

How our calculators work

We believe we have the most detailed calculators available although not all the functionally available is switched on through our website. We use information provided from publicly available sources, Department of the Environment, Food and Rural Affairs (DEFRA) in particular, but where information is not available or the methodology is the subject of scientific debate we make our own estimations based on available data or for example in the case of Energy Suppliers or Airlines we request the source data from the companies themselves. All emissions reductions calculators employed and their results are based on the information provided, the available data and scientific knowledge available at the time of calculation. Given the dynamic nature of the underlying information, data sources, scientific evidence, variety of assumptions, the differing inputs and need to make proprietary assumptions in each model we cannot accept any responsibility or liability for differences in the results with other calculators, changes to calculators over time or the calculation methodologies or assumptions employed by other bodies e.g. airlines, energy providers, motor manufacturers etc. or subsequent changes to the calculation, assumptions or results in the future.

The context of our calculators is the dramatic increase in the UK and Europe in personal travel over the last twenty-five years. Total domestic passenger distance travelled increased by 62 per cent between 1980 and 2005 (491 to 797 billion passenger kilometers). The majority of the growth has been due to increased travel by car. The distance travelled by cars (including vans and taxis) rose from 388 billion passenger kilometres in 1980 to 678 billion in 2005, an increase of 75 per cent. For modes other than car, the greatest percentage increase was in the distance travelled domestically by air, which more than trebled between 1980 and 2005.

Driving Calculator

Our driving calculators are specific to each car make, model and description. For cars manufactured since 2001 we use the annual data sourced from the UK Government Vehicle Certification Agency (VCA), on New Car Fuel Consumption and Exhaust Emissions Figures to calculate the CO₂ for each vehicle. This is adjusted by a Department for Transport 15 pct uplift factor to take into account 'real-world' effects not accounted for in test-cycle based emission factors including: use of accessories (air con, lights, heaters etc), vehicle payload (only driver +25kg is considered in tests, no passengers or further luggage), poor maintenance (tyre under inflation, maladjusted tracking, etc), gradients (tests effectively assume a level road), the weather, more aggressive/harsher driving styles, etc.

Over half the cars in the UK are over six years old. For older vehicles or where data is not available we use an algorithm to estimate CO₂ emissions. This is derived from a 2001 regression analysis of the CO₂ emissions from all models of cars with their fuel, transmission type and engine size to which we apply the 15 pct uplift to the result of the algorithm and an annualised Age Factor.

There have been major strides in the environmental performance of cars in recent years – a typical new small family saloon emits less than one-tenth of the pollution caused by its 1988 equivalent (Commission for Integrated Transport). Catalytic converters representing a significant step forward have been compulsory on cars built since 1993. To reflect the poorer efficiency of older vehicles we multiply

the result of the algorithm by a percentage Age Factor for each fuel and transmission type annualized for each year prior to 2000. Where actual emissions numbers may be available we can apply this as an over ride. The algorithm has a correlation of 88-93 pct fit for petrol cars and 75 pct for diesel vehicles and we believe is a reasonable calculation of car emissions for older cars. The average car in the UK travels over 9,000 miles annually. We currently offset a minimum mileage for each car in our calculators of 5,000 miles (which is subject to change). At less than 5,000 miles the cost of offsetting and issuing licenses makes it uneconomic for us to target spending 80 pct of our monies on offsetting.

Home and small business energy

We prefer to use data supplied by individual energy suppliers for each tariff but where this data is not available or cannot be inferred we use 2007 data from Department of the Environment, Food and Rural Affairs (DEFRA) on CO2 emissions. For example, for each kWh of electricity we consume in the UK, 0.43 kg of CO2 is produced based on the balance of coal, gas, nuclear and renewables. A typical UK house uses about 19,000-20,000 kWh of gas (1,700 – 1,800 cubic feet) and 3,300-3,500 kWh or “units” of electricity.

Quick home calculator

The Quick Home Calculator uses the national housing statistics for England and Wales and the percentage of house types (Detached, Semi-Detached, Terraced – including End Terraces and Flats – including maisonettes and apartments) and the assumption of an average UK House Emitting 5.5 tonnes of CO2 annually from Home Energy. This gives an approximation for emissions from Home Energy for each type of home. Over time we plan to build our own data base of regional and national home energy emissions and make use of public sources where available.

Flying calculator

Where available we use data supplied by Airlines which is specific to the characteristics of their routes and fleet. Where that data is not available we will use our own algorithms based on available fleet data and common flight route data or employing the 2005 (updated 2007) Department of the Environment, Food and Rural Affairs DEFRA data on CO2 emissions from flying. In all our calculations we take into account a factor for cargo and passenger loading, the length of each leg of the journey (the distance spent cruising, climbing or descending) and as a result the different impact of aircraft emissions in warming different altitudes/levels of the atmosphere. We apply a weighting factor as to whether the flight is economy, premium economy, business, first class or private jet based on typical seat arrangements. We employ a radiative forcing factor of 2.0 (see Flying References) for the cruising part of long haul journeys (over 2,000 kilometres).

Flying References

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Further Information

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