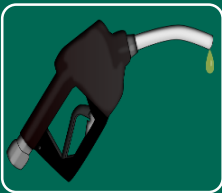


# PESTLE FACTORS ON UK TRUCK DESIGN

John Comer – Product Marketing Manager



# Department of Transport – Carbon Review 2030



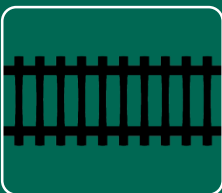
## Alternative Fuels

- Natural Gas
- Biofuels



## Efficiency Savings

- Eco driving
- Fleet design – aerodynamic
- Intelligent technology – platooning



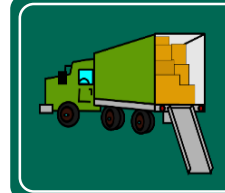
## Modal Shift

- Rail – capacity and cost
- Water – coastal and inland



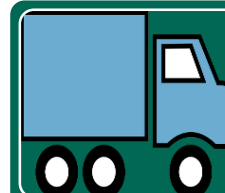
## Electric Power Vehicles

- Wireless power transfer in Roads
- Electric powered large HGVs
- Hydrogen Cell
- Drones



## Logistics

- Distribution centres
- Coordination
- Congestion
- Public procurement



## Final Mile

- Battery Electric Vehicles
- Failed Delivery reduction

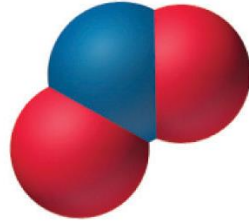
Publication December 2016

# Air Quality, Carbon Reduction & Noise

PM



NO



NO<sub>2</sub>



CH<sub>4</sub>

GHG



DPF



CAZ

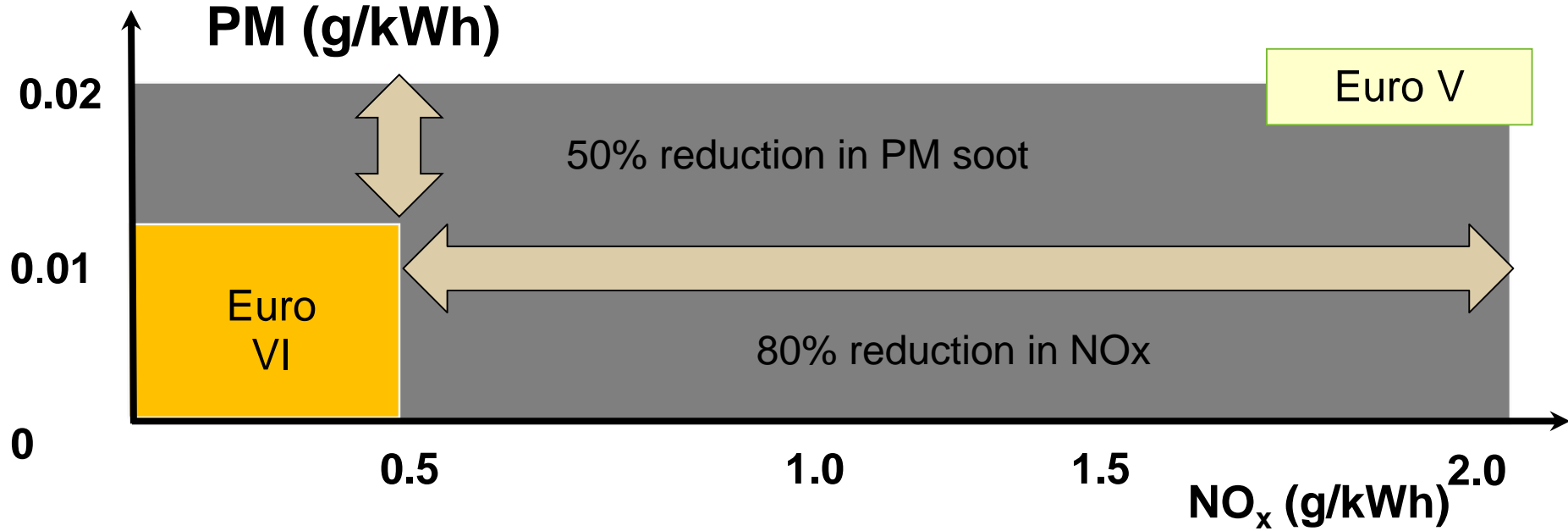
LEZ

ULEZ

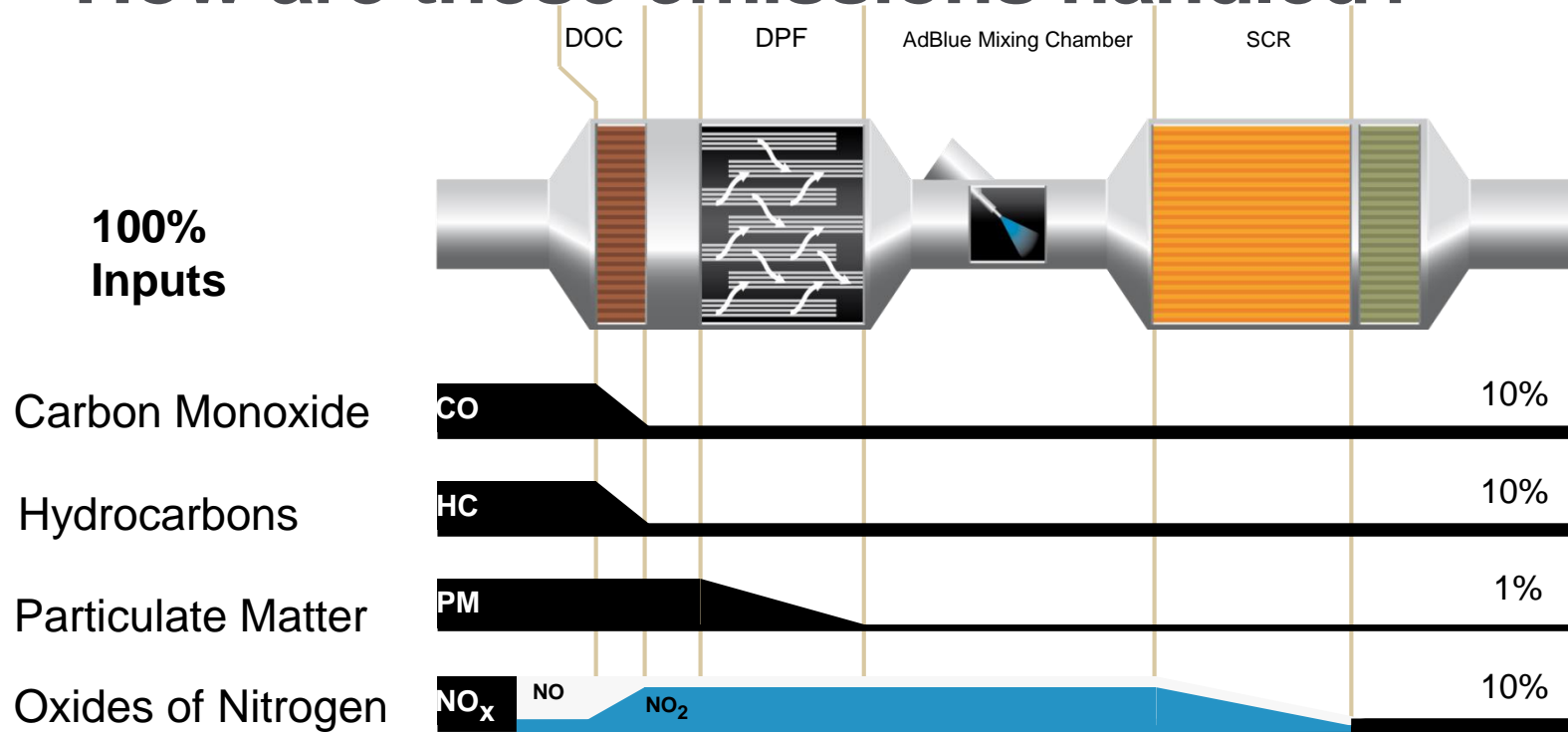
DEFRA



# Is Euro VI Right for ULEZ Air Quality?



# How are these emissions handled?



# Future - London's LEZ ULEZ Proposal

## History

Particulates Matter  
Control of PM

2008 - Euro 3  
PM levels

2012 - Euro 4/5  
PM levels

24hours a day.  
Every day including  
weekends, public and  
bank holidays.



## Original Central ULEZ proposal

Central London ULEZ in 2019 (all vehicles)

   £12.50 per day

   £100 per day

## Existing Truck LEZ now ULEZ

London-wide ULEZ, as early as 2019, but  
possibly later (heavy vehicles)

   Up to £100 per day

## New Inner London ULEZ

Inner London ULEZ, as early as 2019, but possibly  
later (all vehicles)

   Up to £100 per day

   Up to £12.50 per day

**£3000 p.a**

ULEZ standards: Petrol – Euro 4; Diesel – Euro 6/VI; Motorcycle and L-Cat – Euro



# Is there an upgrade for Euro V vehicles? **NO**

## 2019 No retrofit for Euro V to reduce Nox

- Big effect on used truck and coach
- And customers currently using Euro V

## A special test cycle to prove emissions by TFL for buses



TfL have a standard which uses the Millbrook chassis dyno to measure the emissions on a London bus cycle which are roughly in line with Euro VI



# So we can sell older trucks elsewhere?

# DEFRA



# CAZs

## Overview

This consultation seeks views on the implementation of Clean Air Zones in England. A cleaner, healthier environment benefits people and the economy. Our ambition is for the UK to have some of the very best air quality in the world and Clean Air Zones are designed to help us deliver this.

In the national air quality plan for nitrogen dioxide, published in December 2015, Government committed to consulting on the draft framework for Clean Air Zones in 2016. The plan also set out that the Government would require the implementation of Clean Air Zones in five cities (Birmingham, Derby, Leeds, Nottingham, Southampton).

**Closes 9 Dec 2016**

**Opened 13 Oct 2016**

## Contact

03459 335577

[air.quality@defra.gsi.gov.uk](mailto:air.quality@defra.gsi.gov.uk)





# DEFRA Clean Air Zones CAZs

## The effective zone?

- Will this be only specific parts (ward) of each city council area or the whole?  
NB [Southampton City Council](#) aim to introduce penalty charges in 2020 and the proposed CAZ will include the city centre and the main arterial routes within the administrative boundary.
- For HGVs does this mean the whole of Southampton City Council boundary?

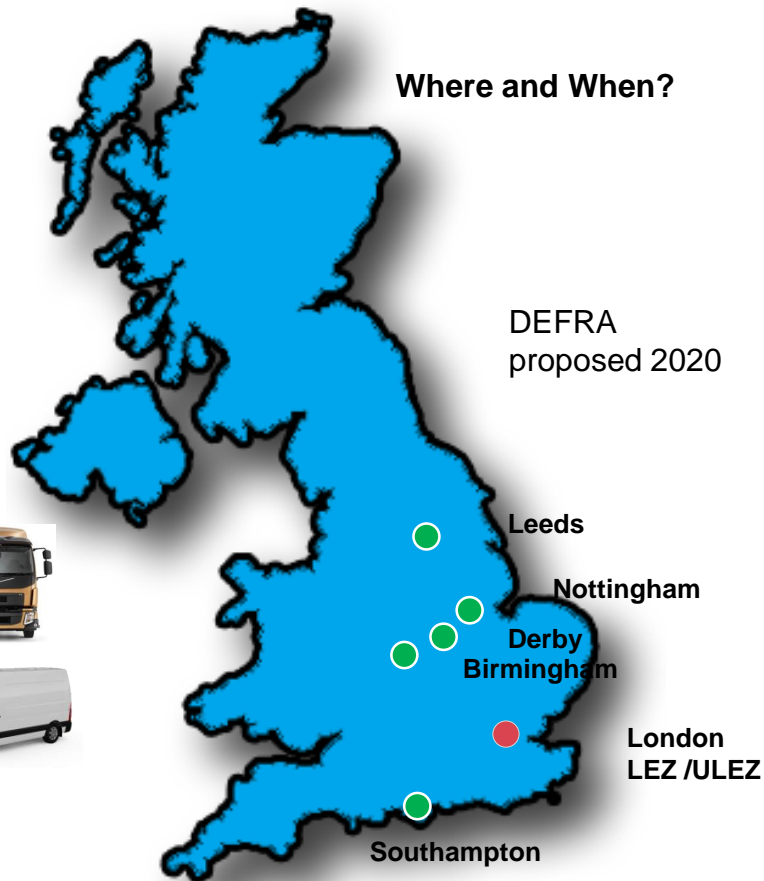
## What vehicles can enter?

HGV Euro VI emission standard for free entry into the DEFRA CAZs.

Leeds and Birmingham would also need to include light CVs (vans) Euro 6 or Euro 4 petrol.

## What is the Cost of entry – if not compliant?

London ULEZ	= £100/day
DEFRA CAZs	= probably as London ?



# Client Earth – Judicial review



ClientEarth air quality lawyer Alan Andrews added:

- “We need a national network of clean air zones to be in place by **2018** in cities across the UK, **not just in a handful of cities.**”
- The government also needs to stop these inaccurate modelling forecasts. Future projections of compliance need to be based on what is really coming out of the exhausts of diesel cars when driving on the road, not just the results of discredited laboratory tests.”

## CAN WE TRUST THE AUTOMOTIVE INDUSTRY

Theresa May indicated that the government would respond positively, with new proposals: “We now recognise that Defra has to look at the judgement made by the courts and we now have to look again at the proposals we will bring forward. Nobody in this house doubts the importance of the issue of air quality. We have taken action, there is more to do and we will do it.”



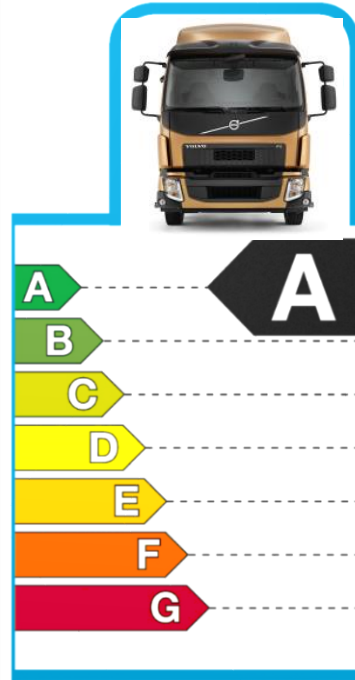
# Future – VECTO 2018



Vehicle Energy Consumption Calculation Tool

certified, reported and monitored

Vehicle Energy consumption Calculation *Tool* – VECTO



Select type of vehicle to start:



SMALL VAN



LARGE VAN



RIGID TRUCK



TRACTOR UNIT

URBAN



REGIONAL



TRUNKING



MIXED



Select the typical vehicle utilisation:

Urban Delivery



Do you have a preferred number of axles?

2 axles

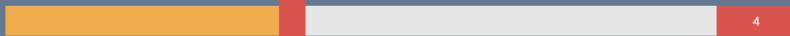


Select your average daily mileage:



225

Select how long the vehicle will be in the fleet (in years):



4

# The Drive for Voluntary Change

Pushing alternative fuels - London LoCity

GET RESULTS

## Your Results

The results shown are new vehicles only. If you are interested in retrofit options please contact [enquires@locity.org.uk](mailto:enquires@locity.org.uk)

The Low Emission Van Guide available on the LowCVP website provides additional information about low emission vans.

CNG ⓘ

Iveco Eurocargo

[Visit Manufacturer](#)

Volvo FE CNG

[Visit Manufacturer](#)

LNG ⓘ

Scania P280DB

[Visit Manufacturer](#)

Hybrid ⓘ

Fuso Canter (Mild Hybrid)

[Visit Manufacturer](#)

Iveco Eurocargo (Mild Hybrid)

[Visit Manufacturer](#)



# TFL PROPOSED VISION STANDARDS

First Consultation  
released - closing date  
18<sup>th</sup> April 2017



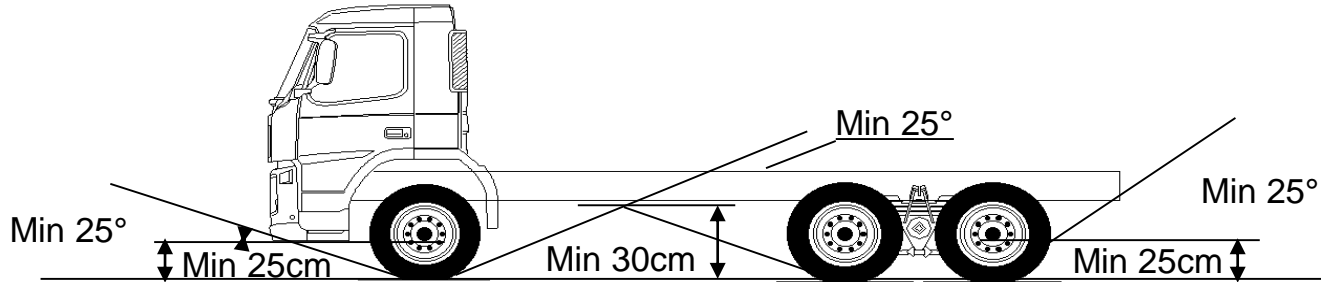
[Link to consultation](#)



# Too Much Focus on Construction?

- To meet off road definition the following requirements have to be fulfilled :
  - At least **half** the axles are driven
  - At least **one** differential lock
  - Climb a **25%** gradient calculated for a solo vehicle
  - Dimensionally **4 out of the following 6** requirements above must be met after the vehicle is completed

For most the truck has straight front axles and **NO FUP**



N3G



N3

# A New Vision Standard?

Star rating	Vehicle type assessed	Actual score
0 Stars	Standard N <sub>3</sub> G vehicles	0.39
1 star	N <sub>3</sub> G vehicle + single vision enhancement	0.41-0.42
2 stars	N <sub>3</sub> rigid vehicle baseline	0.46
	N <sub>3</sub> + single vision enhancement	0.49
3 stars	N <sub>3</sub> rigid vehicle + multiple vision enhancements <sup>6</sup>	0.52
	N <sub>3</sub> articulated vehicle	0.53
4 stars	None of vehicles assessed	N/A
5 stars	N <sub>3</sub> Low entry cab	0.65

Does this allow the right truck for the job?

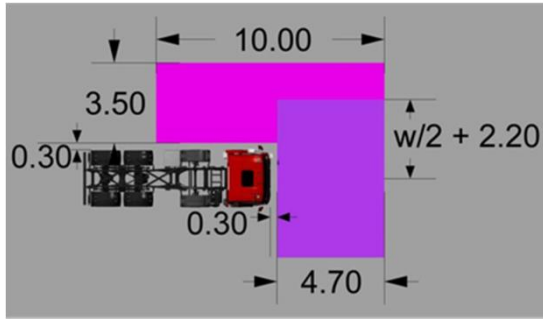
**Stop Press - In the consultation the 5 star rating still holds**

## Implementation dates

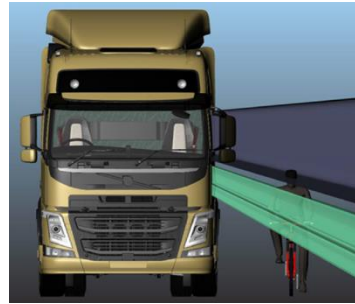
- 2020 Zero Star outlawed
- 2024 Only 3,4 and 5 star



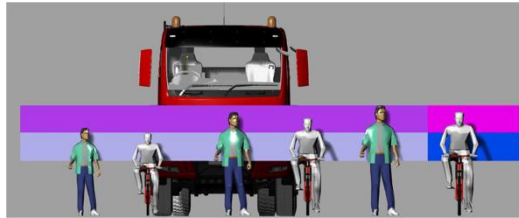
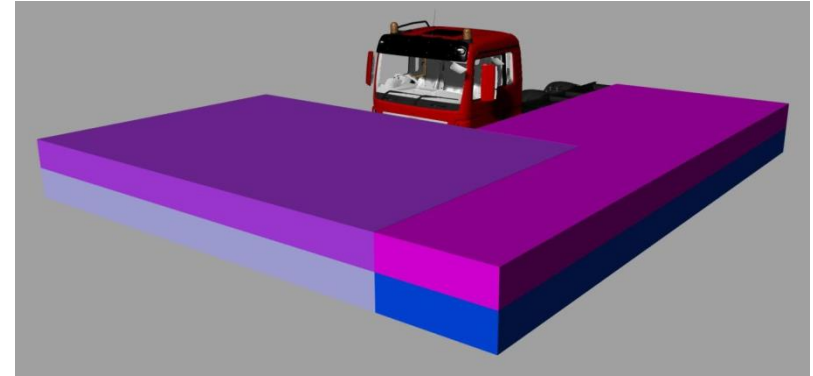
# The proposed standard – How do we get to the figures



Plan - The area that drivers need to see



**A very high weighting on nearside lower vision**



Vertical – What do drivers need to see

Weightings applied to the vision from various parts of the vehicle.

Front Upper	Front Lower	Nearside Upper	Nearside Lower
11%	33%	14%	42%

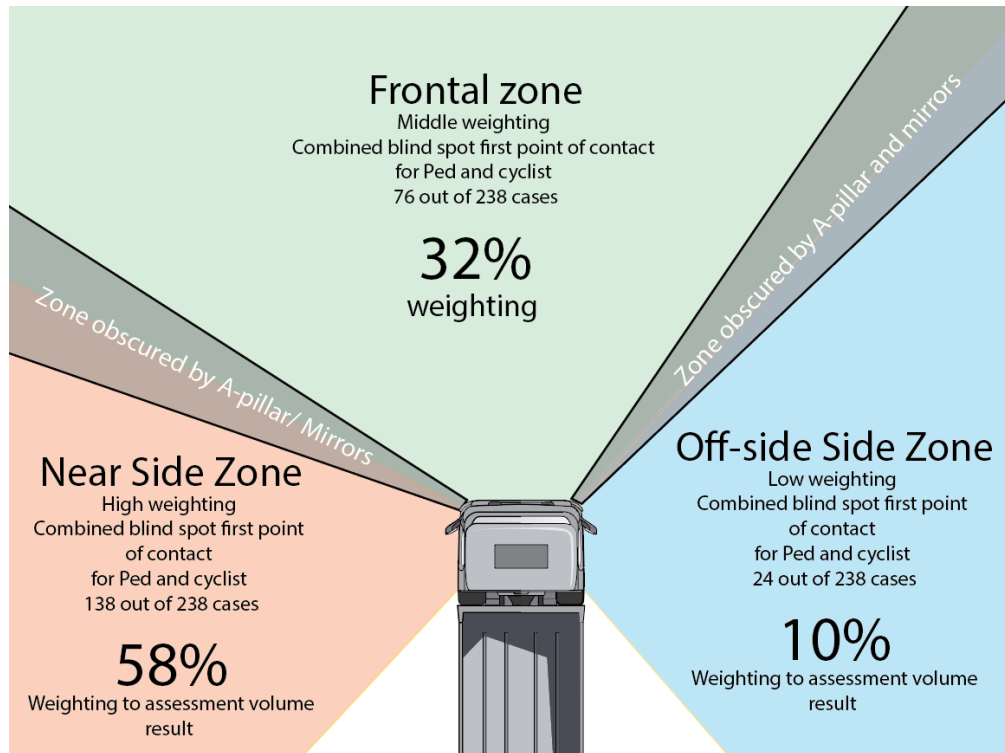
Star rating	Rating boundaries
0 Stars	$\geq 0$ and $\leq 0.40$
1 Star	$> 0.40$ and $\leq 0.45$
2 Stars	$> 0.45$ and $\leq 0.50$
3 Stars	$> 0.50$ and $\leq 0.55$
4 Stars	$> 0.55$ and $\leq 0.60$
5 Stars	$> 0.60$ and $\leq 1.00$

**Stop Press – Weightings on ratings reassessed**



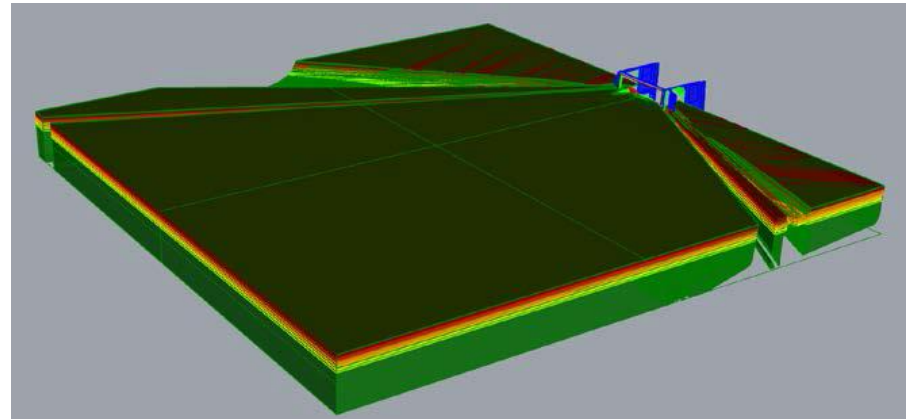
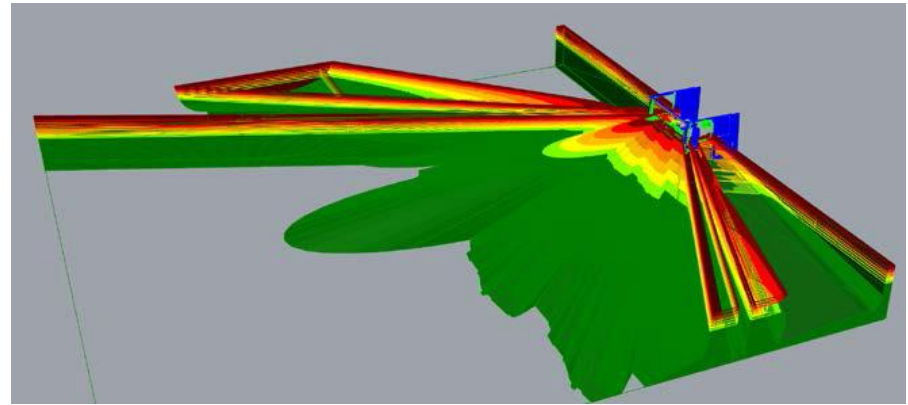
# Revision in Consultation

- The driver – off side included
- The nearside rearward vision shortened as most drivers will not pull away looking behind at nearside
- More weighting on forward vision



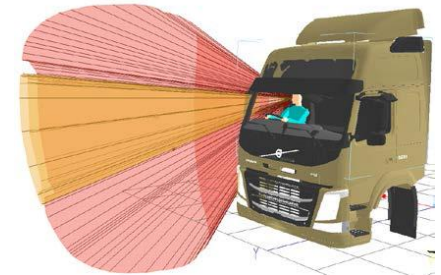
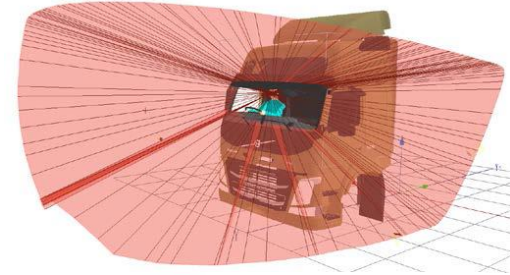
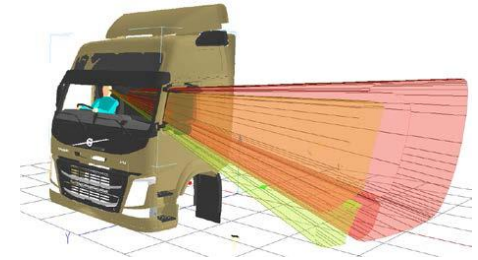
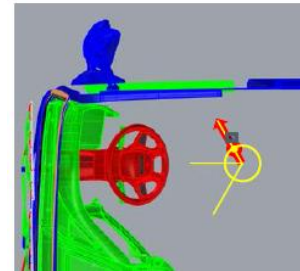
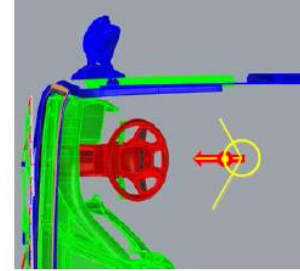
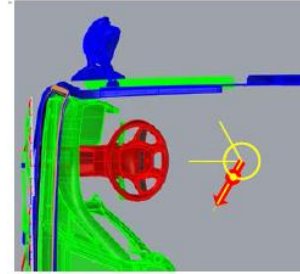
# Revision in Consultation

- New features of the DVS standard and its definition process that have been specified by the LDS team. The height at which a cab is mounted in a vehicle above the ground is a key variable associated with the performance of a design in the DVS rating system
- A cab can vary in height due a number of specified features such as tyre type, suspension type and axel configuration
- The initial proposal for the DVS standard definition process was defined as testing existing vehicles with cabs mounted at their most sold heights
- This has now been expanded to include the maximum mounting height, minimum mounting height, the most sold height, and increments between the maximum and minimum mounting heights
- This allows a look up table to be produced for each cab design
- By taking measurements from an existing cab (the height of cab floor behind the accelerator pedal) the rating of an existing vehicle can be determined using the look up table



# Monocular Vision

- The proposal at this stage is to define the eye point using method defined in UNECE Reg46 635mm above the R point (SgRP)
- And using the method defined in UNECE Reg125 to define a neck point and head rotation.60 degrees to the left and right of central vision about the defined neck point
- With **monocular vision** any glazed area rearwards of the A-pillar (nearside and offside) will be projected using an eye position and with the eye looking in the corresponding direction, and the forward view through the windscreen will be projected with the eye facing forwards
- See figure. e.g. The drivers side window is projected using the eyes shown in bottom two images.
- In this way the complexity of projecting multiple eye points as per the ambinocularmethod is reduced as the projections for both eyes do not need to be combined
- The results for monocular method will be compared to results using the ambinocularmethod by using a sample of the 23 vehicles that will be tested
- If the order of the vehicles that is produced using the scoring system is unchanged between the monocular and binocular testing, the monocular method will be adopted



# Where do our products sit ?



N3



N3G



N3

What Percentage  
of our 8x4 Trucks  
are N3G?

**90%**

Do our customers realise that they have N3G trucks?

Not just construction trucks

- The standard applies to all trucks

Stop Press –  
The Consultation  
documents now  
acknowledge that large  
N3 trucks are within  
scope



# Lower Entry



Volvo Trucks. Driving Progress



# Truck design

- Durability
- Reliability
- Safety
- Type Approval
- Load capability – weight distribution
- Performance - Engine size - cooling
- Fuel consumption
- Manoeuvrability
- Driver comfort
- Living and storage space
- Different types and different models



# Timeline on Direct Vision Standard

- **Consultation document out now**
- **Spring 2017:**  
Carry out this first phase of consultation. TfL will also work with manufacturers to rate vehicles against the Direct Vision Standard.
- **Spring/summer 2017:**  
Analysis and publish the responses to this phase of the consultation.  
**New Euro-6, ULEZ compliant HGV models will have been rated to the Direct Vision Standard to inform operators buying new vehicles.**
- **Autumn 2017:**  
Complete the impact assessment of the use of Direct Vision Standard on London and finalise proposals for any ban or other restrictions on zero or low rated Direct Vision Standard trucks.
- **Spring 2018:**  
Launch the statutory consultation on the appropriate regulatory measure to enable any ban or other restriction, subject to government and European Commission support.
- **Pre-2020:**  
A lead-in period to allow necessary adjustments and preparation for compliance.
- **Early 2020:**  
Enforcement of the regulatory measure for the Direct Vision Standard scheme to go live.



# Next Steps – Volvo Demonstrator

FM City 8x4 Full Air Suspension – Launch CLOCS conference – 14<sup>th</sup> March 2017



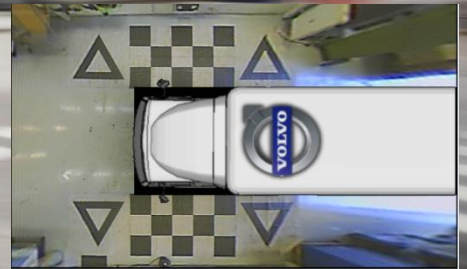


# Beyond human eyes

We want a standard that not only considers direct vision

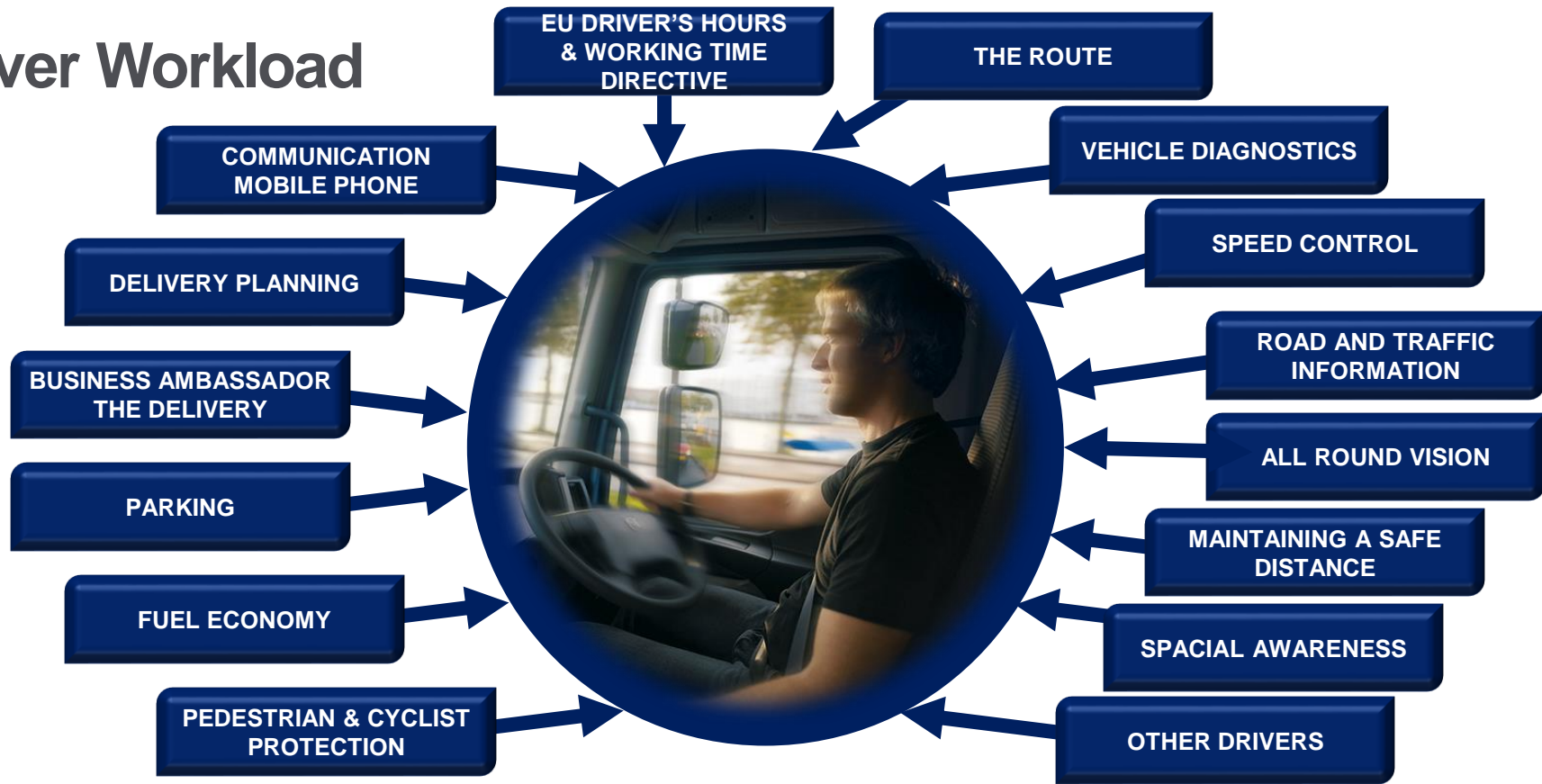


Improved Direct Vision



Camera Systems

# Driver Workload



# Increasing awareness in society



STOP



LOOK



WAVE



- 90% of accidents are due to human error

The Laws of physics –

- High cab or low cab a 32tonne truck is still a 32tonne truck
- Education is vital

# Timeline and Implications

ESOS = Energy Saving Opportunity Scheme

VECTO = Vehicle Energy consumption Calculation Tool

Euro VI mandatory for trucks & Buses

Euro 6 for vans

**N3G or N3 Euro VI zero rated 6 year max**

Also consider derogated stock

ESOS

Type approval surveillance

VECTO

2020 – Vision Standard - Trucks that meet the 0 star rating will no longer be allowed to operate in London.

2024 – Vision Standard - Only trucks that meet 3, 4 or 5 star rating will be allowed to operate in London

2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028

Euro 5 van – 3 – 4 year life

Euro V – Trucks / coach 6 or 7 year life?

In consultation do we need a minimum life

2020 DEFRA Clean Air Zones Birmingham, Derby, Leeds, Nottingham, Southampton

2019 Proposed implementation date for London Ultra Low Emission Zone



# Clean Air Zone – Client Earth 2018 proposal

Euro VI mandatory for trucks & Buses

Euro 6 for vans

**DEFRA Review of emission standard requirements, possibly extending beyond Euro VI**

**Implementation of the new DEFRA minimum standard, if changed beyond Euro VI**

Also consider derogated stock

2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028

Euro 5 van – 3 year?

Euro V – Trucks / coach 4 or 5 year life?

**2019 Proposed implementation date for London Ultra Low Emission Zone**

**2018 DEFRA Clean Air Zones Birmingham, Derby, Leeds, Nottingham, Southampton, Newcastle upon Tyne, Hull, Liverpool, Manchester, Sheffield, Stoke, Leicester, Coventry, Cardiff and Bristol.**



# What is the effect on your Business?

## The Next Steps?



# Timeline on Direct Vision Standard

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# No Lorries – No Goods

