

The rationale behind the Euro 4 standard

ULEZ E4/6 standard

- Despite real-world differences the only way to enforce a scheme is on the official euro standards
- Despite real-world differences the only way someone knows what the NOx emissions of a vehicle are is based on the official euro standards
- Therefore a Euro 4 petrol / Euro 6 diesel standard is the fairest way forward irrespective of real-world emissions UNLESS the mayor wants to become firmly anti-diesel and say there is no place for diesel cars in London. I would advise quite strongly against this position for a number of reasons not least the large number of non-London vehicles that enter the Capital.
- Furthermore, using Euro standards as the 'breakpoint' for compliance avoids any appearance of a non-arbitrary selection criteria.

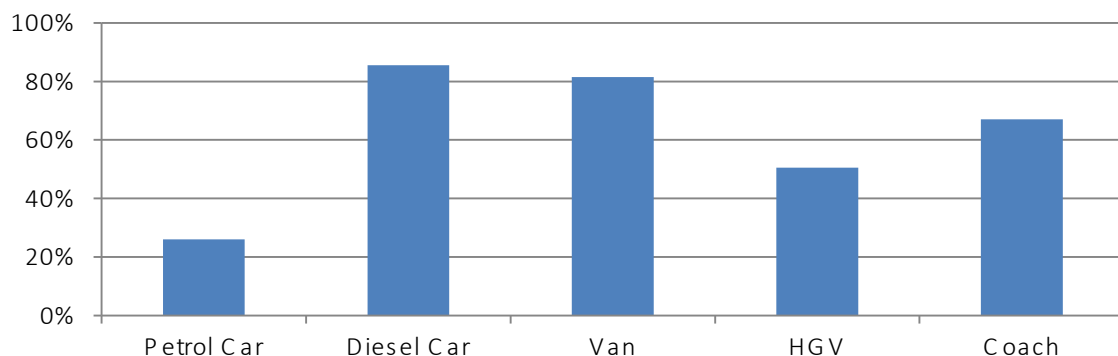
Mayor's manifesto

- Bring ULEZ forward

Vehicle availability

- Euro 6/VI vehicles have only been in production a few years and therefore in 2017 the levels of non-compliance for diesel vehicles would be very high (more than 80 per cent for diesel cars and vans)
- Euro 4 vehicles however were in production between 2005 and 2011 (in the case of passenger cars) and therefore in 2017 only 25 % of the petrol vehicles are expected not to meet this standard

Percentage of vehicles non-compliant with ULEZ standards
in 2017



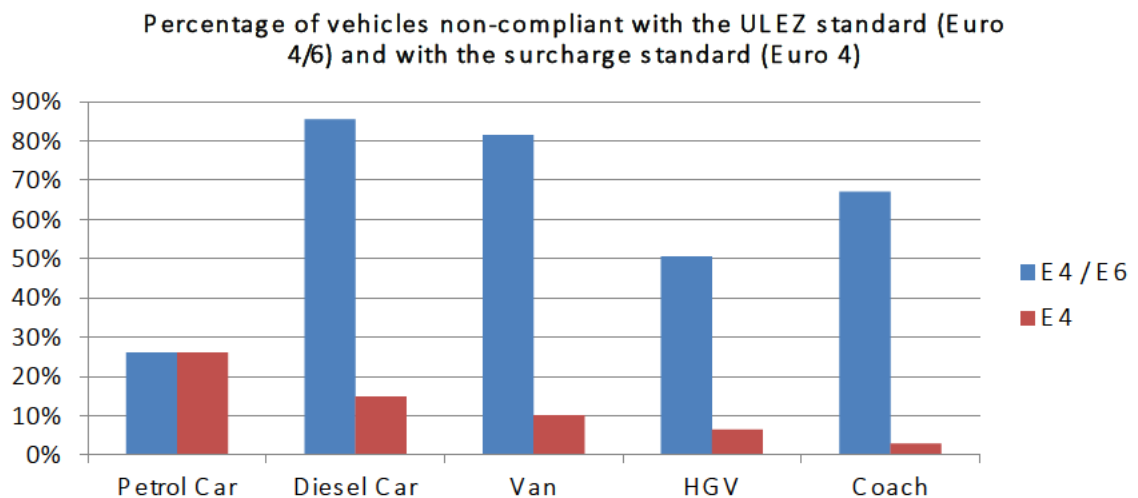
Communication

- Euro 4/6 is already being communicated as the standard for the Ultra Low Emission Zone and the Clean Air Zones
- This is already a complicated message for the public to understand

- Introducing a different standard adds to this confusion especially if the standard is seen as being unrelated to ULEZ

Surcharge standard

- Given that a Euro 4 standard for petrol is acceptable from a vehicle availability perspective in 2017 the only question is what to do about Diesel
- The Euro 6 standard could be maintained if the charge level is low (i.e. people are being asked to pay for their pollution rather than the charge being used to encourage people to upgrade their vehicles)
- However if the aim is to remove vehicles from the fleet through levying a higher charge, then the emissions standard needs to be lowered (note this 'higher' charge is only effective on light vehicles, it is still too low to influence the vehicle choice for heavy vehicle operators)
- It makes sense, and keeps the messages simple, by simply dropping the diesel requirement down to Euro 4 to align with petrol, the justification being the limited period of availability of Euro 6 vehicles at this juncture.
- Once more Euro 6 vehicles become available then this standard can be introduced for diesel (as it will be in ULEZ in 2020).
- This ensures that there is 'reasonableness' applied to the surcharge design in targeting the oldest vehicles first and in having regard for the time it takes for Euro 6 vehicles to penetrate the fleet. –



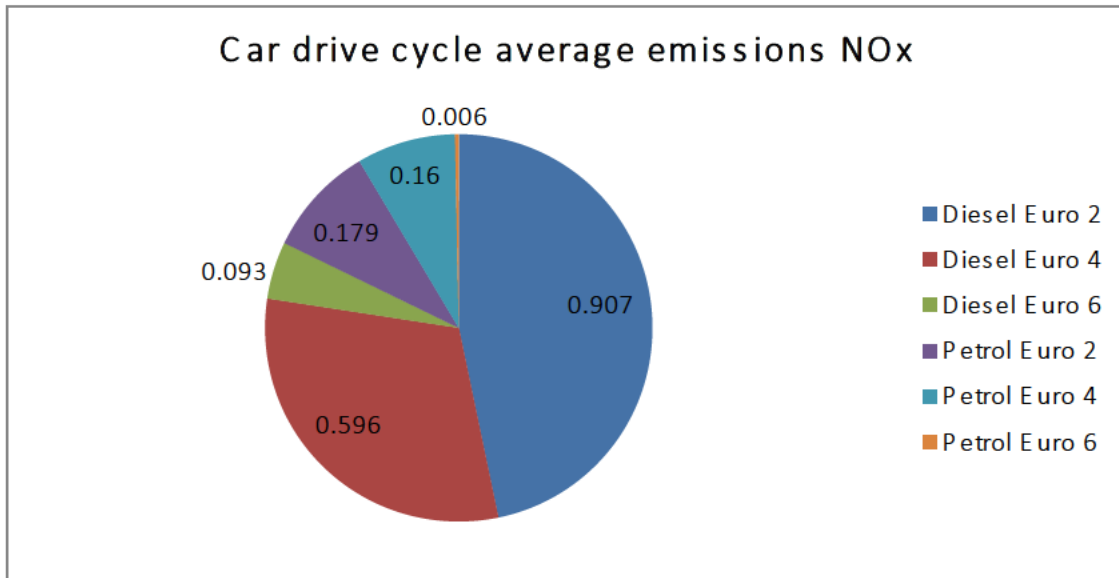
Emissions comparison

- Whilst there is a strong justification for setting the ULEZ standard at Euro 4/6 on the basis of NOx emissions, there is still a compelling case for an introductory phase using Euro 4 as the prevailing standard until natural fleet replacement churn has increased the numbers of Euro 6 vehicles in the fleet.
- This introductory phase will send a message to vehicle owners about the path of the regulatory framework.
- It will also achieve an emissions benefit from light duty vehicles within the chargeable area, with some spin-off benefits beyond.

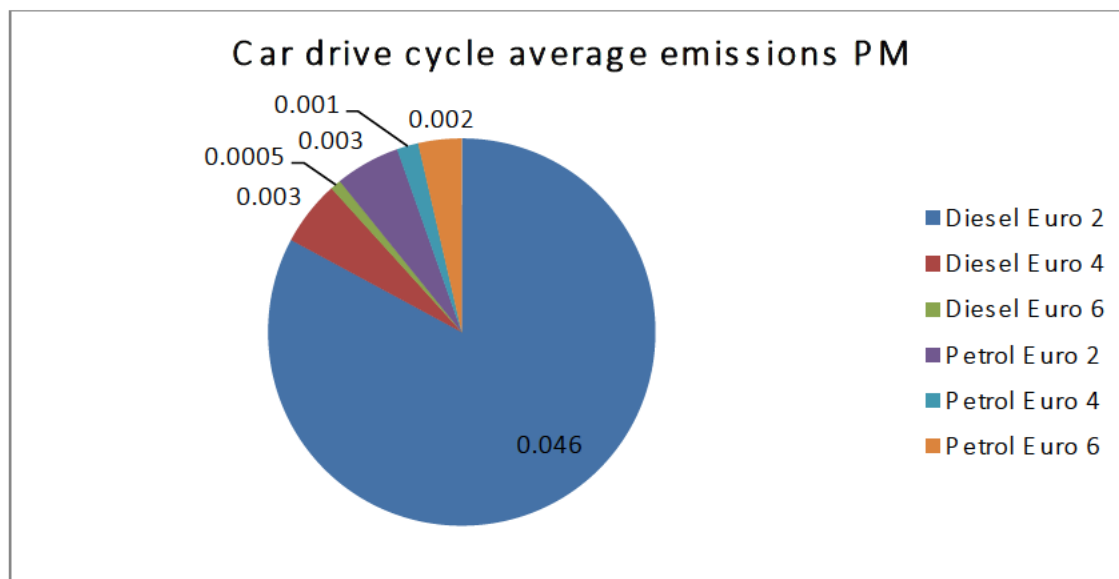
- The proposed level of charge is unlikely to influence heavy vehicle owners, but in any case, LEZ phase 4 means that heavy vehicles will already be Euro IV compliant across Greater London.

The chart below shows the relative emissions of NO_x emitted by six passenger cars tested by TfL at the Millbrook emissions laboratory, using the bespoke London drive cycles, which reflect real-world driving conditions in London.

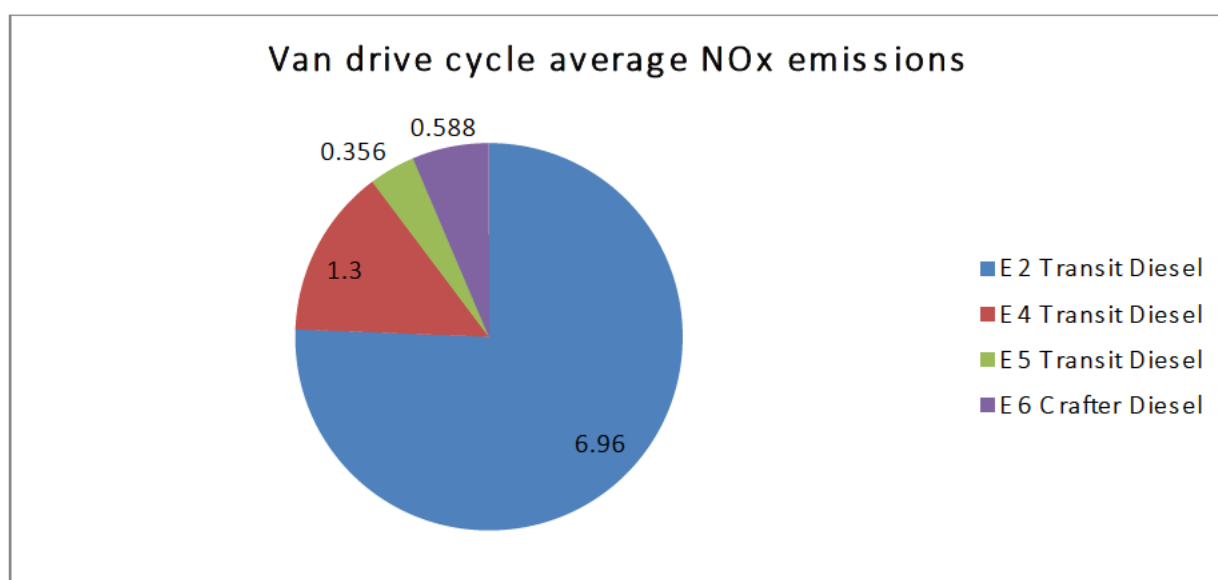
Whilst NO_x emissions are greatest from the Euro 2 diesel family saloon car, it is important to note that the Euro 2 petrol saloon has NO_x emissions almost double those of the Euro 6 diesel car.

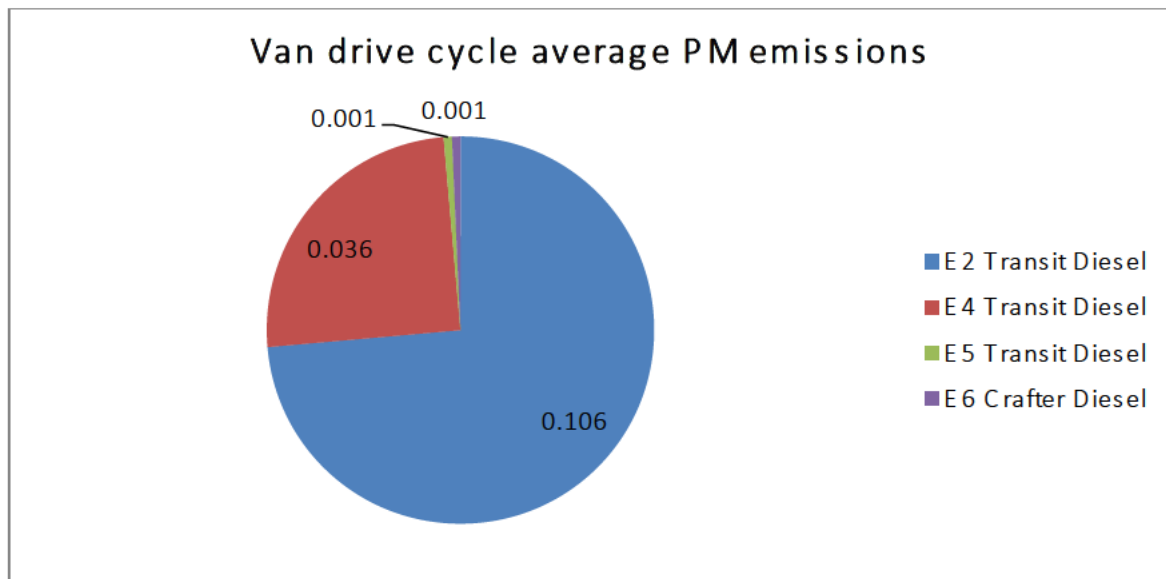


Meanwhile, examining the particulate emissions of the same group of vehicles demonstrates that The Euro 2 petrol and diesel vehicles have higher emissions than Euro 4 and Euro 6 vehicles. Diesel particulate filters became more or less standard equipment at Euro 5 for light duty diesels, with some Euro 4 vehicles being thus equipped. This means that particulate emissions from these vehicles are routinely similar, if not better than many petrol vehicles. See chart below.



Considering van emissions, which are also subject to whole-vehicle type approval emissions testing along with cars, then the emissions case is even more clearly defined. The two charts below illustrate the measured emissions on four light goods vehicles tested by TfL and the Euro 2 vehicle has emissions of both NO_x and PM which are substantially greater than those of the later Euro standards. As with passenger cars, the introduction of diesel particulate filters (dfr) is very obvious on the Euro 5 and Euro 6 vehicles, providing a massive reduction in emissions of particulates, for which the health benefits are well established. Please note that in this case the Euro 2 van was an older, high mileage example at the time of testing, whereas the Euro 4, 5 & 6 vehicles were quite new. This may reveal, in part, some degradation of the Euro 2 vehicle through high mileage in addition to the design emissions performance.





Euro 6C

The good performance of Euro VI for heavy duty engines, and the relative poor performance of Euro 6 for light duty has been well publicised. This is a separate issue from the so called 'dieselgate' where manufacturers have used defeat devices for the laboratory tests. The poor performance will be addressed by a new and more representative drive cycle from 2017 and from on-highway verification of emissions from 2019 (RDE). This means that it may be desirable to not encourage early replacement of diesel cars with new examples of Euro 6A standard and that greater emissions savings will be achieved by waiting for Euro 6C.

Since those car buyers most likely to buy a new, rather than used, diesel car are those already driving a recent example, it would be better not to apply a surcharge to these vehicles and to wait for ULEZ in 2020, which is already within the vehicle buyer's consciousness.

Retail motor industry

Applying the Emissions Surcharge to only relatively old vehicles (Euro 4 for both petrol and diesel), will put vehicle dealerships on notice that they must adjust their procurement and disposal channels to allow for the requirements of ULEZ. They will need to adjust their used car stocking policies. A Euro 4 petrol & diesel surcharge will allow them to do this without substantially cutting the value of their used car inventories, which will damage businesses and create ill will from a sector which may be needed to support a future scrappage scheme.

