Abstract: The GB National Transport Model – demands and uncertainty in road transport energy forecasts.

Background

Transport represents a sizeable portion of the GB's total energy demand and, as the UK population increases and travels further, this proportion might be expected to increase.

Transport predominately uses fossil fuels currently accounts for about a quarter of the UK's greenhouse gas emissions. However, including increased demand, it is still expecting to play its part in reducing carbon emissions from the 1990 base by 80% in 2050.

This presentation will first describe the department's National Transport Model (NTM) explaining its origins, data sources and forecasting approach. It will then go on to outline our latest forecasts for traffic and how we forecast emissions as well as the new approach we have adopted to presenting the forecast results

Finally, it discusses our plans for the future and how we hope to accommodate new ultra low emission vehicles into our model.

Model History and Structure

The model was created in the early 2000's and has been regularly up-dated to reflect the latest evidence. It has been used to test a range of policies including road pricing, speed limit changes, 'smart motorways' and carbon budgets.

Whilst it is 'multi-modal' and includes all GB land based transport, other models are used for Rail and Bus policy as these are relatively small sectors. The Department also has other models for Aviation.

The NTM is a 'cross sectional' behavioural model which is founded on data collected in the Departments National Travel Survey (NTS). This captures the travel behaviour of individuals, in terms of the number, distance, mode and purpose of trip and is segmented by household income and structure. Using forecasts of population and employment etc, future travel demand estimated using other key inputs such as fuel prices, efficiency and GPD.

The model is a four stage transport model which estimates the numbers of trips, their destination, mode and finally their route. The model then iterates between demand and supply until converged.

Latest Forecasts

The latest traffic forecasts, which underpinned the Roads Investment Strategy, were published in March and are available at:
https://www.gov.uk/government/publications/road-traffic-forecasts-2015

They included two scenarios which, alongside high and low demand sensitivities, tried to capture some of the uncertainties associated with different views of recent travel trends. They ranged from +19% to +55% from 2010 to 2040 whilst showing falls in carbon emissions from 26% in the low scenario to a 3.5% fall for the highest.

New emerging trends suggest the traditional approach to uncertainty (GDP, fuel price, population) no longer capture the full range of uncertainty and has even led to some academics proposing that we have reached 'Peak Car' and a new era of behaviour.

Going Forwards

Due to this uncertainty, as well others such as autonomous vehicles, we are embarking on a programme of engagement with stakeholders which focuses on transparency and making our model fully comprehendible. This will accompany a new consultative approach to creating plausible scenarios whilst commissioning more research to help fully understand the emerging trends.

Also, having just completed research into the emissions/energy curves of hybrid, plug-in and electric vehicles, we hope to be able to incorporate these into the model over the summer.