float	7	Average emissions per First Class Passenger (KGCO2e) for this journey.
	10	AverageEmissionsPerRailPassengerKGCO2e	Float	7	Average Emissions per Passenger - all classes (KGCO2e) for this journey.
	11	AverageCarEmissionsKGCO2e	Float	7	Average car emissions (KGCO2e).
	12	AveragePetrolDieselCarEmissionsKGCO2e	Float	7	Average Petrol/Diesel car emissions (KGCO2e).

Key	Field	Field Name	Type	Max Length	Description
	13	AveragePluginHybridElectricCarEmissionsKGCO2e	Float	7	Average Plug-in Hybrid Electric car emissions (KGCO2e).
	14	AverageBatteryElectricCarEmissionsKGCO2e	Float	7	Average Battery Electric car emissions (KGCO2e).
	15	AverageAirEmissionsKGCO2e	Float	7	Average Air emissions (KGCO2e).
	16	SavingStandardRailOverAveCarKGCO2e	Float	7	Saving of Standard Class Rail over Average Car (KGCO2e).
	17	SavingStandardRailOverAveCarCupsOfTea	Float	7	Contextual saving of Standard Class Rail over Average Car (number of cups of tea boiled to generate the same emissions).
	18	SavingStandardRailOverAirKGCO2e	Float	7	Saving of Standard Class Rail over Air (KGCO2e).
	19	StandardClassRailSavingOverAirCupsofTea	Float	7	Contextual saving of Standard Class Rail over Air (number of cups of tea boiled to generate the same emissions).
	20	SavingFirstRailOverAveCarKGCO2e	Float	7	Saving of First Class Rail over Average Car (KGCO2e).
	21	SavingFirstRailOverAveCarCupsOfTea	Float	7	Contextual saving of First Class Rail over Average Car (number of cups of tea boiled to generate the same emissions).
	22	SavingFirstRailOverAirKGCO2e	Float	7	Saving of First Class Rail over Air (KGCO2e).

Key	Field	Field Name	Type	Max Length	Description
	23	SavingFirstRailOverAirCupsOfTea	Float	7	Contextual saving of First Class Rail over Air (number of cups of tea boiled to generate the same emissions).

2.4 Rules for Use

2.4.1 What can the data be used for?

- 2.4.1.1 The raw data may be made freely available or otherwise distributed to third parties.
- 2.4.1.2 To inform Data Consumer development roadmaps to integrate future data into their Point-of-Sale travel solutions. Therefore, informing business travellers as they consider their business travel options.

2.4.2 What can the data not be used for?

- 2.4.2.1 The raw data may not be sold or otherwise distributed to third parties for commercial gain.

2.4.3 Accreditation

- 2.4.3.1 The consumption of this data output is not currently an accreditation requirement. This may change in the future and would be reflected in future documentation.

2.4.4 Data refresh

- 2.4.4.1 The latest data files will be added to RDM following each data upgrade. The latest file should be used unless being used for historic journeys, in which case the file for the relevant dates should be used.

2.4.5 Suggested format for data presentation

- 2.4.5.1 Within journey planners it is suggested that the saving for the relevant class be presented alongside (where space allows) the contextual equivalent. A suggested wording is as follows:

This rail journey saves x KGCO_{2e} compared to making the journey by <average car/air>. The equivalent to the energy needed to make x cups of tea. More information <link to small print>

- 2.4.5.2 It is suggested that the values are linked to the following small print:

How we calculate the per passenger emissions of a rail journey

Our calculations are based on the per km 'well to tank' emissions of the specific train model and number of carriages used to operate services on the specific route you are travelling on a typical week. Where more than one model/length of train is used, the mean average is calculated based on the proportion of services operated by each type.

We use revenue modelling software to work out how many passengers travel on each service between all stops on this route, and from this calculate a weekly passenger km figure on these services. This figure can then be divided by the weekly train km figure to calculate mean average passenger numbers for an individual service on this route.

The per km emissions figure is then multiplied by the distance of this journey and divided by the number of passengers to calculate a per passenger emission value.

First class journeys can lead to higher emission values, as in some cases, fewer first class seats can be fitted into a carriage than standard class seats. Where passengers are travelling with a first class ticket, the proportion of a train's emissions that are allocated to each passenger are increased by a factor relative to the additional space a first class seat takes up compared to a standard class seat (e.g. a passenger travelling on a train where a first class seat take up 1.5 times the space of a standard class seat, will see an emission value 1.5 times that of a standard class passenger for the same journey).

Where a journey can be made using multiple routes, the mean value is calculated based on all routes used by any non-overtaken journey during the week, proportionate to the number of times each route is returned in results.

How we calculate the per passenger emissions of a car journey

We take the per km 'well to tank' emissions of an average car from the Government conversion factors for company reporting of greenhouse gas emissions (<Link 1>) which is 0.2109 kgCO₂e/km (based on 2024 figures) for an average car with unknown fuel type (average of petrol, diesel, hybrid and battery based on relevant proportions of each). Car occupancy is based on the 2024 average of 1.5 passengers per car. Distances for car journeys are based on the shortest road distance between the two points as taken from open-source journey routing tool (<Link 2>) with 10% added for diversions due to traffic rerouting and congestion etc.

How we calculate the per passenger emission of an air journey

We take the per km 'well to tank' emissions of a domestic flight from the Government conversion factors for company reporting of greenhouse gas emissions (<Link 3>) which is 0.30607 kgCO₂e/km (based on 2024 figures) for a domestic aircraft of average passenger load. Distances for air journeys are based on the "great circle" distance between the two airports serving the city in question (figures already account for expected levels of circling and taxiing). Where more than one airport in each city provides flights on this route (e.g. London Gatwick and London Heathrow to Edinburgh), the mean average distance between the alternatives is used.

How we calculate the saving of travelling by rail, over a car or air journey in cups of tea

The emissions created by generating enough energy to boil one cup of water is 0.00619 kgCO₂e. The difference between a rail and a car/air journey is divided by this figure to calculate the energy saving in cups of tea.

For more information on Green Travel Data and the calculations, please visit the dedicated Green Travel Date webpage (<Link 4>).

2.4.5.3

The links referenced above are:

Link 1:

<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024>

Link 2:

<https://project-osrm.org>

Link 3:

<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024>

Link 4:

<https://www.raildeliverygroup.com/uk-rail-industry/green-travel-data.html>

End.