

## **Guidelines for the accreditation of Low Carbon Buses**

Following the definition of the emissions performance of Low Carbon Buses based on a Well-to-wheel CO<sub>2</sub> figure vs. passenger capacity, guidelines for the testing and accreditation of Low Carbon Buses are being developed.

The guideline is a structured document and includes an overview document with attached annexes and appendices

The overview document provides an explanation of the process by which low carbon technology providers can apply for accreditation and includes

- Definition of a low carbon bus
- CO<sub>2</sub> target
- Explanation of well-to-wheel CO<sub>2</sub> calculations
- Test requirements
- Test cycle definition
- Qualification requirements

The test requirements are provided as detailed annexes as follows

1. Test procedure for buses powered by conventional powertrain
2. Test procedures for buses powered by charge sustaining hybrid powertrain
3. Test procedures for buses powered by charge depleting hybrid powertrain
4. Test procedures for buses powered by pure electric powertrain
5. Test procedures for buses powered by fuel cell/electric powertrain

Procedures 1 to 3 are based on SAE J2711 – Recommended Practice For Measuring Fuel Economy and Emissions of Hybrid-Electric and Conventional Heavy-Duty Vehicles

This procedure is of US origin therefore a cross reference to European requirements is appended.

Procedure 4 is based on:

UNECE Regulation 101 – "Uniform provisions concerning the approval of passenger cars powered by a hybrid electric power train with regard to the measurement of the emission of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range, and of categories M1 and N1 vehicles powered by an electric power train only with regard to the measurement of electric energy consumption and electric range"

and:

BS EN 1986-1 – "The measurement of energy consumption and range of pure electric heavy-duty vehicles"

The content of both procedures is adapted to ensure suitability for the testing of heavy-duty vehicles

Procedure 5 will be added at a later date.

Each procedure has associated appendices as follows:

Appendix 1: Essential characteristics of the vehicle and information concerning the conduct of tests

Appendix 2: Test report and approval

Appendix 3: Determination of the total road load power of a vehicle and calibration of the chassis dynamometer

A key item for debate is qualification, specifically regarding the relationship between CO<sub>2</sub> emissions below or above the target line and the level of accreditation conferred.

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