Bus and Coach: The route to net zero

WPI ECONOMICS

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About the authors

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Matthew founded WPI Economics in 2015. He is a respected economist and policy analyst, having spent well over a decade working in and around policy making in Westminster. He has previously been Chief Economist at Which?, and Head of Economics and Social Policy at Policy Exchange. He began his career as an Economic Advisor at the Treasury, predominantly working on microeconomic analysis and modelling issues around tax and welfare reform. He holds an MSc in Economics from UCL.

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About the Confederation of Passenger Transport

We help a dynamic bus and coach industry to provide better journeys for all, creating greener communities and delivering economic growth.

We do this by representing around 900 members from across the industry be they large or small, bus or coach, operator or supplier. We use our influence to campaign for a supportive policy environment, give our members practical advice and support to run their businesses safely, compliantly, and efficiently and bring the industry together to share ideas and best practice. We are ambitious to make things better for passengers, inclusive in seeking out different perspectives and we are always there when our members need us.

About this report

The Confederation of Passenger Transport, the trade body for the bus and coach industry, commissioned WPI Economics to analyse the role that switching car journeys to bus and coach journeys ("modal shift") may have in achieving the country's Net Zero emissions goal. Our first report for this project, *The Decarbonisation Dividend*, demonstrated that modal shift from car to bus and coach is necessary to support the UK's Net Zero objectives. The report also demonstrated the scale of modal shift that is needed, and the benefits that would be associated with it. This report, focused on England and accompanied by equivalent reports for Scotland and Wales, summarises the result of the second stage of the project, assessing the different policy options available to produce the scale of modal shift that the previous report identified as necessary to decarbonise the transport sector.

Executive Summary

This report analyses the role that switching car journeys to bus and coach journeys ("modal shift") may have in achieving the country's Net Zero emissions goal. It presents the main results of the second stage of the project, which was based on two complementary streams of work:

1. Engaging with operators, campaigners, civil society and policy professionals in six roundtables organised by the Confederation of Passenger Transport and chaired by the Social Market Foundation; and
2. Desk research to review existing analysis of modal shift policies and modelling of various policy options and impacts.

The focus here is on the results for England. Further reports highlight results for Scotland and Wales. Methodological details are explained in the accompanying Methodology report.

Modal shift: necessary, desirable and possible

The first report of this project established that modal shift was necessary for the UK to meet its Net Zero obligations. The shift is possible based on the existing evidence, and desirable because of the significant benefits that come from it.

We estimated that across Great Britain the modal shift required would amount to only two more trips by bus per person per month (26 per year). However, this would need to be delivered against the backdrop of a trend of an 11% decline in bus patronage per decade over the last four decades. From that relatively low base, in order to support the country's Net Zero ambitions, the scale of increase in patronage driven by modal shift would amount to an 82% increase in bus journeys across Great Britain by 2050 (a 25% increase per decade up to 2050).

In this context, it is clear that while this is achievable, piecemeal interventions will not deliver the scale of change required. Instead, an ambitious strategy will be needed. This will need to provide certainty and leadership, and establish a shared set of goals under which different levels of administration can work together.

Why further policy action is needed

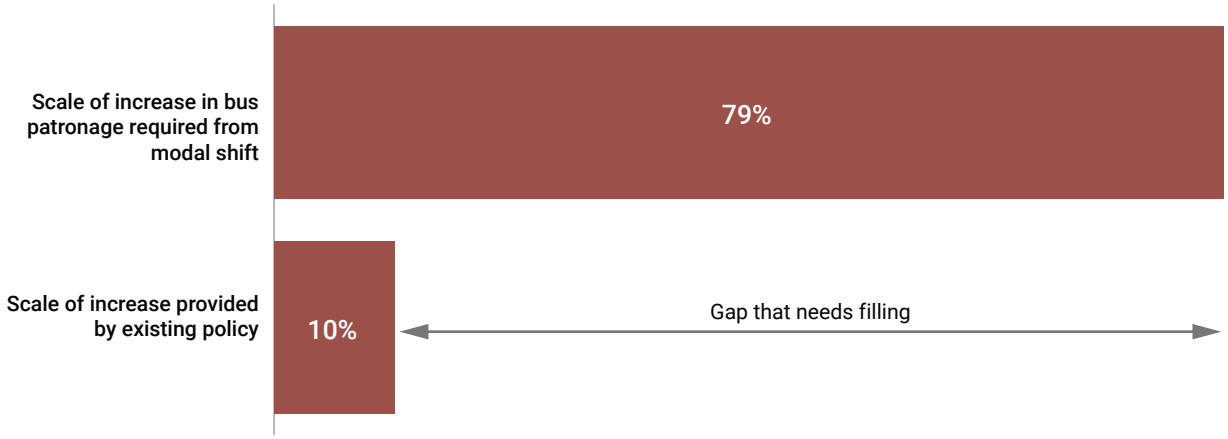
This report follows on from the first and shows how a range of different measures could lead to modal shift. We believe that the options in this paper could go a long way to achieving the scale of change needed as long as they are suitably targeted and tailored for the specific circumstances of different areas, and are supported by policies across the wider transport system.

Before turning to different policy options, it is first important to demonstrate why the current (much needed and welcome) investment in bus and coach is not going to be enough.

Focusing on existing funding commitments, with reasonable assumptions about their continuation until 2050, we estimate that a total investment of £4.8bn would deliver almost 1.5bn extra bus journeys across England. Of these, 450m can be attributed to modal shift (i.e., the journeys would have otherwise been travelled by car).

This means that the increase in bus patronage resulting directly from modal shift represents around a 10% increase on the 2018/19 baseline. In other words, **current policy trajectory would deliver just over one eighth of the total modal shift estimated to be necessary in our previous report**.

Figure 1: The gap between modal shift needed and what is achieved with existing policy



Source: WPI Economics

So how can the remaining 69% increase in patronage be achieved? One obvious way of delivering significant modal shift would be to increase the relative cost of motoring; thereby making bus journeys more attractive. However, the scale of increase in the cost of motoring required to close the gap is prohibitively large. In fact, we estimate that, if this gap was to be closed with widespread rises to the cost of motoring, the real cost of motoring would have to increase by 3.25% per year above CPI until 2050. In tangible terms, this means that the costs of motoring in 2050 would be 137% higher in real terms than they are today.

Without further interventions and investment in bus and coach, the cost of motoring would need to rise by 137% by 2050 in order to drive the scale of modal shift needed to support Net Zero.

Increases in the cost of motoring of this scale are clearly not a viable option. The likely result would be significant economic damage and a transition that is unlikely to be "just". This would make the approach politically unpalatable.

Another alternative would be to make buses free at the point of use. Again, this could be a significant part of driving the modal shift required. In fact, we estimate that free-at-the-point of use bus journeys would deliver 200m fewer car journeys, and a total increase in bus journeys of 1.5bn.

However, this would only represent 11% of the necessary modal shift. It would also provide significant financial benefits to existing bus users (rather than just incentivising existing car users to switch), meaning that this approach comes with a very significant financial cost.

We estimate that the total cost of this policy would amount to around £110bn up to 2050, or nearly £4bn per year, in addition to the £1.2bn currently spent by government on funding conessionary travel and the Bus Service Operator Grant. Some 35% of this would benefit London. This demonstrates that this is not a viable option, given the significant cost and the poor performance of the policy against Levelling Up objectives.

These two examples make it clear that **further policy interventions to achieve modal shift need to be developed and delivered in a way that is politically feasible, economically efficient, affordable and socially fair**.

Delivering the necessary modal shift with a policy package

In thinking about what such policy interventions might look like, a major insight from our research and from a wide range of stakeholders, is the need for a modal shift strategy to be implemented through **policy packages. Four key types of interventions are**:

1. Increasing the attractiveness of the bus network

2. Making buses cheaper

3. Discouraging the use of cars

4. Behavioural interventions to influence consumer choices

The key finding is that relying on just one or two of these options would be unlikely to deliver the scale and type of policy change needed. Instead, a full range of these policies will need to be combined. Given the significant difference in circumstances across the UK, and with different passengers having different needs, it is clear that the appropriate combination of these policies will vary between locations. This report has a deliberately national scope, meaning that it does not intend to serve as a defined recipe for policy-makers across England to follow. Instead, it aims to offer a flexible framework through which to think about the transformation in our transport systems that might be required to achieve modal shift, as well as evidence about the extent to which different types of interventions might contribute to make them a reality.

The potential impacts of a range of modal shift policies

We analyse (i) increasing the attractiveness of the bus network; (ii) options to both make buses cheaper, and; (iii) options to make motoring less desirable. We model different scenarios within each of these interventions. These scenarios should be viewed as representing either different levels of ambition or differing levels of success of a specific measure. With the latter, greater levels of success would be likely with accompanying behaviour-change interventions, though this is not modelled explicitly.

The table below provides a summary of the results from this analysis. It shows that:

- **More ambitious investment in bus services and infrastructure**, amounting to around £1.1bn a year to 2050 (or around £30bn cumulatively), would deliver over 6bn additional annual bus journeys, of which **1.8bn journeys annually would have previously been travelled by car**.
- A salary sacrifice scheme ("Bus Bonus") for commuters **would reduce car** usage by 28m journeys and lead to an increase in bus journeys of 55m.

- A £2 fare cap for single journeys costing around £13bn by 2050, would deliver over 215m additional bus journeys, of which **65m journeys would have been previously been travelled by car**.
- A **congestion charge in urban local authorities** around England, in turn, would lead to 25m fewer car journeys, if applied only to urban centres, and **250m fewer car journeys** if applied more comprehensively to the entire area of urban local authorities.

Table 1: Selected results from modelling of policy options

Policy area	Scenario	Total increase in bus journeys (yearly)	Increase in journeys from modal shift	Increase in journeys from modal shift (%)	Annual cost (2021 £ values)
Increasing attractiveness of bus network	Ambitious investment	6.2bn	1.8bn	50.0%	£1.1bn
Making bus cheaper	Bus bonus	-	55m	1.5%	£170m
	£2 fare cap for single journeys	216m	65m	1.9%	£490m
Discouraging the use of cars	Low scenario	-	25m	0.7%	-£1.7bn
	High scenario	-	250m	7.3%	-£17bn

Source: WPI Economics

Notes: Cost refers to cost to the Exchequer – negative values represent revenue. Labels for total increase refer to policies where we directly modeled modal shift, meaning that total increases are not available.

These policies have the potential to deliver results that go beyond those highlighted above if:

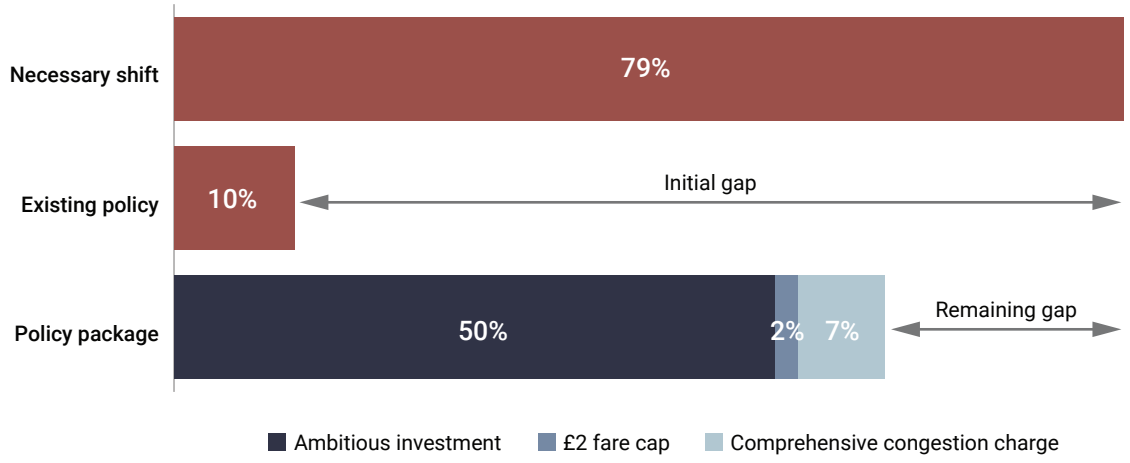
- They are accompanied by behavioural change interventions;
- They are designed in the context of local transport plans; and
- They are focused on attracting drivers.

What a package could deliver

As outlined above, packages of these options will need to vary between different localities, be combined with behaviour-change policies and reflect the needs of different types of users. Wider reforms to the transport system will also need to support this package. However, what this shows is that meaningful levels of modal shift can be achieved with the right policy interventions.

For example, combining increased investment in bus services with a £2 fare cap and congestion charging in urban local authorities **could achieve three quarters of the modal shift needed to support the delivery the delivery of Net Zero in England**.

Figure 2: Impact of example package of policies on modal shift



Source: WPI Economics

It is also important to consider that this would be achieved without generalised increases in the cost of motoring, which would be concentrated on congested urban areas, and in a context of improved bus networks that would reduce the need to drive in these places. Additionally, this package does not include wider changes to our planning system that liberate urban and rural communities from car dependency (by ensuring, for instance, that housing and infrastructure is designed for active and public transport mobility as the default option, rather than private transport options as the norm). If implemented, these would contribute to closing the remaining gap and help deliver modal shift quickly and cheaply.

As a result, with no other changes to wider transport systems, the rise in the general cost of motoring needed to achieve the modal shift required to support Net Zero would be just 39% by 2050 – one quarter of the level it would have been under the current policy trajectory.

The example package would also be delivered with a net revenue gain to the Exchequer. Under the most ambitious congestion charging option, the **net revenue from the package would amount to around £15bn per year on average**. This could be invested in further modal shift polices, other environmental interventions or, in the context of declining tax bases in other places (e.g., Fuel Duty), provide a much needed boost to the Exchequer.

The benefits that this could bring

As highlighted in our previous report, this modal shift would also bring significant benefits. The example package modelled here would bring:

Large environmental benefits, including:

A reduction in emissions of 10 million tons of CO_2 equivalent to the total transport emissions in the **East Midlands in 2019**;

Air quality benefits worth almost **£19m** enough to pay the wages of almost **540** nurses for a year.

Socioeconomic benefits **worth almost £27bn** from changes in travel patterns resulting from this policy package – **equivalent to the total GDP of Leeds in 2019.**

Positive impacts on local labour markets (from expanding the bus network and increasing service frequency), which could result in almost **58,000 additional people in employment, contributing more than £3.6bn to England's GDP and £800m in tax receipts.**

Driving modal shift forward

This report confirms that modal shift is necessary and desirable and, most importantly, it shows how, by working together, we can make the required change a reality. The combination of our own research and modelling, and insights drawn from the roundtables and stakeholder engagement show that the policy design for modal shift will rely on five key considerations.

Modal shift cannot be piecemeal - ambitious strategy is necessary to achieve the scale of change required

Modal shift policy needs to be fully integrated with broader measures to reduce the use of private cars

Modal shift policy needs to be based on firm financial footing

Transport demand is segmented, and ambitions for modal shift should be highest in urban locations

Modal shift requires a holistic package of interventions that make bus and coach the most convenient transport options

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