



# **NEDC/WLTP correlation process**

**CO2MPAS workshop, Ispra, 12-13  
December 2016**

# Change and challenges...

***WLTP enters into force 2017***

***NEDC/WLTP correlation procedure***

***2020/21 CO<sub>2</sub> targets***

## **WLTP – why?**

- **NEDC: outdated and no longer representative of real world emissions**
- **WLTP: more robust and precise test conditions**
- **More realistic CO<sub>2</sub> emission and fuel consumption values**
  - **for consumer purposes**
  - **for new CO<sub>2</sub> emission standards**

## State of play

- **WLTP: positive vote in TCMV 14 June**
- **Correlation procedure for cars: positive vote in Climate Change Committee on 23 June**
- **Target translation mechanism endorsed by the CO2 Expert Group**

<https://circabc.europa.eu/w/browse/0a8edb91-1436-41d9-aa28-2cb5f2dd9ffc>

- **Correlation procedure for vans to be voted 2017**
- **Adoption by the Commission spring 2017**

# Transition from NEDC to WLTP

*1 September 2017 (M1 and N1 class 1\*):*

- **New vehicle types: WLTP approved**
- **Existing vehicle types: NEDC approved**

*1 September 2018:*

- **All vehicles: WLTP approved**
- **End-of-series: NEDC approved**

*1 September 2019:*

- **All vehicles: WLTP approved**

(\*N1 class 2 and 3 – one year later)



# CO2 emission standards for cars

EU fleet average targets are based on NEDC:

- 130g CO<sub>2</sub>/km in 2015
- 95g CO<sub>2</sub>/km in 2021 (phase-in from 2020)

Individual manufacturer targets

- set annually to reflect the EU fleet average targets

Compliance with individual targets

- annual average emissions of a manufacturer's fleet

Non-compliance

- 95 euro/gCO<sub>2</sub> in excess of the annual target

## Effects of WLTP – need for correlation

*With WLTP CO<sub>2</sub> emission values increase (on average) but impact differs between different manufacturers:*

- 1. How to ensure comparable stringency when changing to WLTP based CO<sub>2</sub> targets?**
- 2. How to verify CO<sub>2</sub> target compliance during the transition period when vehicles will be type approved according to either NEDC or WLTP?**
- 3. How to facilitate the transition?**

# Comparable stringency

*Legal requirement:*

***"... ensuring that reduction requirements of comparable stringency for manufacturers and vehicles of different utility are required under the old and new test procedure"***

*Correlation procedure to ensure that*

- **A manufacturer that meets its NEDC based target should also meet its WLTP based target**





## Transition 2017-2020

- **NEDC based CO2 standards are maintained until 2020**
- **All new registered vehicles should have both NEDC and WLTP CO2 emissions determined at type approval**
- **WLTP test results to be correlated into NEDC values taking into account relevant NEDC test conditions**
- **Creation of comparable WLTP and NEDC datasets to be used for target translation in 2021**

# CO2MPAS correlation tool

- **Facilitates transition to WLTP by avoiding extensive double testing campaigns**
- **Uses robust WLTP test data as input for the NEDC calculation**
- **Includes key NEDC test conditions that are explicitly regulated or confirmed by national type approval authorities**

**WLTP test results**

**Conversion into NEDC input values**

**Correlation tool output vs. OEM declared value**

**NEDC value for TVH or TVL**

**Physical vehicle test**

**NEDC interpolation of CoC values**



# Physical vehicle NEDC tests

*Same test conditions as for the correlation tool – three situations:*

- 1. Correlation tool output exceeds the OEM declared value by more than 4%**
- 2. Random physical tests in 10% of the cases where the NEDC TVH/TVL value is set by reference to the correlation tool output**
- 3. Physical verification tests if technical services / type approval authorities consider there are grounds for further verification**



# Random tests & correction factor

*Objective: to prevent abuse of too low correlation outputs*

Every random test generates a deviation factor:

- **If the deviation factor is equal to or lower than 0,04:** no correction
- **If the deviation factor exceeds 0,04:** the average emissions of the manufacturer will be increased by a correction factor taking into account all deviation factors recorded for that year



# Verification & correction factors

*Type approval authorities & technical services have a general duty of care:*

- **May request an additional physical vehicle test and attribute a deviation factor**
- **Must verify the correctness of the correlation input data, in particular the presence of**
  - Fuel saving gear for automatic transmission
  - Start-stop activation time
  - Brake energy recuperation
- **If input data is incorrect, a verification factor (1) is attributed and will trigger the application of the correction factor**

# Interpolation of CoC values

- **Correlated NEDC CO2 values to be attributed to test vehicles high and low of a WLTP interpolation family**
- **OEMs to interpolate the NEDC CO2 values for each individual vehicle and record these values in certificates of conformity**



# Transition to WLTP based targets

*WLTP fully applicable from 2021:*

- **From 2021, WLTP based annual manufacturer targets are determined and compliance is checked on the basis of WLTP CO<sub>2</sub> emissions**
- **Super credits will be determined on the basis of NEDC values until 2022**
- **Eco-innovation approvals are still valid (unless fully covered by WLTP) and the WLTP savings will be increased by up-lift factors until 2023**





## 2020 emissions – basis for new 2021 target

*EU fleet target of 95gCO<sub>2</sub>/km NEDC applies but OEM specific targets are translated into WLTP values using 2020 as reference year:*

- **In 2020 all new registered vehicles have both NEDC and WLTP CO<sub>2</sub> emission values**
- **Compliance with NEDC based OEM target in 2020 is checked:**

**OVERACHIEVEMENT or EXCESS EMISSIONS?**



# Target translation 2021

## Manufacturer 2021 WLTP target:

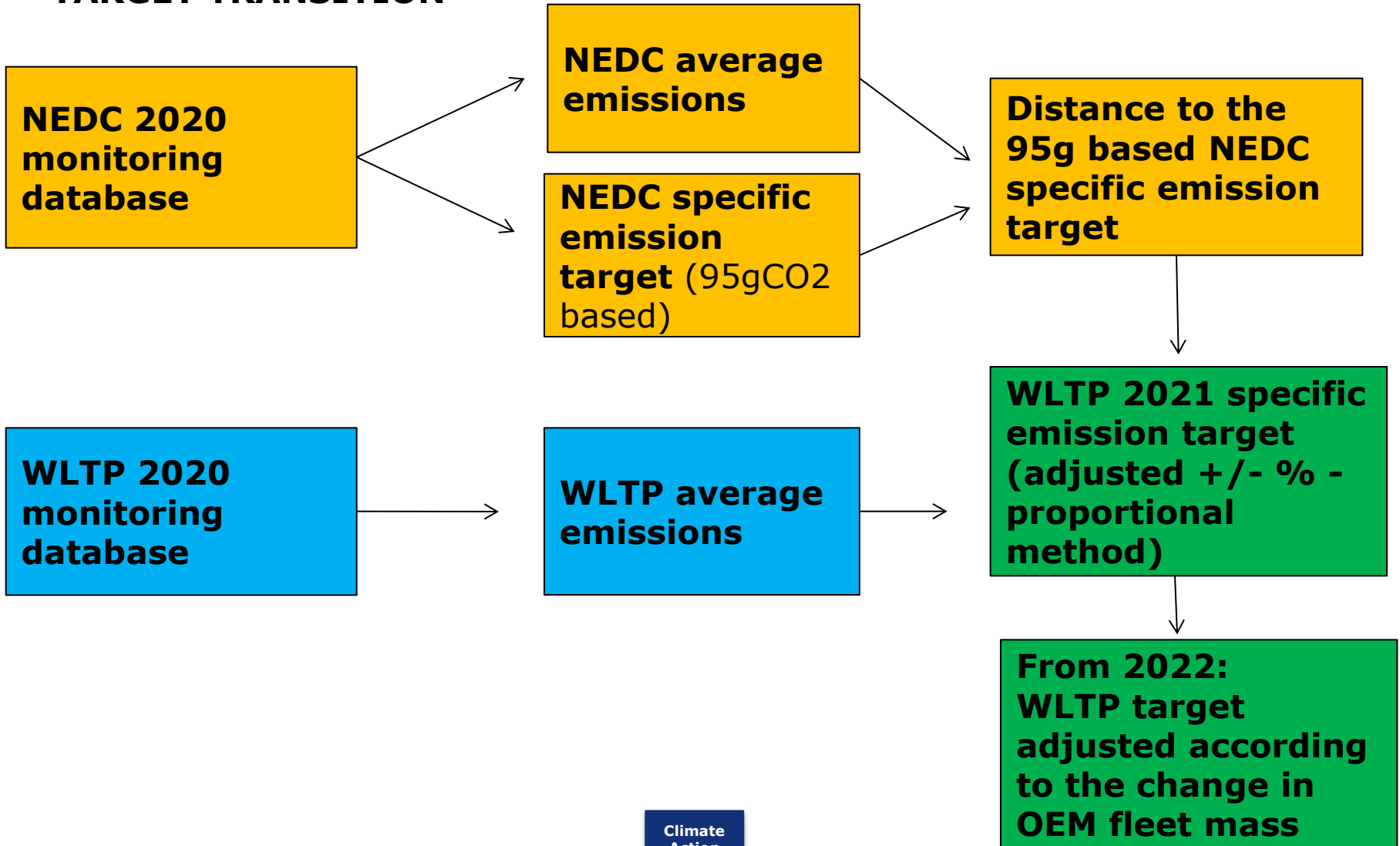
### If the NEDC 2020 target was met:

WLTP average emissions of the manufacturer in 2020 are increased in proportion to how much the the NEDC target was overachieved

### If the NEDC 2020 target was exceeded:

WLTP average emissions of the manufacturer in 2020 are decreased in proportion to how much the NEDC target was exceeded

## TARGET TRANSITION



*THANK YOU!*

# Correlation test conditions

## NEDC test conditions included:

- Vehicle inertia
- Pre-conditioning effect
- Set lab temperature
- Battery state of charge
- Tyre pressure
- Tyre tread depth
- Inertia of rotating parts

## NEDC flexibilities removed:

- No NEDC coast down test - WLTP coast down results used as input to the correlation
- NEDC driving profile tolerance
- Test track slope
- Lab temperature range