



HM Treasury

# Review of WLTP and vehicle taxes

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December 2018



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ISBN 978-1-912809-29-5

PU2227

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# Chapter 1

## Introduction

- 1.1 At Budget 2018, the government announced a review of the impact of the Worldwide harmonised Light vehicles Test Procedure (WLTP) on vehicle taxes which are linked to CO<sub>2</sub> emissions. This review is seeking evidence on the impact of WLTP on reported CO<sub>2</sub> emissions, and views on whether changes are therefore required to Vehicle Excise Duty (VED) and company car tax.
- 1.2 VED and company car tax are graduated based on CO<sub>2</sub> emissions, although they have different structures and banding. Tax rates were previously based upon reported CO<sub>2</sub> emissions achieved through the New European Driving Cycle (NEDC) which has been in place since 1992.
- 1.3 At Autumn Budget 2017, the government announced that cars registered from April 2020 will be taxed based on WLTP figures. WLTP is a newly introduced laboratory test for emissions and fuel efficiency, initially developed by the United Nations Economic Commission for Europe (UNECE). It aims to better align reported CO<sub>2</sub> emissions measured in the laboratory with those achieved during real world driving conditions. This will help reduce the current gap of around 40% that exists between NEDC results achieved in the laboratory and actual emissions.<sup>1</sup>
- 1.4 The government welcomes the introduction of WLTP. By providing consumers with more accurate information regarding the environmental impact of their new car, more informed decisions may be taken. This is important in helping the government to achieve its legally binding target to reduce national CO<sub>2</sub> emissions. In 2016, road transport accounted for over 90% of UK greenhouse gas emissions from transport in total.
- 1.5 Initial evidence provided by manufacturers suggests that over 50% of cars will see an increase from NEDC to WLTP of between 10% and 20%.<sup>2</sup> For motorists choosing a new car from April 2020, this could result in an increased tax liability, compared to an identical model

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<sup>1</sup> Available online (Figure 2b.5):

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/739460/road-to-zero.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf)

<sup>2</sup> HMT analysis, based on preliminary data provided by manufacturers

chosen before this date. Although WLTP impacts CO<sub>2</sub> figures provided on a car's type approval certificate, actual emissions are not impacted.

- 1.6 Through this review, the government is aiming to strike the balance between protecting consumers from increased transport costs and ensuring we meet our climate change and air quality commitments by providing clear incentives for zero and ultra low emission vehicles (ULEVs).

## Scope of the review

- 1.7 This review considers the impact of WLTP on VED and company car tax for cars first registered from April 2020 onwards. Cars registered before April 2020 will maintain their current tax treatment; for example, based on CO<sub>2</sub> emissions or engine size. Other policies linked to CO<sub>2</sub> emissions – such as capital allowances – are not being considered in this review.
- 1.8 WLTP testing has been required for new car registrations since September 2018, but until April 2020, VED and company car tax will continue to be paid based upon converted NEDC figures. This review does not consider the implications of using the EU's computer simulation tool, known as CO<sub>2</sub>MPAS (CO<sub>2</sub> model for passenger and commercial vehicles simulation), used to convert WLTP figures back to an equivalent NEDC figure as is happening during the transitional period between September 2018 and April 2020. The majority of the government's analysis has focussed on the differences between equivalent NEDC figures and WLTP.
- 1.9 If changes to the vehicle tax system are required, these would be introduced into Finance Bill 2019-20, with draft legislation being published for technical consultation ahead of that. This puts a premium on keeping any changes within the current framework. The government believes that the fundamental structure of VED and company car tax is appropriate, including the diesel supplement and timeframe for introduction of future company car tax rates.
- 1.10 While the government has announced that new vans will be liable to pay VED based on CO<sub>2</sub> emissions when first registered from April 2021, the WLTP impacts on vans will be considered separately. WLTP testing for heavier vans does not become mandatory for new registrations until September 2019.
- 1.11 The government welcomes evidence from the automotive sector on the impact of WLTP on their fleet, as part of this review. More broadly – and recognising these groups may only choose to comment on certain questions in the review – we also welcome comments from motoring organisations, environmental groups and any other individuals or organisations who would like to contribute.
- 1.12 Chapter two considers the impact of WLTP, and asks for further evidence from respondents. Chapter three sets out the trade-offs being considered and how any tax changes could be delivered.

Chapter four summarises the questions in the review and chapter five provides details on how to submit responses.



# Chapter 2

## Impact of WLTP

### Conventionally fuelled cars

- 2.1 WLTP aims to be more representative of real world driving conditions by introducing a longer driving cycle, more speeds and different temperatures, compared to NEDC. Studies have shown that, while the CO<sub>2</sub> emissions of new cars in the laboratory have reduced significantly in recent years, this level of reduction has not been observed on the road. Many factors contribute towards this gap, including traffic conditions, driving behaviour and road surface. WLTP aims to reduce this gap whilst maintaining the ability to make accurate comparisons between models, through controlled laboratory conditions.
- 2.2 WLTP CO<sub>2</sub> emission values are also 'model specific'. For example, the addition of air conditioning, or a sun roof, may change an individual car's reported CO<sub>2</sub> emissions. Therefore, a greater number of unique CO<sub>2</sub> values will exist within a single 'family' of cars, depending on their additional features.
- 2.3 Table 2.A sets out some of the differences between NEDC and WLTP.

Table 2.A: Differences between NEDC and WLTP

	NEDC	WLTP
Test cycle	Single test cycle	Dynamic cycle based on real driving
Cycle time	20min	30min
Cycle distances	11km	23.25km
Driving phases	Urban, non-urban	Urban, suburban, rural, motorway
Average speed	34 km/h	46.5 km/h
Maximum speed	120 km/h	131 km/h
Inclusion of optional equipment	Not considered	Additional features considered
Gear shift	Fixed gear shift points	Different gear shift points for each vehicle
Test temperatures	20-30°C	23°C (±5°C)

- 2.4 Due to these improvements, it is expected that reported CO<sub>2</sub> emissions will increase. Based on a preliminary sample of data provided by manufacturers, the government estimates that over 50% of cars will see an increase from NEDC to WLTP of between 10% and 20%<sup>1</sup>.
- 2.5 These findings are supported by external research. For example, the European Commission’s Joint Research Centre finds an average increase of around 22% when comparing WLTP to NEDC with a greater increase for smaller models and those fuelled by petrol, rather than diesel. However, other studies find different impacts ranging from 9% to 30%, dependent on the models compared.

**Table 2.B: Relationship between WLTP and NEDC: CO<sub>2</sub> emissions for cars**

Passenger cars	Engine size	Ratio WLTP/NEDC
Petrol	All	1.22
	< 1.4L	1.24
	1.4-2.0L	1.15
	> 2.0L	1.07
Diesel	All	1.20
	< 1.4L	1.26
	1.4-2.0L	1.21
	> 2.0L	1.14

Source: European Commission Joint Research Centre (2017). From NEDC to WLTP: effect on the type-approval CO<sub>2</sub> emissions of light-duty vehicles

- 2.6 Although the magnitude of the WLTP impact remains uncertain, at Budget 2018 the Office for Budget Responsibility assumed an increase in Exchequer revenue by adjusting the VED and company car tax forecasts from April 2020:
- VED receipts are forecast to increase by around £200 million a year on average from 2020-21 onwards
  - company car tax receipts – through income tax and National Insurance contributions – are forecast to increase by £100 million in 2020-21, rising to £400 million in 2023-24
- 2.7 As a proportion of total revenue, the impact of WLTP is greatest for company car tax as:
- The stock of company cars is much newer, compared to privately owned cars. Of the 1 million company cars on the road, around 25% are newly registered each year, compared to around 8% of all

<sup>1</sup> HMT analysis, based on preliminary data provided by manufacturers.

vehicles. Therefore, by 2023-24, over 90% of company cars are forecast to be WLTP tested with a resultant impact on reported CO<sub>2</sub> emissions and company car tax revenues.

- The average company car tax liability is – on average – higher than for VED and company car drivers are liable to pay tax based on CO<sub>2</sub> emissions in every year, rather than only when a new car is first registered. As the CO<sub>2</sub> bands in the company car tax system are spaced closely together, it is also more sensitive to changes in reported CO<sub>2</sub> emissions, although this is capped at a maximum appropriate percentage of 37%.

2.8 Some tax incentives will remain unaffected by WLTP. For example, in the VED system, ongoing discounts for zero emission and alternatively fuelled vehicles are unaffected as they are not linked to CO<sub>2</sub> emissions.

### Question 1

The government is interested in gathering further data on the impact of WLTP on reported CO<sub>2</sub> emissions for conventionally fuelled cars. What evidence can you provide on the differences between NEDC and WLTP figures for similar models of cars?

## Ultra low emission vehicles (ULEVs)

- 2.9 Understanding the impact of WLTP on CO<sub>2</sub> emissions and zero emission mileage for ULEVs is particularly important, due to the incentives offered through the tax system for these cars. The government is committed to ensuring these incentives continue.
- 2.10 For example, on company car tax, the government will introduce five new bands for plug-in hybrids which emit 1-50g of CO<sub>2</sub>/km from 2020-21 to distinguish between those models which can drive greater distances in zero emission mode. If WLTP impacts these figures, then the government will need to consider whether the current rates remain correct. In particular, the aim of distinguishing between cars with different ranges of zero emission mileage is to ensure that incentives are targeted towards those models which may be predominantly used in zero emission mode, rather than relying on their internal combustion engine.
- 2.11 Although the reported zero emission range for 100% zero emission cars may also change on introduction of WLTP, these figures will have no impact on the amount of VED or company car tax paid. For example, zero emission models will continue to pay no first year or standard rate VED and, from 2020-21, the company car tax appropriate percentage for zero emission models is 2%.

- 2.12 Only limited evidence is currently available regarding the impact of WLTP on reported CO<sub>2</sub> emissions and zero emission mileage for ULEVs. The European Commission's Joint Research Centre estimates that NEDC and WLTP values will be similar but subject to change as technology develops.

**Question 2**

What further evidence can you provide on the impact of WLTP on reported CO<sub>2</sub> emissions and zero emission mileage for ULEVs?

# Chapter 3

## Considerations for changes

- 3.1 After gathering evidence on the impact of WLTP on reported CO<sub>2</sub> emissions, the government must consider if changes are required and how these could be delivered within the existing framework of the current VED and company car tax systems.
- 3.2 The government is mindful of a number of factors which must be taken into consideration:
- a) **Climate change targets and air quality.** WLTP provides consumers with a clearer understanding of the impact of their purchasing decisions on real world levels of CO<sub>2</sub>. The Climate Change Act sets legally binding targets to reduce CO<sub>2</sub> emissions in the UK by at least 80% by 2050, compared to 1990 levels. If no tax changes are made on introduction of WLTP, this could have a positive impact in helping to achieve our climate change and air quality targets, in comparison to making changes to VED and company car tax.
  - b) **Incentives for zero emission cars and ULEVs.** As detailed in the Road to zero strategy, by 2040, the government expects the majority of new cars and vans sold to be 100% zero emission and for all new cars and vans to have significant zero emission capability. On introduction of WLTP, without any changes to the tax system, the incentives to choose zero emission models or ULEVs would increase, relative to conventionally fuelled alternatives. However, we recognise that cost is just one of several factors that consumers and businesses consider when making a purchasing decision. Price signals are unlikely to wholly translate to uptake of zero emission models or ULEVs, albeit they could encourage motorists to switch to conventionally fuelled options with lower CO<sub>2</sub> emissions.
  - c) **Future proofing.** EU regulations for the CO<sub>2</sub> emissions of new cars and vans were introduced in 2009 and 2011 respectively. These targets have driven industry investment in reducing fleet wide emissions. New CO<sub>2</sub> targets will be set, based on a WLTP baseline determined in 2020, for future reductions. The government is aware that uncertainty exists around whether improvements observed over time for NEDC figures will be repeated, or exceeded, for WLTP. Any change to VED and company car tax must balance the need for revenues to remain

sustainable over the longer term whilst maintaining the environmental incentives.

- d) **Economic impacts.** Due to supply-side issues resulting from the introduction of WLTP testing from September 2018, UK registrations were down 20.5% in September 2018, compared to September 2017. While this partly recovered in October, continued disruption is expected. The SMMT cited testing backlogs affecting consumer, fleet and business deliveries as the primary cause<sup>1</sup>. Moving the tax system to WLTP could create further distortions in the short term if consumers bring forward purchasing decisions, ahead of April 2020, or potentially over a sustained period if consumers choose to hold onto older cars which maintain their current tax treatment for longer. These older vehicles are likely to also have higher real world CO<sub>2</sub> emissions. The government must consider if these impacts will be significant and if tax changes have a role in managing them.
- e) **'Model specific' impacts.** As models are individually tested under WLTP, those with a significant number of optional extras when first registered could reasonably expect to attract a higher rate of tax in most scenarios. No combination of adjustments to VED and company car tax could result in every model variation returning to its original tax position.

### Chart 3.A: Vehicle taxes and WLTP: international comparisons

- **Denmark** – in September 2018, the Danish Parliament adopted a Bill changing the circulation tax and the registration tax for passenger cars and light commercial vehicles by introducing a 21% adjustment to the vehicle's data for fuel economy.
- **Finland** – car registration tax and annual vehicle tax are based on CO<sub>2</sub> emissions. Based on the European Commission's analysis, Finland has adjusted tax rates so that average tax liability does not increase for new cars.
- **Germany** – due to varying estimates about the impact of WLTP, no WLTP changes have currently been proposed.
- **Portugal** – vehicle tax (ISV) is calculated based on the CO<sub>2</sub> emissions and engine capacity of the vehicle. Portugal will use e-NEDC figures to calculate ISV during a transitional period.

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<sup>1</sup> <https://www.smmt.co.uk/2018/10/uk-new-car-market-falls-in-exceptional-september-as-supply-issues-bite/>

### Question 3

How should the government balance the factors (a-e) outlined when considering whether to introduce changes to VED and company car tax on introduction of WLTP?

## Scope of vehicle tax changes

3.3 If the evidence suggests that the government should make changes to the vehicle tax system, several options exist for delivering these. However, the government is minded to introduce a simple adjustment, such as a change in rates, for the following reasons:

- the government believes the fundamental structure of VED and company car tax is correct. Both systems have provided a strong environmental signal to consumers and businesses, balancing the need raise revenue and support the uptake of cars with low CO<sub>2</sub> emissions
- any changes must be introduced into the Finance Bill 2019-20, providing only limited time for drafting of legislation and technical consultation, in line with the tax policy making framework

### Question 4

Do you agree that, if the government makes changes to the vehicle tax system, the adjustment should be simple? If not, why?

# Chapter 4

## Review questions

### Question 1

The government is interested in gathering further data on the impact of WLTP on reported CO<sub>2</sub> emissions for conventionally fuelled cars. What evidence can you provide on the differences between NEDC and WLTP reported figures for similar models of cars?

### Question 2

What further evidence can you provide on the impact of WLTP on reported CO<sub>2</sub> emissions and zero emission mileage for ULEVs?

### Question 3

How should the government balance the factors (a-e) outlined when considering whether to introduce changes to VED and company car tax on introduction of WLTP?

### Question 4

Do you agree that, if the government makes changes to the vehicle tax system, the adjustment should be simple? If not, why?



# Chapter 5

## How to submit responses

- 5.1 Please send responses by Sunday 17 February 2019 to:  
RHMTETTAnswers@hmtreasury.gov.uk
- 5.2 The government cannot guarantee that responses received after this date will be considered.
- 5.3 Alternatively, responses may be sent to the following address:  
WLTP review  
Energy and transport tax  
HM Treasury  
1 Horse Guards Road  
London  
SW1A 2HQ

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