

Pay as you drive: Is this the price of getting our roads moving?

An influential proposal to charge drivers according to the amount of time they spend behind the wheel and the number of traffic jams they endure will land on the desk of the Prime Minister this morning.

It is the most radical idea proposed for Britain's roads and will present Tony Blair with a political headache every bit as intense as that inflicted by the state of the railways.

The report is the work of the Commission for Integrated Transport, chaired by David Begg, a former Edinburgh councillor. It states something that many in politics and transport have known for years, but have been too frightened to admit: roads need "congestion charging" to stop people from using them as though they were an unlimited resource.

Making the proposals work would require the fitting of a "transceiver" system to every car, linked to a smartcard with a unique ID that could be tracked by satellites. These would record where a car was and send a bill to the owner according to the type of road and the time. For example, rush hour in London could cost 45 pence per mile; motorways an average of 3.5p per mile; rural roads at peak times 1p per mile, and at quiet times nothing. The intention is to make driving on congested roads too expensive to contemplate.

To compensate, fuel taxes would fall by between 2p and 10p per litre, while the £160 annual road tax could be reduced or scrapped. Lorries would be charged on the same principle. The commission says charging could reduce congestion by up to 44 per cent, without increasing the overall tax take, and cut the total amount of time we spend in traffic each year by more than 25,000 years.

Professor Begg is arguing for a "big bang" approach in 2010. And he has made sure that the report itself, which has been in preparation for two years, will not be buried. The leaking of it yesterday shows he is unwilling to see the scheme brushed under the carpet as so many other transport problems have been. "It's difficult for the Government, but it's good for Britain," he said. "It would mean significant reductions in congestion, and there will be less pollution because a lot of pollution is caused by queuing traffic.

"We have reached the point where congestion is seriously blighting the lives of an increasing number of people. We cannot build our way out of the problem." Most travel would not incur charges, he said.

It sounds easy, but it is not. For the Government, it is another reminder of the intractability of the transport question.

The proposals are sure to be unpopular with average voters such as the "Mondeo Man" whom Labour credits with its 1997 victory. The Tory shadow Transport Secretary, Theresa May, called the idea "an attempt at a sort of stealth tax, trying to price the motorist off the road". (There was no mention of the fact that the Tories funded pilot versions of similar schemes when in power in 1995).

There are few signs that the Government is in any hurry to implement the scheme. A spokesman for the Department for Transport, Local Government and the Regions said: "There is no prospect of introducing road-user charging for vehicles other than lorries in the present decade. As [the commission] itself acknowledges, it is an issue for the longer term beyond the Government's 10-year plan for transport."

But the Government urgently needs solutions to congestion. On coming to power in 1997, Labour's deputy leader, John Prescott, was eager to be judged on a pledge to reduce the number of road journeys by the time the next election came. He failed. In fact, the only thing that cut the number of road journeys, in the short term, was the 2000 fuel blockades. The pledge was dropped.

The first politician to struggle with road pricing will be Ken Livingstone, the Mayor of London, who plans to introduce a £5 daily charge for vehicles to enter a central zone in the capital. Although the plans were announced in his manifesto, they have been held up by technical issues and the political problem of introducing such unpopular charges.

Professor Begg, however, approaches the issue not as a politician but as a pragmatic economist. He knows the ideas will not be popular. "I will not be surprised or upset if ministers distance themselves from this because politically it could give them a headache," he said.

Professor Andrew Oswald, an economist at Warwick University, says charging is long overdue and would not hit the poor. "Sensible road tolls would be high during morning and evening peaks. Those earning good wages would travel then but pay for the privilege of a quick journey. What is wrong with that?" Moreover, he says, many of Britain's poorest people do not own a car.

Tony Bosworth, a transport campaigner for Friends of the Earth, said: "It's very interesting, although to some extent there's already a taxation system for charging for every mile travelled – it's called fuel tax."

The UK has avoided road pricing schemes for years. Yet Canada, Norway and Singapore have introduced electronic forms, while most tourists who drive in Europe are familiar with toll roads.

Professor Begg says: "At the moment we have a very blunt and unfair [fuel] taxation system with those who can sometimes least afford it – users of quieter roads at off-peak times – subsidising commuters competing for space in the rush hour." Perhaps, in the end, that sense of unfairness will trickle through. But it would be a brave person who bet on it.

How satellite tracking would work

In principle, charging for road use sounds like the inevitable destination of modern technologies. But beware: there may be long delays.

Nothing about the proposed system is in itself difficult. Most people have credit or debit cards with a built-in chip, and within a few years will use them to pay in shops by punching in a four-digit PIN instead of signing a slip of paper. So when every car has a smart card on its dashboard, it will not seem strange.

Similarly, we are used to the idea that the mobile phone network can "find" our phone wherever we are in the country, or even world. And it is accepted that satellites can be used to track movements; the network of global positioning satellites (GPS) can locate you to within a few metres anywhere on earth, if you have a receiver capable of receiving their signals.

Combine an in-car GPS receiver with a transmitter beaming its identity signal to a satellite, and all that remains to close the loop is for the system to note which road you were on and what the charge was. The details are forwarded to a computer which sends you a bill.

Cars without smartcards will be detected by positioning "auto-enquiry" points along or over the roadside. If no signal is detected from the car, its number plate will be recorded.

But there are still dozens of hidden technical difficulties. The first is logistical: how to deal with millions of movements and detect gaps in the system caused by fraud or errors such as people with old cars or tourists.

The Commission for Integrated Transport says the charges will be based on historical traffic patterns, and will aim to smooth the flows that lead to rush-hour snarl-ups, school-run delays and bottlenecks. But what happens if a driver who intended to avoid the rush hour by leaving early finds himself caught in congestion caused by a crash or roadworks? Even if the difference in cost is tiny perhaps a few pence it will cause resentment.

Then there are the privacy issues: Will we feel comfortable with the idea that the data about our whereabouts is being collected by the government?

In the end, the awesome logistics rather than privacy concerns will probably delay the widespread introduction of such systems, because while governments can and do ride roughshod over political objections, none has managed to repeal Murphy's Law: what can go wrong, will.