



European Experience and Challenges on Implementation of RDE

**ECMA's 10th International Conference "Enabling Cleaner and Greener
India Progressing Towards BS VI Norms" ECT 2017
2 November 2017**

Directorate-General for Internal Market,
Industry, Entrepreneurship and SMEs

Automotive and Mobility Industries Unit

A quick history of RDE: packages 1 to 3

Why did we opt for Real Driving Emissions?

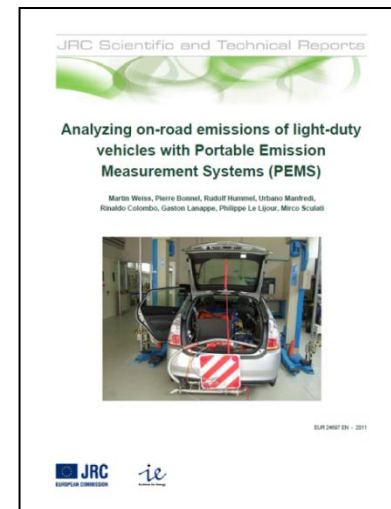
Recital 15 of Regulation EC 715/2007 (Euro 5 and Euro 6)

(15) The Commission should keep under review the need to revise the New European Drive Cycle as the test procedure that provides the basis of EC type approval emissions regulations. **Updating or replacement of the test cycles may be required to reflect changes in vehicle specification and driver behaviour.**

Revisions may be necessary to ensure that real world emissions correspond to those measured at type approval. The use of portable emission measurement systems and the introduction of the 'not-to-exceed' regulatory concept should also be considered.

Early Evidence:

- June 2009: First on-road test of a Euro 5 light-duty vehicle
- April 2010: End of experimental campaign with a total of 12 Euro 3-5 light-duty diesel and gasoline vehicles tested
- September 2010: First EC internal discussion (JRC-ENV-ENTR)
- November 2010: Presentation at the workshop “Approach on Emission Legislation” with MS and stakeholders
- Q1 2011: Publication of full JRC report



Start of formal work in 2011:

- January 2011: COM establishes WG involving all interested stakeholders for developing a real-driving emissions (RDE) test procedure better reflecting emissions measured on the road.
- The Joint Research Centre of the Commission published two studies in 2011 and 2013 on the feasibility of on-road testing and assessment of other technical options (e.g., random cycles).
- After thorough technical discussions, the option suggested in Regulation (EC) No 715/2007, i.e. the use of portable emission measurement systems (PEMS) and not-to-exceed (NTE) limits is been developed and implemented as complementary regulatory test procedure.

Timeline and legal architecture of RDE

- **RDE1 (2011-2015):** Testing framework and data evaluation methods (how to perform RDE tests and how to calculate results) *Reg. EU 2016/427*
- **RDE2 (2015-2016):** Additional boundary conditions for tests, conformity factors for NOx (limits to what kind of driving is included in RDE tests and NOx emission limits that apply) *Reg. EU 2016/646*
- **RDE3 (2016-2017):** Evaluation of cold-start emissions, conformity factors for PN, LCVs, regeneration events, hybrid vehicles, transparency provisions. *Reg. EU 1154/2017*
- **RDE4 (2017-2018):** In-service conformity testing, "reviews" and other issues. *Reg. EU XXX/2018*

Lessons Learned from RDE1-3

- Long time was needed to agree on a new method to measure real driving emissions and define most of the technical details in RDE1 (2011-2015)
- Work since then has been much more rapid, concluding all three remaining RDE packages in less than three years (2015-2018)
- Some items are revisited when new evidence arrives:
 - **Multiple evaluation tools have shown diverging results for the same trip, so we now work on one common tool**
- RDE testing will effectively limit the use of defeat devices because the NTE limit needs to be respected in a wide range of conditions

RDE4 in a nutshell: What to expect

Main topics:

- **In-service conformity testing** (introducing *independent testing by third parties*)
- Type-approval issues related to multi-stage LCVs and special-purpose vehicles
- Other open issues (e.g., heavy fuel effects on PN)

Reviews:

- More representative method for testing hybrid vehicles
- Reviews of
 - *data evaluation methods (choice of single method)*
 - *uncertainty margin for NO_x (CF is 1 + margin)*

Work started early this year.

Guidance on the evaluation of Auxiliary Emission Strategies and the presence of Defeat Devices

- As a follow-up of the emissions scandal
- A Commission Guidance document (C(2017) 352 final) was published on 26 January 2017
- Addressing how to evaluate properly AES
- And guidance on how to detect defeat devices



The future

- Complete technical work on RDE4 act this year
- Adoption by mid 2018
- Technical study on post- EURO6 limits to start in 2018
- And hopefully work within a new Market Surveillance Framework in Europe



Thank you for your attention!

[QUESTIONS to: EC-RDE@ec.europa.eu](mailto:EC-RDE@ec.europa.eu)