

Energy use statistics for 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 of use in monitoring energy consumed in Herefordshire for use in planning interventions aimed at reducing energy use.

Key points

- In 2006 Herefordshire's total consumption of energy per unit of productivity (2.2 kWh/£GVA) was high compared to the national average (1.7) and is in the upper quartile (2.2) for all authorities in Great Britain. However, comparing our consumption to the other more rural authorities it is similar to Shropshire (also 2.2) but not as high as Powys (2.5).
 - Herefordshire uses less energy per unit of productivity than Powys, but the mix of fuels used means that more CO₂ (per unit productivity) is emitted as a result.
 - In Herefordshire domestic properties used an average of 4,687 kWh of electricity in 2008, a considerable decrease (-18%) on 2005 (5,731 kWh). Despite this however, in 2008 Herefordshire was still higher than its neighbouring authorities and the West Midlands region (4,234 kWh) and Great Britain as a whole (4,198 kWh).
 - The average electricity consumption per employee in the industrial and commercial sector in Herefordshire was 8,042 kWh in 2008, greater than for the West Midlands region (6,770 kWh), Great Britain (7,201 kWh) and all neighbouring authorities except Shropshire.
 - In Herefordshire in 2008, the average domestic gas consumption per meter point was 15,023 kWh a 12% decrease on 2005 (17,013 kWh) and low compared to all the neighbouring authorities, the West Midlands and Great Britain.
 - Consumption of non-gas, non-electricity and non-road transport fuels is relatively high in Herefordshire (0.5 tonnes per cap), especially in the domestic and agricultural sectors.
 - The amount of fuel for personal and freight transport consumed per capita in Herefordshire in 2007 was 0.7 tonnes down from 0.9 tonnes in 2006. This was the same as for the West Midlands region (0.7) as a whole, but slightly higher than for Great Britain (0.6).
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Energy consumption for the most part directly or indirectly results in the release of carbon dioxide (CO₂), a known greenhouse gas. The release of greenhouse gases, in particular CO₂, is 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).

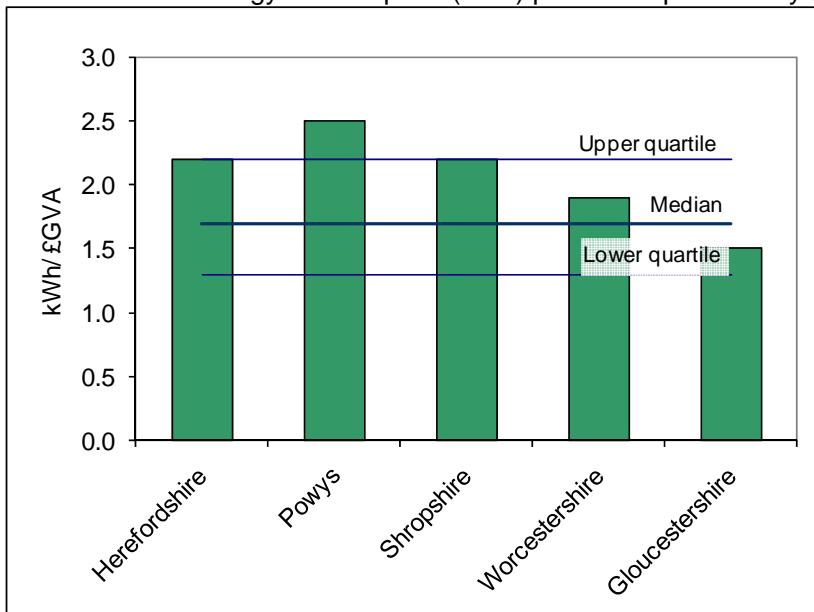
It is important to bear in mind when reading this article that the different data sets relate to different years. The high level indicators presented first relate to 2006, whereas electricity and gas usage is newer data relating to 2008.

High level indicators

Final energy consumption per unit of productivity (2006)

Looking at the total energy consumption in kilowatt hours per pound of GVA (kWh/ £GVA) for Herefordshire and all the neighbouring authorities. Herefordshire's consumption in 2006 (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 similar to Shropshire (also 2.2) but not as high as Powys (2.5). It is important to note with this measure that Herefordshire has low productivity as measured by GVA per head of population compared to elsewhere. 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

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

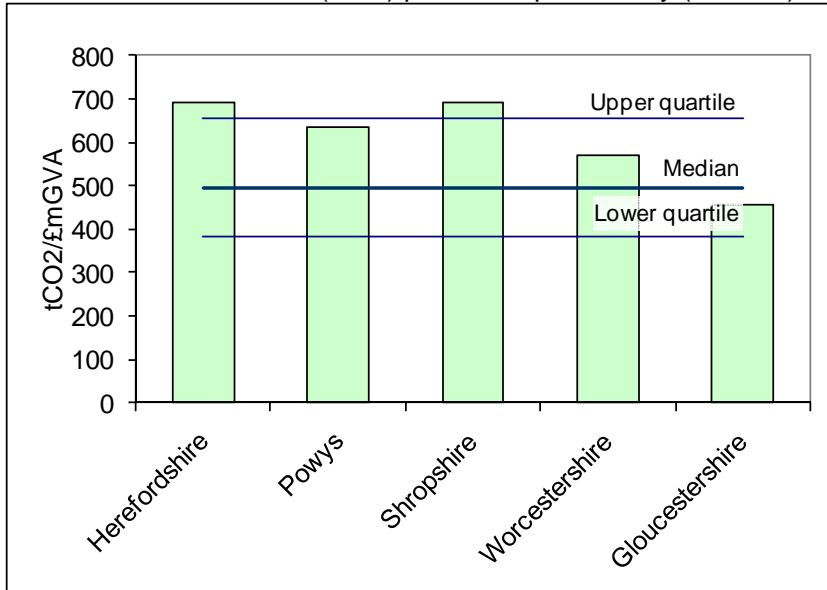
the neighbouring authorities and within the upper quartile (0.7 kWh/ £GVA) for all authorities in Great Britain.

Carbon dioxide (CO₂) emissions from energy use (2006)

Energy consumption can be converted into the equivalent weight of carbon dioxide (CO₂), giving us the amount in tonnes (tCO₂) per million pounds 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 i.e. Herefordshire uses less energy per unit of productivity than Powys, but the mix of fuels used means that more CO₂ (per unit productivity) is emitted as a result.

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



Source: DECC – ONS Crown copyright

Total vehicle consumption (2006)

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).

It is not possible to say exactly what causes this difference. For more detail see section on transport energy consumption.

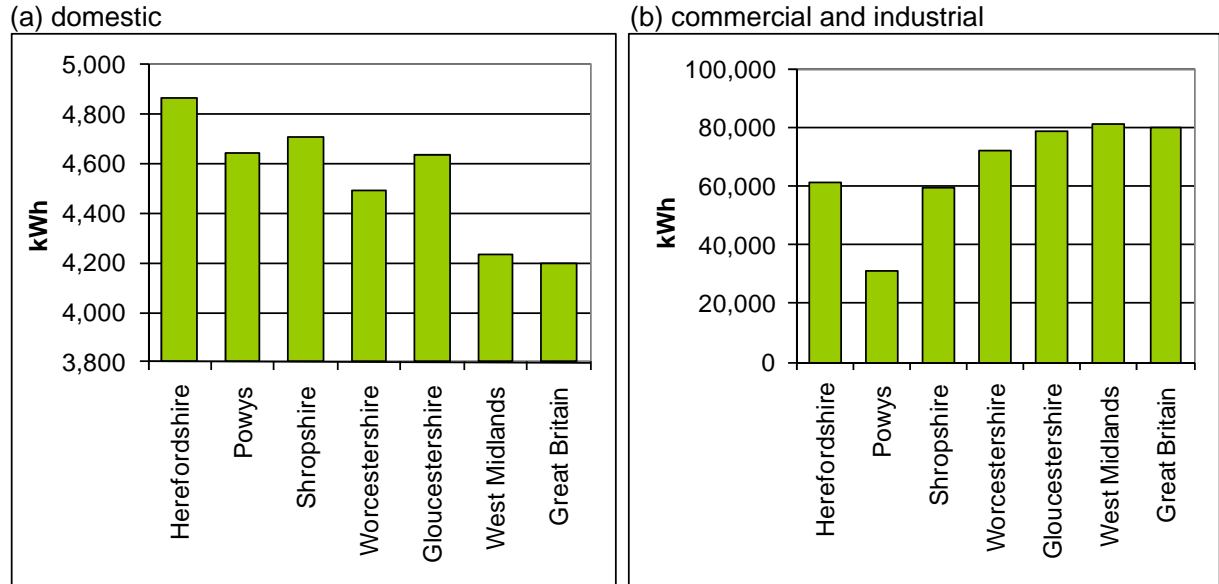
It is important to consider that these consumption figures are modelled, based on traffic flow figures, road consumption factors and CO₂ emissions data. In turn the traffic flow figures come from census count points on motorways and A-roads. There are no count points on B or C-roads, for these roads aggregated regional traffic flow data produced by the 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 (2008)

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 2008.



Source: DECC – ONS Crown copyright

Domestic electricity

In Herefordshire domestic properties used an average of 4,867 kWh in 2008. This was a considerable decrease compared to 2005 when the average was 5,731 kWh. In fact consumption in Herefordshire has dropped by 18% since 2005 more than Great Britain as a whole (-10%) or any of its neighbouring authorities. Despite this however, in 2008 Herefordshire was still higher than its neighbouring authorities and the West Midlands region (4,234 kWh) and Great Britain as a whole (4,198 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 electricity

The average electricity consumption per customer (MPAN) in the commercial and industrial sector is unsurprisingly around 10 times that of the domestic sector. In 2008, the average for Herefordshire was 61,433 kWh, lower than the West Midlands region (81,453 kWh) or Great Britain (79,809 kWh). It was also lower than in Worcestershire or Gloucestershire, but higher than Shropshire and Powys.

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 8,042 kWh in 2008, greater than for the West Midlands region (6,770 kWh), Great Britain (7,201 kWh) and all neighbouring authorities except Shropshire.

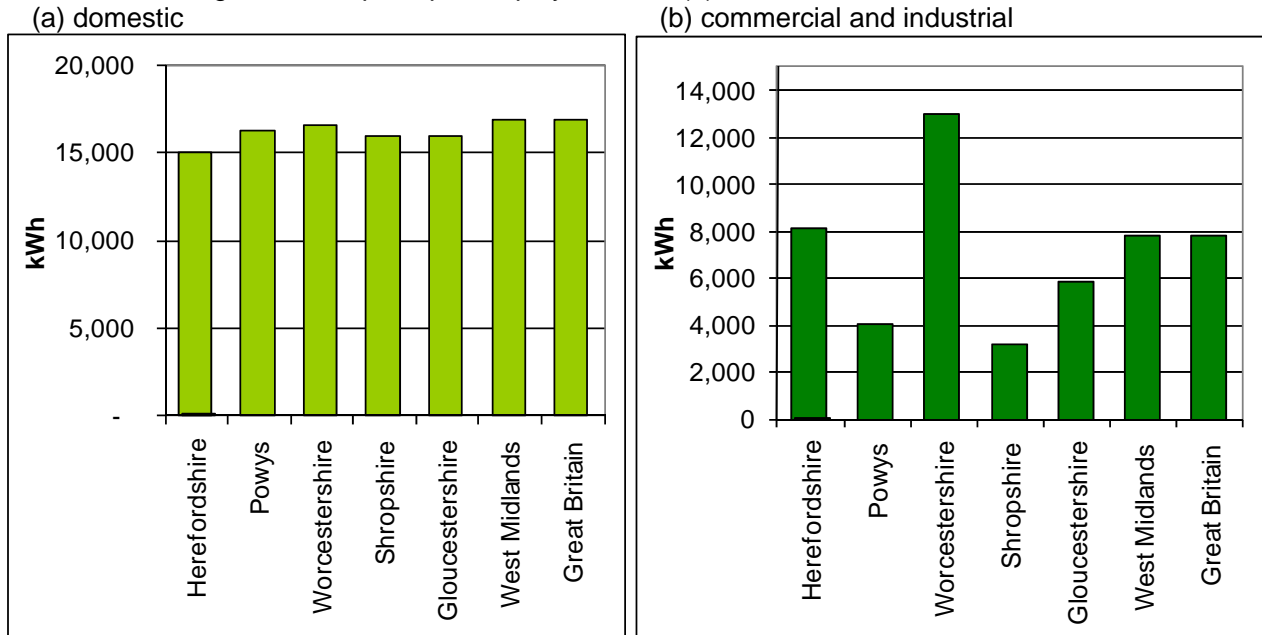
As with the domestic sector it is important to consider the mix of energy used in an area. It is not clear to what extent lack of infrastructure affects the industrial and commercial sector, but as in the domestic sector it is likely that in rural areas there will be limited access to mains gas. The 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 known 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 whose use is below the 73,200 kWh threshold. This means that there are small industrial and commercial users that are defined as domestic.

Gas usage (2008)

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, 2008 (a) and average commercial and industrial gas consumption per employee, 2008 (b).



Source: DECC – ONS Crown copyright

Domestic gas

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In Herefordshire in 2008, the average consumption per meter point (MPAN) was 15,023 kWh a 12% 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 in 2008, this was lower than all its neighbouring authorities except Powys and considerably lower than for the West Midlands and Great Britain as a whole (0.38 and 0.37 respectively). 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 gas

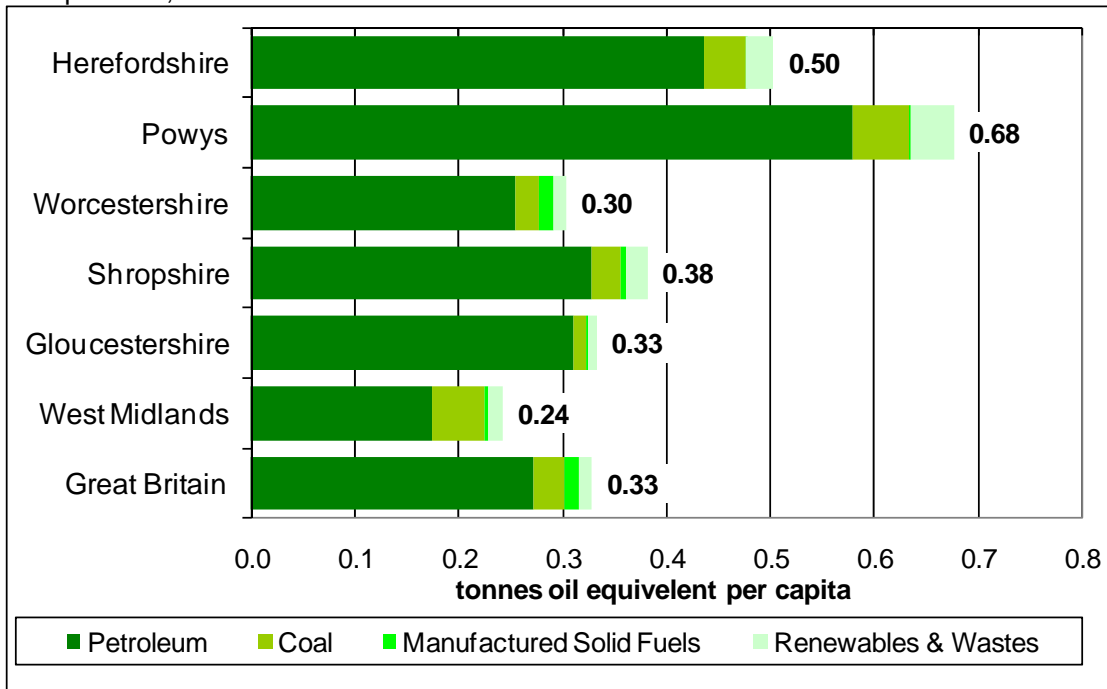
Average gas consumption per employee was 8,095 kWh for Herefordshire in 2008. This was high compared to all the neighbouring authorities, the West Midlands and Great Britain as a whole, with the exception of Worcestershire. It's not clear why the level of gas usage is high in Herefordshire. One possible 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 (2007)

This measure includes uses of petroleum other than 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, 2007



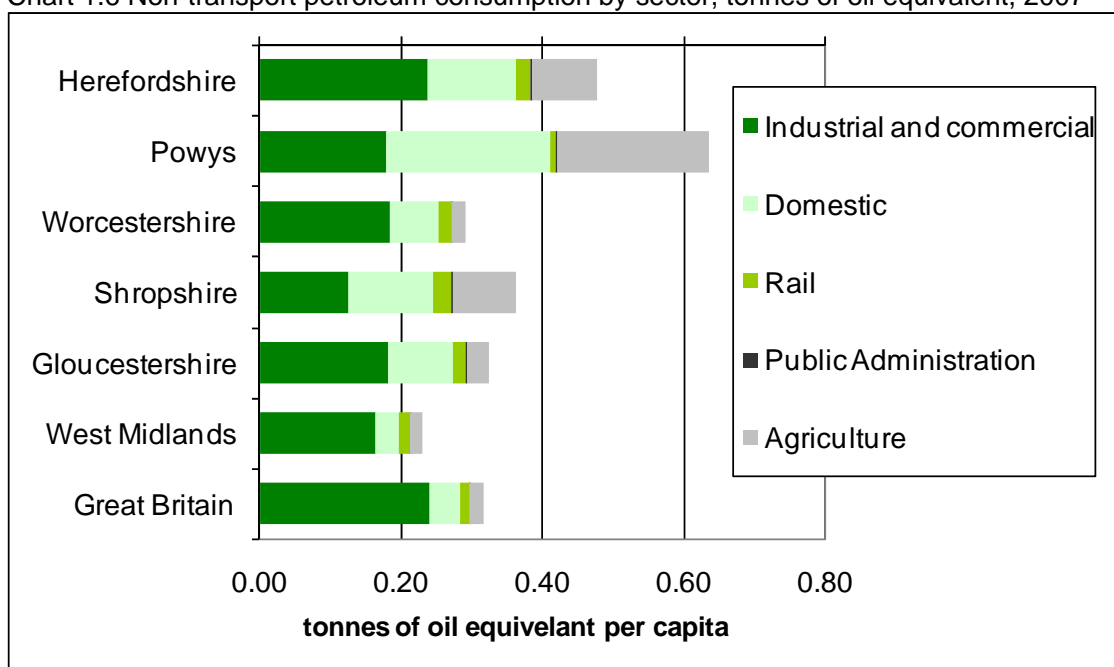
Source: DECC – ONS Crown copyright

Herefordshire's total consumption of non gas, non electricity and non road transport fuel per capita was 0.5 tonnes of oil equivalent (chart 1.5). Again this is high compared to all the

neighbouring authorities with the exception of Powys (0.63). This was a decrease on 2006 (0.55 tonnes/cap) and slightly lower than 2005 (0.52 tonnes/cap).

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 industrial and commercial sectors. In the case of Herefordshire industrial and commercial consumes 0.24 tonnes per capita the same as for Great Britain as a whole, but higher than any of the neighbouring authorities. Domestic consumption is high amongst all the rural authorities being particularly marked in Powys, 0.23 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 0.09 tonnes per capita, compared to Great Britain as a whole (0.02). Shropshire (0.09) and Powys (0.22) also had high levels of consumption in the agricultural sector, not surprising given the relative amount of agriculture in these areas. The increased 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. This applies particularly to the domestic sector. Between 2006 and 2007 both the industrial and commercial and agricultural use of non-transport petroleum consumption decreased, both by 0.01 tonnes per capita. Consumption for Great Britain as a whole remained static.

Chart 1.6 Non-transport petroleum consumption by sector, tonnes of oil equivalent, 2007

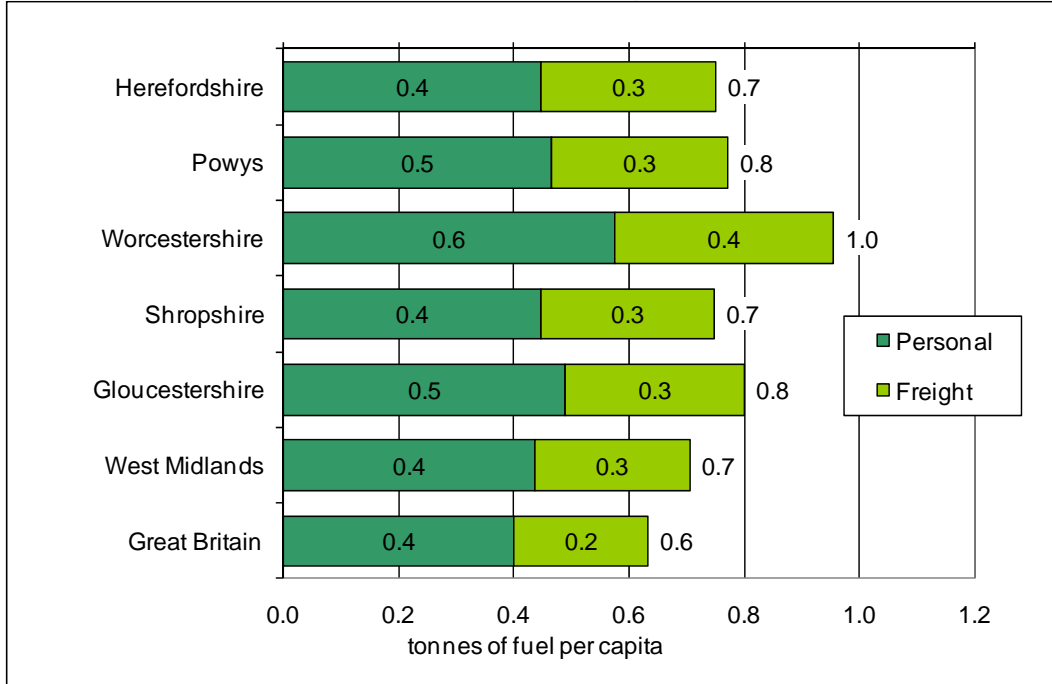


Source: DECC – ONS Crown copyright

Transport energy consumption (2007)

The amount of fuel for personal and freight transport consumed per capita in Herefordshire in 2007 was 0.7 tonnes down from 0.9 tonnes in 2006. This was the same as for the West Midlands region (0.7) as a whole, but slightly higher than for 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 2007



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 account for by far 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, 2007

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

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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