European Automobile Manufacturers Association

ACEA

Real Driving Emission tests

The industry perspective

ENVI PUBLIC HEARING
EUROPEAN PARLIAMENT

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KEY FIGURES ABOUT THE INDUSTRY

12.1 million direct and indirect jobs

€41.5 billion in R&D spending, largest private investor

€95.1 billion positive net trade contribution

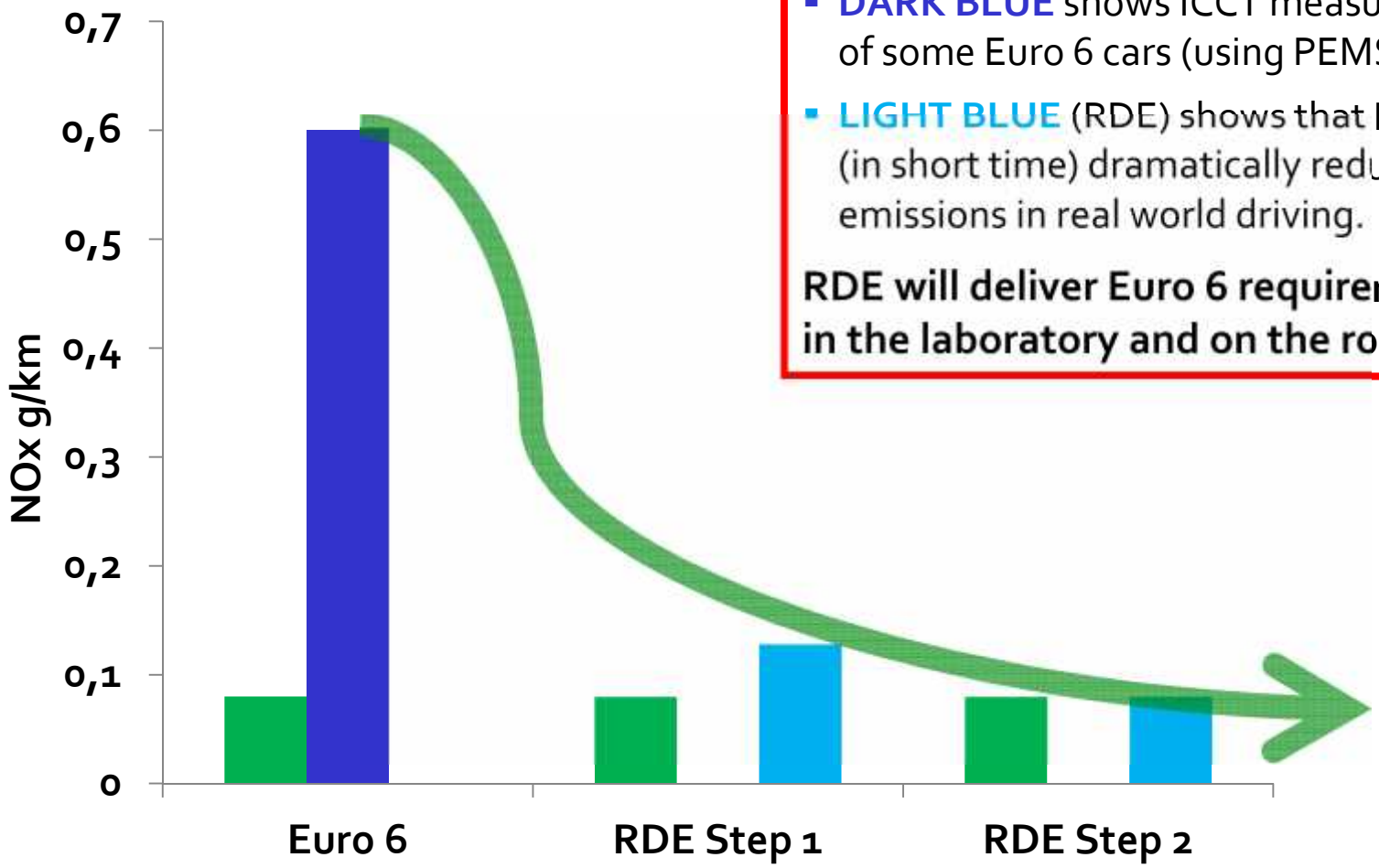
LEARNINGS

- **Industry should communicate better** and improve collaboration with other stakeholders:
  - How to reconcile what is possible with what is needed.
- EU environmental **policy needs to be more coherent**:
  - Important regulations on emissions and test cycles continue to be drafted separately – disregarding interconnections.
  - Air quality improvements and further reducing CO_2 emissions need to be addressed together.
- **Innovation always goes faster than regulation**:
  - Revisions needed to adapt to new realities.
  - Limits to what can be regulated.

NOx: WHAT INDUSTRY WILL DO

- **GREEN** shows the Euro 6 NOx limit.
- **DARK BLUE** shows ICCT measurements of some Euro 6 cars (using PEMS).
- **LIGHT BLUE** (RDE) shows that RDE will (in short time) dramatically reduce emissions in real world driving.

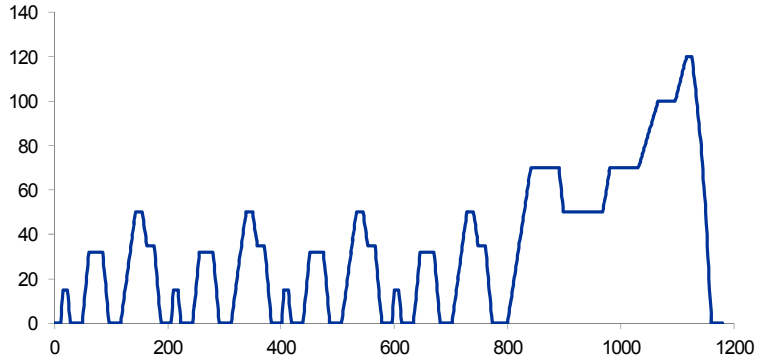
RDE will deliver Euro 6 requirements in the laboratory and on the road.



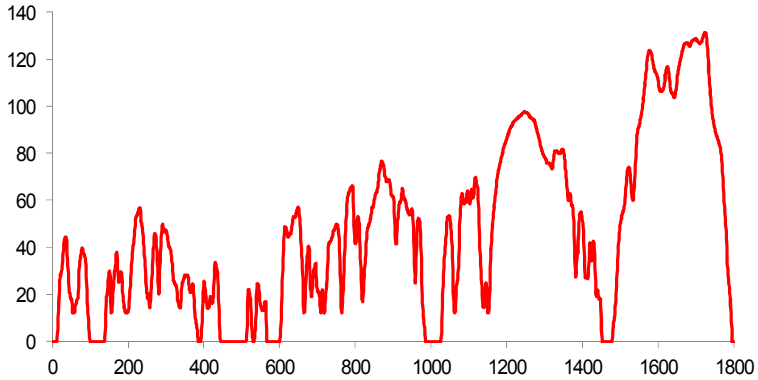
Source: Euro 6 = http://www.theicct.org/real-world-exhaust-emissions-modern-diesel-cars

WHY NEW TESTS ARE NEEDED

- The **New European Driving Cycle (NEDC)** is the current test cycle used to verify compliance with emissions limits.
- It is a **laboratory test, which ensures repeatability and reproducibility**, but NEDC is out-dated.



- A new test cycle, the Worldwide Harmonised Light Duty Vehicles Test Procedures (WLTP), will **replace NEDC**.
- Industry has pushed for WLTP as a global new test cycle.



WHAT COMES NEXT

- For air quality related emissions, laboratory tests will be complemented by tests on the road: a new procedure known as **Real Driving Emissions** (RDE).

- Actual real-world **emissions vary depending on conditions met on the road and on driver behaviour**.

- Real-world emissions are also influenced by the use of **new car features** that didn't exist when NEDC was developed.

- European **Commission adopted a step-by-step approach**:

  - Two packages are still missing and are urgently needed to complete the legislation.

RDE package 1 (cars):

- General framework of RDE legislation, 90% of boundary conditions, data analysis procedures and normalisation tools, data for RDE monitoring phase

Status:

- Agreed in May 2015
- Publication ≈ April 2016 (tbc)
- Effective in Q2 2016

RDE package 2 (cars):

- 2-steps, dates, conformity factors, completion of boundary conditions

Status:

- Agreed TCMV 28 October 2015
- Approved by Council on 12 February
- Publication ≈ April 2016 (tbc)

RDE package 3:

- PEMS for particles (PN), LCVs

Status:

- On-going work: due summer 2016

RDE package 4:

- RDE in-service conformity

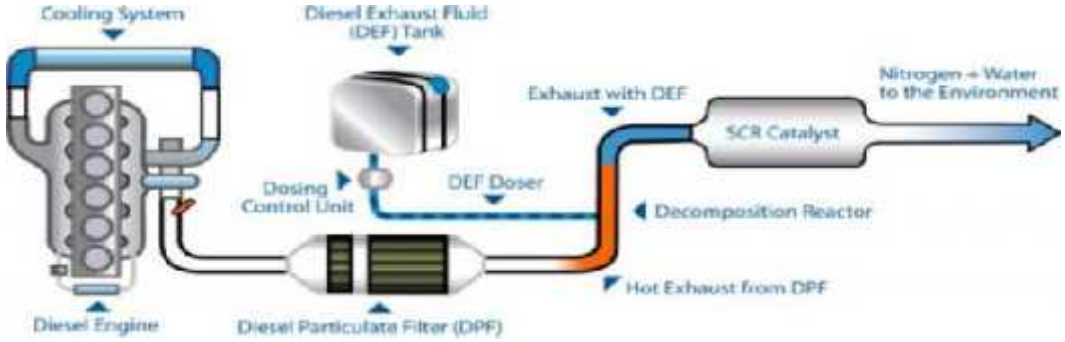
Status:

- Not started: due end-16/early-17

IMPACT OF RDE

Technical challenges

- Important **software** and **hardware upgrades**.
- Deployment of **latest generation NOx emission control technologies** across fleet (ie SCR, LNT).
- **Modifications to vehicle design** to accommodate emission control systems including urea tank (trade-off between customer convenience and efficiency).



IMPACT OF RDE

Technical challenges

- Important: **AdBlue refuelling infrastructure** needed for cars.
- Investment in **new testing equipment**: Portable Emission Measurement Systems or PEMS.
- Need to make PEMS smaller and lighter.

IMPACT OF RDE

Financial challenges

- Measures to reduce NOx may **contradict previous investments in technologies aimed at reducing CO2** (such as engine downsizing).

- **Significant investments** in the next generation emission control technologies, but also changes to assembly lines and testing:

  - Manufacturing costs of **€600 - €1,300 per vehicle**;

  - **€120 million** in development, retooling, new test facilities and equipment **per manufacturer from now until 2019**.

IMPACT OF RDE

Expected impact on the passenger car fleet

- 5% of planned diesel models will be **scrapped with step 1**.
- **Up to 25%** of planned diesel models to be dropped for step 2.
- Loss of investment return and **less choice for customers**.

THE RDE ERROR MARGIN

- The 2nd RDE package sets a conformity factor (CF) of **1.0** as of 2020/21 plus a **PEMS error margin of 0.5**

- Margin for error necessary because both the **accuracy of measurement equipment** and **accuracy of testing procedures** are affected by various factors.

- **Does this mean that vehicles will emit 120mg/km instead of 80mg/km?**

  - **No**, vehicles will have to perform **well below the 80mg/km limit** to ensure compliance with the conformity factor in the most extreme driving conditions. The limit will be met in the laboratory and on the roads.

REVIEWING THE ERROR MARGIN

- If the accuracy of equipment and testing procedures improves, the **error margin could go down**.

- The European **Commission should also propose:**

  - A system for regular auditing of testing parties to ensure the correct setting-up of vehicles and running of the tests;

  - A system for homologation of the PEMS equipment.

CONCLUSIONS

- **RDE is urgently needed despite being a major challenge for the industry**, both in terms of investments and production.
- Adoption of the 2nd RDE package was essential to allow manufacturers to start preparing, but **industry urgently needs the additional two RDE packages.**
- **CF of 1.0 means the legal limits are upheld**, the 0.5 error margin is necessary for the time being.
- A future revision of the error margin completed with robust procedures auditing system and homologation of the PEMS should allow the **error margin to go down.**

THANK YOU FOR YOUR ATTENTION

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