

Energy use statistics for Herefordshire

Energy consumption for the most part directly or indirectly results in the release of carbon dioxide (CO₂), a known greenhouse gas. Greenhouse gases, in particular CO₂, are considered to be responsible for man made climate change. Increasingly the climate change agenda is gaining more weight, resulting in more pressure being put on individuals and organisations alike to reduce their use of energy sources which rely on carbon based fuels. In addition to this global supply of fossil fuels, particularly oil, has become less certain and in the recent past has resulted in considerable increases in energy prices. These two issues can be tackled jointly through achieving efficiency savings which will result in both increased financial and environmental sustainability. It is important for this reason that we monitor how energy is consumed in Herefordshire.

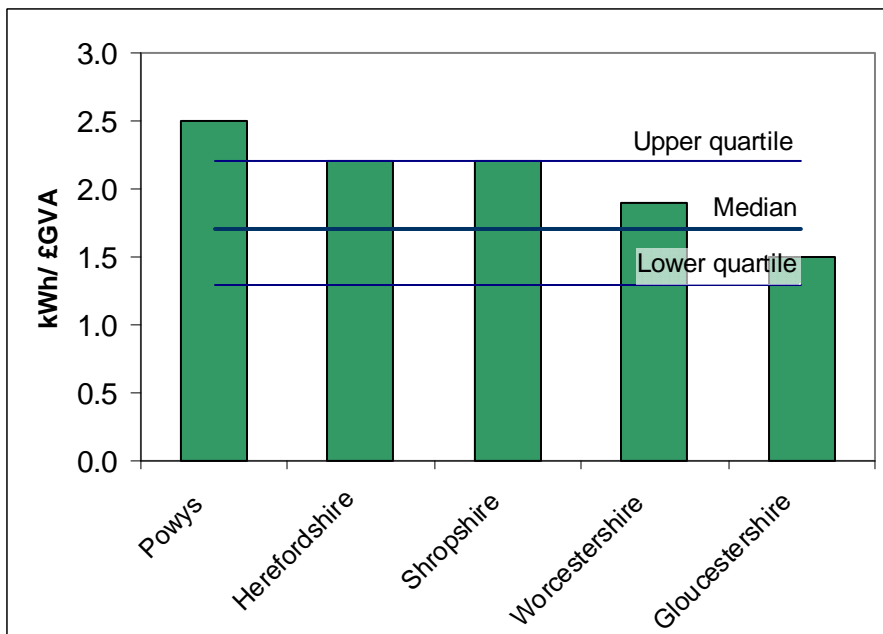
The Department for Energy and Climate Change (DECC) produces statistics, for Local Authority areas on the level of energy consumption from electricity, gas and other fuels, for both the domestic and industrial/commercial sector. These statistics are those that were previously produced by the Department for Business Enterprise and Regulatory Reform (BERR).

High level indicators

Final energy consumption

Looking at the total energy consumption in kilowatt hours per pound of GVA¹ (kWh/ £GVA) for Herefordshire and all the neighbouring authorities. Herefordshire's consumption (2.2) is high compared to the national average (1.7) and is in the upper quartile (2.2) for all UK authorities. However, comparing our consumption to the other more rural authorities it is not as high (Powys 2.5 and Shropshire 2.2). It is important to note with this measure that Herefordshire has low productivity as measured by GVA per head of population. This means that this measure will inevitably be higher for Herefordshire without taking account of the level of energy use.

Chart 1.1 Total energy consumption (kWh) per unit of productivity (£GVA), 2006



Source: DECC – ONS Crown copyright

¹ GVA – Gross Value Added is a measure of productivity of the local economy and is equivalent to GDP (Gross Domestic Product) plus taxes on products, less subsidies on products.

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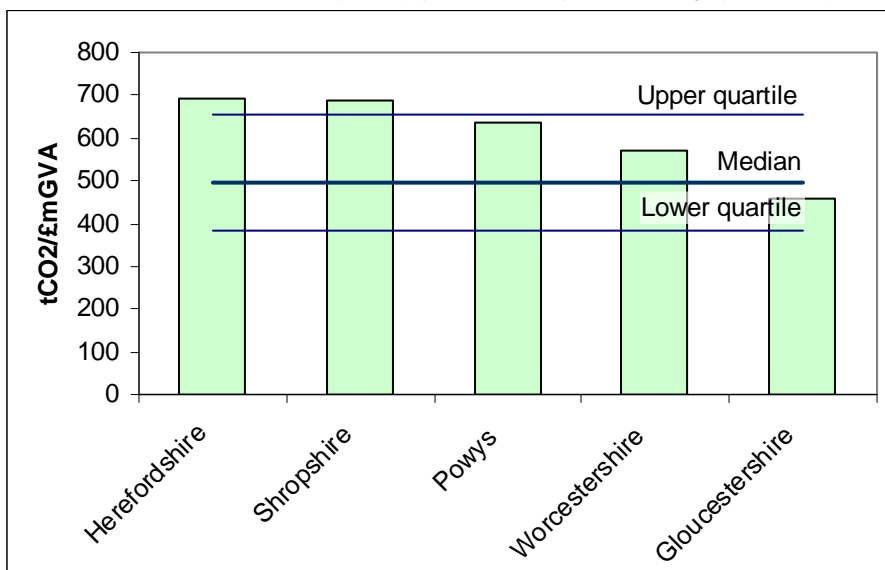
Looking at the same measure but for just the industrial and commercial sector, Herefordshire's performance (0.8 kWh/ £GVA) compared to elsewhere is worse still, being the highest out of all the neighbouring authorities and within the upper quartile (0.7 kWh/ £GVA) for all UK authorities.

Carbon dioxide (CO₂) emissions from energy use

Energy consumption can be converted into the equivalent weight of carbon dioxide (CO₂), giving us the amount in tonnes (tCO₂) per pound of economic productivity (£mGVA). Again this measure places Herefordshire (692 tCO₂/ £mGVA) within the upper quartile (656) and above all the neighbouring authorities (chart 1.2).

This measure, whilst using the same data as the final energy consumption measure, takes into account the mix of fuel used in an area and the amount of CO₂ produced by each of these fuels (emissions factor). For example Herefordshire's position relative to Powys is worse looking at this measure compared to the final energy use (kWh/£GVA) suggesting Herefordshire uses a mix of fuels that have higher emissions factors than Powys.

Chart 1.2 Carbon dioxide (tCO₂) per unit of productivity (£mGVA), 2006



Source: DECC – ONS Crown copyright

Total vehicle consumption

Energy use by vehicles in each area is reported as tonnes of fuel used per thousand vehicle kilometres. This measure standardises energy use so that it doesn't reflect the amount of transport use in kilometres, rather it shows the difference in both the mix of transport used and the efficiency of these vehicles.

The figure for Herefordshire is 0.09 (t/km (1,000s)). This is high compared to the median for all UK authorities (0.07) and above the upper quartile (0.08). It is also higher than both Worcestershire and Gloucestershire (both 0.07), but similar to Shropshire (0.09) and Powys (0.1). This relatively high level for Herefordshire could be a result of two things:

It is not possible to say from this measure alone which effect causes the difference. For more detail see section on transport energy consumption.

It is also important to consider that these consumption figures are modelled based on traffic flow figures, road consumption factors and CO₂ emissions data. In turn the traffic flow figures come from census count points on motorways and A-roads. There are no count points on B or C-roads, for these roads aggregated regional traffic flow data produced by DfT is used. This will inevitably lead to some inaccuracies in traffic volume estimates, especially in areas with a greater proportion of B and C-roads.

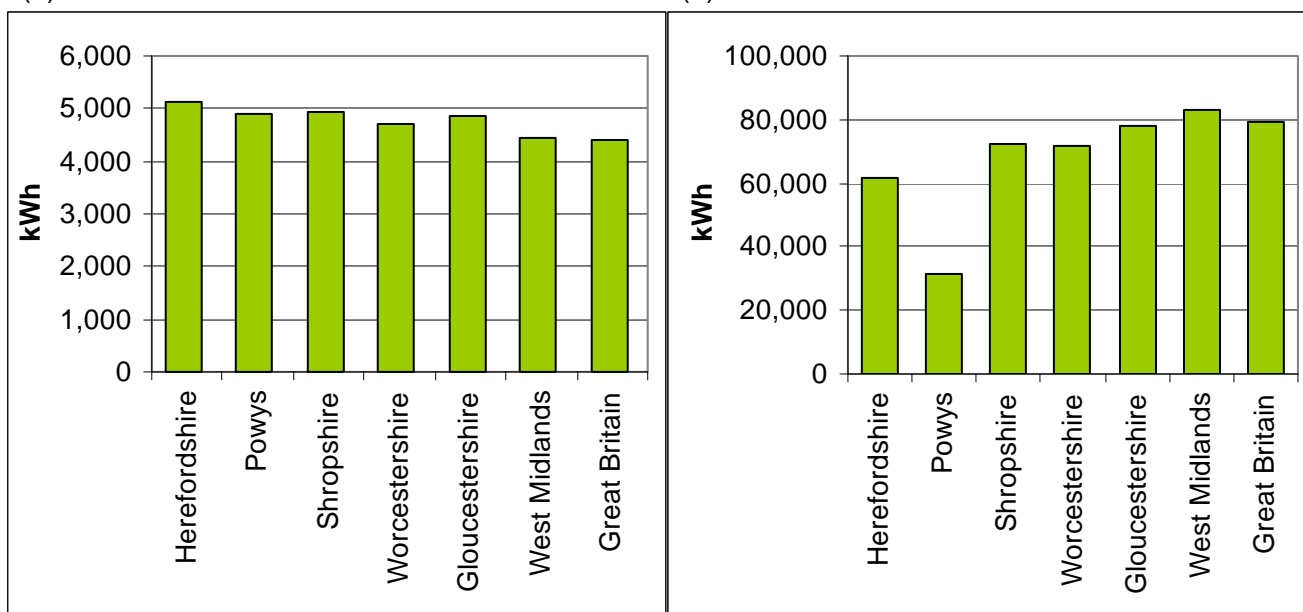
Electricity usage

Total electricity use, measured in kilowatt hours (kWh), is standardised for an area by dividing by the total number of supply points or meters (MPANs). This gives an average level of consumption for the area. The MPAN reference also indicates whether the property is domestic or commercial and industrial.

Chart 1.3 Average domestic (a) and commercial and industrial (b) energy consumption (kWh), sales per consumer 2007.

(a) domestic

(b) commercial and industrial



Source: DECC – ONS Crown copyright

Domestic

In Herefordshire domestic properties used an average of 5,126 kWh in 2007. This was a considerable decrease compared to 2005 when the average was 5,731 kWh. Despite this in 2007 Herefordshire was higher than its neighbouring authorities and the West Midlands region (4,433 kWh) and Great Britain as a whole (4,392 kWh) (Chart 1.3(a)). Looking at these figures it is also important to consider the mix of energy used in an area, as supply of the different fuel types may vary between areas. In Herefordshire rural areas will have limited access to mains gas supply, which is likely to lead to more reliance on other energy sources like electricity.

Commercial and industrial

The average electricity consumption per customer (MPAN) in the commercial and industrial sector is unsurprisingly around 10 times that of the domestic sector. In 2007, the average for Herefordshire was 61,504 kWh, the lowest out of all the neighbouring authorities except Powys and lower than the West Midlands region (82,898 kWh) or Great Britain (79,077 kWh).

Using this measure for businesses however, is misleading as it doesn't reflect the size of businesses in an area. For example a large business, which consumes a large amount of energy, might only have one meter point. If an area has more large businesses like this then it will greatly increase their average. In the case of Herefordshire, where businesses tend to be smaller in size then this will reduce the average consumption.

An alternative measure is to calculate the average electricity consumption per employee (kWh). This takes into account, at least in part, the size of businesses in an area and so is a better measure to compare between areas. The average consumption per employee in Herefordshire

was 27,900 kWh in 2006, greater than for all the other neighbouring authorities and the West Midlands region (21,600 kWh).

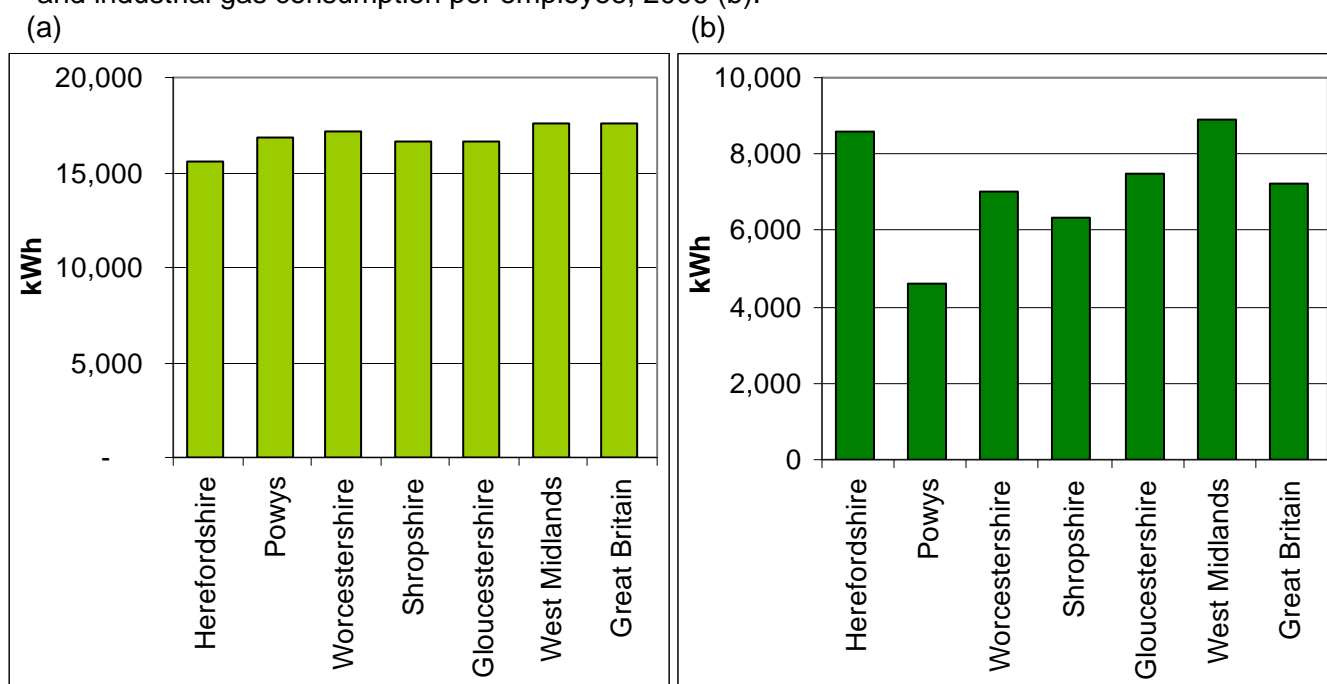
As with the domestic sector it is important to consider the mix of energy used in an area. It is not clear to what extent lack of infrastructure affects the industrial and commercial sector, but as in the domestic sector it is likely that in rural areas there will be limited access to mains gas. The following section looks at gas usage. Another factor to consider is the type of businesses operating in an area some, by their nature, have a much higher demand for energy.

Using the number of employees as a denominator for energy use may also skew this measure for some areas, as the source used is the Annual Business Inquiry, which does not include the self-employed. Having said this it is not know whether those that are self-employed are classified as domestic consumers or industrial consumers. In the case of electricity consumption, classification is based on the profile of the meter used (MPAN) so self-employed people working from home are likely to be classified as domestic for this measure. In the case of gas, domestic consumers are defined as any user who use is below the 73,200 kWh. This means small industrial and commercial users may be defined as domestic if their consumption is low.

Gas usage

As with electricity, gas consumption is measured in kilowatt hours (kWh) and can be standardised for an area by dividing by the total number of supply points or meters (MPANs). For reasons discussed earlier this analysis uses consumption per employee for the industrial and commercial sector so to account for the effect of business size.

Chart 1.4 Average domestic gas consumption per consumer, 2007 (a) and average commercial and industrial gas consumption per employee, 2006 (b).



Source: DECC – ONS Crown copyright

Domestic

In Herefordshire in 2007, the average consumption per meter point (MPAN) was 15,582 kWh a decrease on 2005 (17,013 kWh) and low compared to all the neighbouring authorities, the West Midlands and Great Britain (Chart 1.4 (a)).

Looking at the number of consumers (meter points), Herefordshire had 0.27 meter points per capita, this was lower than all its neighbouring authorities except Powys and considerably lower than for the West Midlands and Great Britain as a whole (both 0.38). This highlights the relatively low usage of gas in the domestic sector a result of a lack of infrastructure in rural parts of the county. In contradiction to overall gas use the number of gas meters has increased; the number of meter points per capita in 2005 was 0.26.

Commercial and industrial

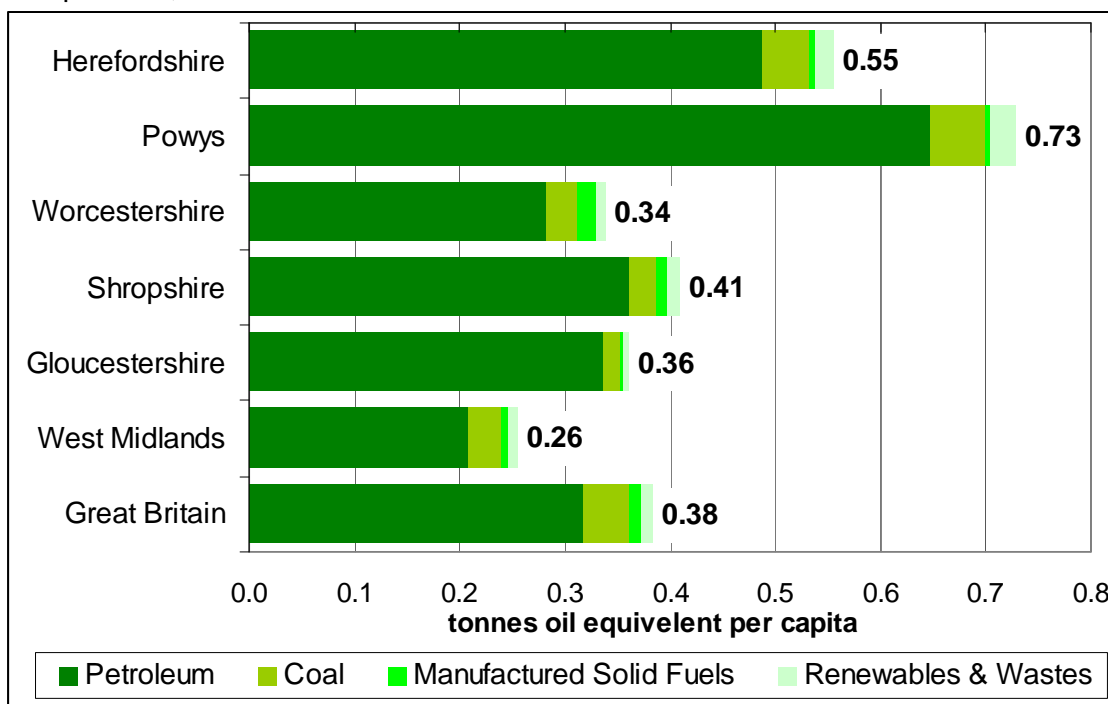
Average gas consumption per employee was 8,600 kWh for Herefordshire in 2006. This was high compared to all the neighbouring authorities and Great Britain as a whole, but slightly lower than the West Midlands region. It's not clear why the level of gas usage is high in Herefordshire. One possible explanation is the relatively high level of manufacturing, which may consume more energy than other sectors, particularly the service sectors which are underrepresented in Herefordshire.

As mentioned previously it is important to bear in mind the limitations of both the definition of employees and the classification of the consumer as industrial and commercial or domestic.

Non gas, non electricity and non road transport fuels

This measure includes other uses of petroleum not in transport, coal, manufactured solid fuels and renewables and waste and is given as thousand tonnes of oil equivalent. Figures have been presented here on a per capita basis to enable comparison between areas.

Chart 1.5 Non gas, non electricity and non road transport fuel consumption per capita, tonnes of oil equivalent, 2006



Source: DECC – ONS Crown copyright

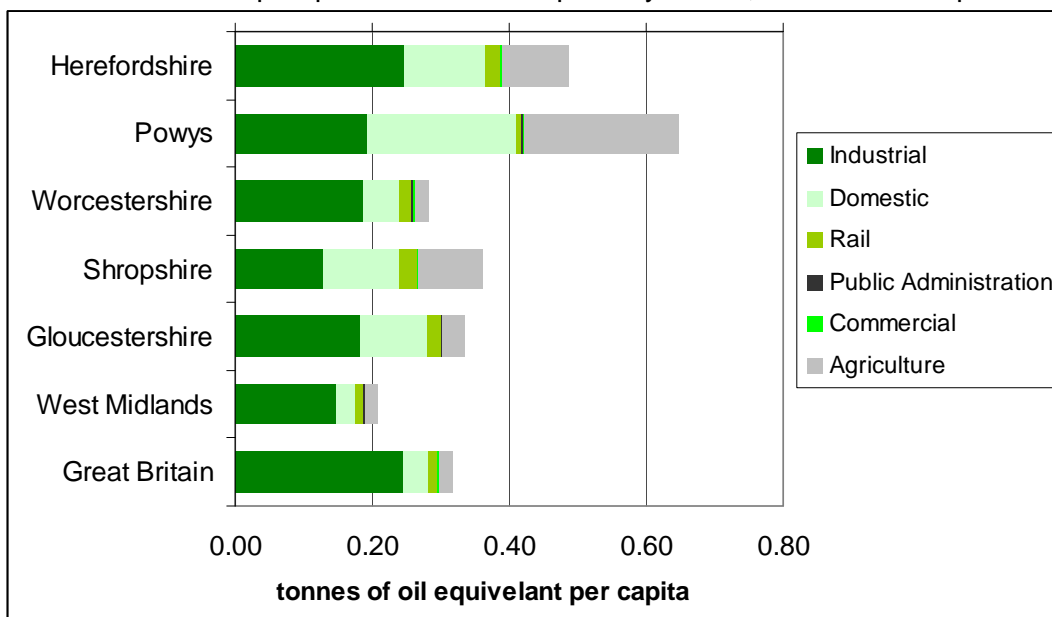
Herefordshire's total consumption of non gas, non electricity and non road transport fuel per capita was 0.55 tonnes of oil equivalent (chart 1.5). Again this is high compared to all the

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neighbouring authorities with the exception of Powys (0.73). This was also an increase on 2005 when the per capita value was 0.52 tonnes.

It's clear from chart 1.5 that of all the fuel types in this category the vast majority of consumption is of petroleum. Looking at which sectors contribute to this (chart 1.6 below) the greatest proportion for most areas is used in manufacturing. In the case of Herefordshire manufacturing consumes more petroleum per capita (0.25) in this sector than any other area, although it is only slightly higher than Great Britain as a whole (0.24). Domestic consumption is high amongst all the rural authorities being particularly marked in Powys, 0.22 tonnes per capita compared to 0.12 in Herefordshire and 0.04 for Great Britain as a whole. Agriculture was the other sector that had high levels of consumption in Herefordshire 0.1 tonnes per capita, compared to Great Britain as a whole (0.02). Shropshire (0.09) and Powys (0.23) also had high levels of consumption in the agricultural sector, not surprising given the relative importance of agriculture in these areas. The increased petroleum consumption in Herefordshire is likely to be a result of a lack of availability of other fuels e.g. use of heating oil instead of gas.

Chart 1.6 Non-transport petroleum consumption by sector, tonnes of oil equivalent, 2006

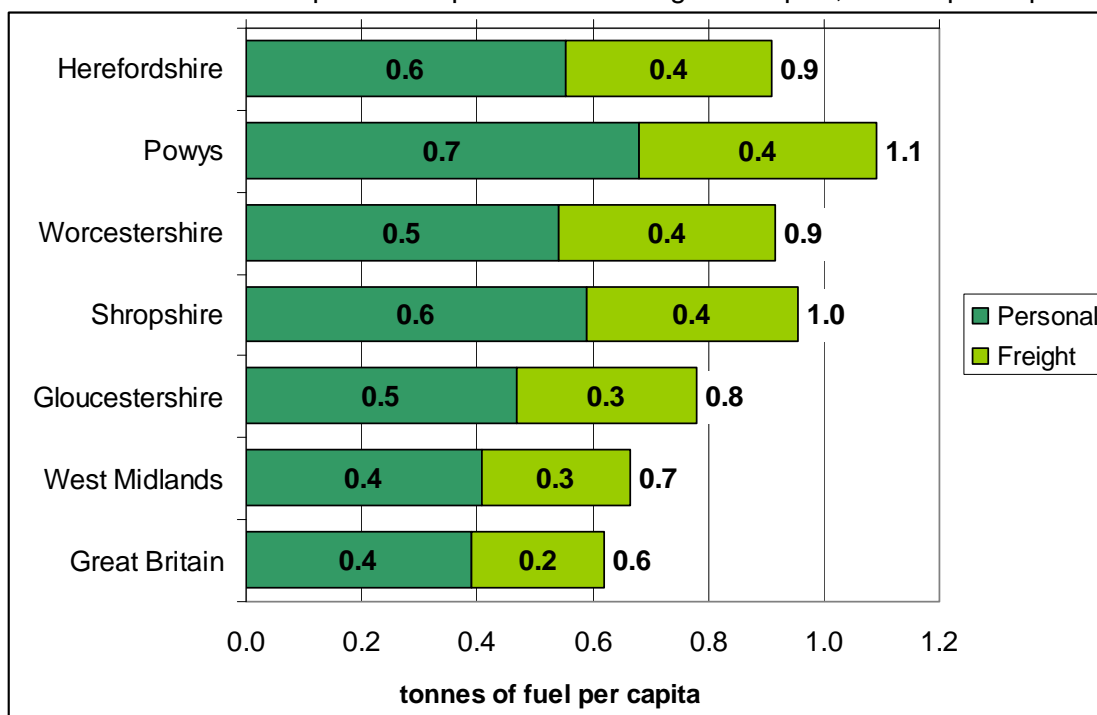


Source: DECC – ONS Crown copyright

Transport energy consumption

The amount of fuel for personal and freight transport consumed per capita in Herefordshire in 2006 was 0.9 tonnes, similar to the neighbouring authorities, but higher than both the West Midlands (0.7) and Great Britain (0.6) (chart 1.7 below). For all areas it is personal transport, as apposed to freight, that accounts for a greater proportion of fuel consumed.

Chart 1.7 Fuel consumption from personal and freight transport, tonnes per capita 2006



Source: DECC – ONS Crown copyright

Note: data values in the table above are rounded to the nearest 0.1 so summing constituent parts may not equal the total provided.

Looking at all vehicle classes it is petrol cars that by far account for the greatest proportion of fuel consumed, 46% in Herefordshire compared to just 12% for diesel cars. HGVs account for the second greatest proportion 23%, followed by diesel LGVs (table 1.8 below). The proportion of fuel usage for the different vehicle classes in Herefordshire is very similar to that for the West Midlands and Great Britain as a whole.

Table 1.8 Proportion of total fuel consumption by vehicle class, 2006

	Herefordshire	West Midlands	Great Britain
Buses	3%	4%	4%
Diesel Cars	12%	12%	12%
Petrol Cars	46%	45%	47%
Motor-cycles	0%	0%	0%
HGV	23%	24%	22%
Diesel LGV	15%	14%	14%
Petrol LGV	1%	1%	1%

Source: DECC – ONS Crown copyright

LGV – Light Goods Vehicle

HGV – Heavy Goods Vehicle

For further information on the data in this article, please contact the Research Team on 01432 260 893 or e-mail researchteam@herefordshire.gov.uk

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