

WLTP-08-45e

Review of definitions

Proposals for amendments from Bill Coleman (OICA)

Definitions, Subject areas:

- 1 Masses
- 2 Vehicle selection in combined approach
- 3 Electrified vehicles
- 4 General

1. - 3.2.5. "Mass in running order"

In gtr 15:

means the mass of the vehicle, with its fuel tank(s) filled to at least 90 per cent of its or their capacity/capacities, including the mass of the driver and liquids, fitted with the standard equipment in accordance with the manufacturer's specifications and, when they are fitted, the mass of the bodywork, the cabin, the coupling and the spare wheel(s) as well as the tools when they are fitted.

Proposal:

means the mass of the vehicle, with its fuel tank(s) filled to at least 90 per cent of its or their capacity/capacities, including the mass of the driver, **of the fuel** and liquids, fitted with the standard equipment in accordance with the manufacturer's specifications and, when they are fitted, the mass of the bodywork, the cabin, the coupling and the spare wheel(s) as well as the tools ~~when they are fitted~~.

Reasoning:

Alignment with (EC)692/2008

1. - 3.2.7. "Maximum vehicle load"

In gtr 15:

means in this gtr the difference between the technically permissible maximum laden mass and the sum of the mass in running order, 25 kg and the mass of the optional equipment of vehicle H.

Proposal:

means in this gtr the difference between the technically permissible maximum laden mass and the sum of the mass in running order, 25 kg and the mass of the optional equipment ~~of vehicle H.~~

Reasoning:

To align with EU legislation the mass of optional equipment needs to be defined (see next slide). Once this is done the reference to vehicle H becomes redundant and potentially confusing

1. - new "mass of the optional equipment"

In gtr 15:

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Proposal:

means the mass of the equipment which may be fitted to the vehicle in addition to the standard equipment, in accordance with the manufacturer's specifications;

Reasoning:

Although this definition is only valid in the context of application for and granting of an approval, it is essential to operate the combined approach.

1. - new

"technically permissible maximum laden mass"

6

In gtr 15:

-

Proposal:

means the maximum mass allocated to a vehicle on the basis of its construction features and its design performances;

Reasoning:

No definition of this term was included in the gtr in phase 1a and it has since become evident that this could cause different interpretations in different regions.

This definition from EU legislation should resolve this issue.

1. - new "actual mass of the vehicle"

7

In gtr 15:

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Proposal:

means the mass in running order plus the mass of the optional equipment fitted to an individual vehicle;

Reasoning:

No definition of this term was included in the gtr in phase 1a.

This definition comes from EU legislation and is a value that is already communicated in the EU as a vehicle specific mass.

1. - new "test mass of the vehicle"

In gtr 15:

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Proposal:

means the sum of the actual mass of the vehicle, 25 kg and mass representative of the vehicle load;

Reasoning:

No definition of this term was included in the gtr in phase 1a.

This term is generic but describes a vehicle specific condition which will be used throughout the combined approach and in future to describe test conditions for individual vehicles post approval.

1. - new "mass representative of the vehicle load"

In gtr 15:

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Proposal:

means 15 per cent for category 1 vehicles or 28 per cent for category 2 vehicles from the maximum vehicle load.

Reasoning:

No definition of this term was included in the gtr in phase 1a.

This term is generic covering both categories of vehicle included in the WLTP scope.

The term maximum vehicle load was discussed on slide 4

"Maximum vehicle load,, means in this gtr the difference between the technically permissible maximum laden mass and the sum of the mass in running order, 25 kg and the mass of the optional equipment"

2. - 3.2.21. “vehicle H”

In gtr 15:

means the vehicle within the CO₂ vehicle family with the combination of road load relevant characteristics (e.g. mass, aerodynamic drag and tyre rolling resistance) producing the highest cycle energy demand.

Proposal:

means the vehicle **selected for testing** within the CO₂ vehicle family with the combination of road load relevant characteristics (**e.g. i.e.** mass, aerodynamic drag and tyre rolling resistance) producing the highest cycle energy demand.

Reasoning:

This is an attempt to clarify that vehicle H is not necessarily the vehicle with the highest cycle energy demand within the family rather a vehicle with high cycle energy demand which has been selected for testing within the constraints of the combined approach.

This should resolve a conflict between a best/worst case concept and extrapolation which is expressly permitted in the gtr.

2. - 3.2.21. “vehicle L”

As Vehicle H, i.e.:

In gtr 15:

means the vehicle within the CO2 vehicle family with the combination of road load relevant characteristics (e.g. mass, aerodynamic drag and tyre rolling resistance) producing the lowest cycle energy demand.

Proposal:

means the vehicle **selected for testing** within the CO2 vehicle family with the combination of road load relevant characteristics (**e.g. i.e.** mass, aerodynamic drag and tyre rolling resistance) producing the lowest cycle energy demand.

Reasoning:

This is an attempt to clarify that vehicle L is not necessarily the vehicle with the lowest cycle energy demand within the family rather a vehicle with low cycle energy demand which has been selected for testing within the constraints of the combined approach.

This should resolve a conflict between a best/worst case concept and extrapolation which is expressly permitted in the gtr.

3. - 3.3.1. and 3.3.2. "All-electric range" (AER)

In gtr 15:

This terminology is defined twice in different contexts (OVC-HEV and PEV)

Proposal:

Consideration should be given to the following options:

- Make the term of the definition clear which context is being defined
- Create a generic definition which covers both contexts

However:

As the first option seems unduly bureaucratic and the second seems unduly difficult, proposals follow to improve the existing definitions

3. - 3.3.1. "All-electric range" (AER)

In gtr 15:

in the case of an off-vehicle charging hybrid electric vehicle (OVC-HEV) means the total distance travelled from the beginning of the charge-depleting test over a number of complete WLTCs to the point in time during the test when the combustion engine starts to consume fuel.

Proposal:

means in the case of an off-vehicle charging hybrid electric vehicle (OVC-HEV), **means** the total distance travelled from the beginning of the charge-depleting test ~~over a number of complete WLTCs~~ to the point in time during the test when the combustion engine starts to consume fuel.

Reasoning:

A charge-depleting test is run over complete cycles and the AER can end at any time during a cycle of this test.

This amendment attempts to avoid confusion with R_{CDC} which is measured in complete cycles

3. - 3.3.2. "All-electric range" (AER)

In gtr 15:

in the case of a pure electric vehicle (PEV) means the total distance travelled from the beginning of the charge-depleting test over a number of WLTCs until the break-off criteria is reached.

Proposal:

means in the case of a pure electric vehicle (PEV) **means** the total distance travelled from the beginning of the charge-depleting test ~~over a number of WLTCs~~ until the break-off criteria is reached.

Reasoning:

A charge-depleting test is run over complete cycles and the AER can end at any time during a cycle of this test.

This amendment attempts to avoid confusion with R_{CDC} which is measured in complete cycles

3. - 3.3.5. "Charge-depleting operation condition"

In gtr 15:

means an operating condition in which the energy stored in the REESS may fluctuate but, on average, decreases while the vehicle is driven until transition to charge-sustaining operation.

Proposal:

means an operating condition in which the energy stored in the REESS may fluctuate but, **decreases** on average, ~~decreases~~ while the vehicle is driven until transition to charge-sustaining operation.

Reasoning:

A charge-depleting test is run over complete cycles and the AER can end at any time during a cycle of this test.

This amendment attempts to avoid confusion with R_{CDC} which is measured in complete cycles

3. - 3.3.6. "Charge-depleting break-off criteria"

In gtr 15:

is determined based on absolute net energy change.

Proposal:

delete

Reasoning:

This does not appear to be a definition rather content of a technical annex

3. - 3.3.9. "Electrified vehicle" (EV)

In gtr 15:

means a vehicle using at least one electric machine for the purpose of vehicle propulsion.

Proposal:

delete

Reasoning:

The terminology is not used in the gtr

3. - 3.3.10. "Energy converter"

In gtr 15:

means the part of the powertrain converting one form of energy into a different one.

Proposal:

means the part of the powertrain ~~converting one~~ where the form of energy **input is into** ~~a~~ different from the form of energy output **one**.

Reasoning:

Discussions in WLTP 6 in Vienna and in VPSD suggested that a battery could be seen as converting chemical energy into electrical energy. VPSD therefore agreed on a „black box“ approach considering input and output to the system.

3. - 3.3.11. "Energy storage system"

In gtr 15:

means the part of the powertrain on board a vehicle that can store chemical, electrical or mechanical energy and which can be refilled or recharged externally and/or internally.

Proposal:

means the part of the powertrain on board a vehicle that can store ~~chemical, electrical or mechanical~~ energy and ~~release it in the same form as it was input which can be refilled or recharged externally and/or internally.~~

Reasoning:

This proposal is consistent with that of energy converter.

The text differentiating refilling and refuelling and internal or external appears redundant

3. - 3.3.13. „Highest fuel consuming mode“

In gtr 15:

means the mode with the highest fuel consumption of all driver-selectable modes.

Proposal:

delete

Reasoning:

The only difference between the term and the definition is “driver selectable” but this is contained in the definition of “mode”

3. - 3.3.14. „Hybrid electric vehicle,, (HEV)

In gtr 15:

means a vehicle using at least one fuel consuming machine and one electric machine for the purpose of vehicle propulsion.

Proposal:

Means a hybrid vehicle where one of the energy converters is an electric machine.

Reasoning:

This is consistent with other definitions and also with the concept of hierarchical definitions favoured by VPSD

3. - 3.3.17. & .19. „not-off/off vehicle charging,, (NOVC)/(OVC)

In gtr 15:

means that the REESS cannot be charged externally. This is also known as not externally chargeable.

means that the REESS can be charged externally. This REESS is also known as externally-chargeable.

Proposal:

delete both

Reasoning:

The terminology is not used without HEV at the end (which is separately defined, see e.g. next slide)

3. - 3.3.20. „Off-vehicle charging hybrid electric vehicle,, (OVC-HEV)

In gtr 15:

identifies a hybrid electric vehicle that can be charged externally.

Proposal:

identifies means a hybrid electric vehicle that can be charged externally.

Reasoning:

In the interest of consistency

3. - 3.3.21. „Pure electric mode,,

In gtr 15:

means operation by an electric machine only using electric energy from a REESS without fuel being consumed under any condition.

Proposal:

delete

Reasoning:

The terminology is not used in the gtr

3. - 3.3.23. & 3.3.24. „Recharged energy"(EAC) & "REESS charge balance" (RCB)

In gtr 15:

means the AC electric energy which is recharged from the grid at the mains socket.

means the charge balance of the REESS measured in Ah.

Proposal:

delete

Reasoning:

The terminology and the units are defined in the relevant technical annexes

3. - 3.3.25. "REESS correction criteria"

In gtr 15:

means the RCB value (Ah) which determines if and when correction of the CO₂ emissions and/or fuel consumption value in charge-sustaining (CS) operation condition is necessary.

Proposal:

delete

Reasoning:

The terminology is not used in the gtr

4. - 3.5.13. „Type 1 test“

In gtr 15:

means a test used to measure a vehicle's cold start gaseous, particulate matter, particle number, CO₂ emissions, fuel consumption, electric energy consumption and electric range at ambient conditions.

Proposal:

delete

Reasoning:

The terminology is defined in the relevant technical annex

4. - 3.7.3. & 3.7.4. „Rated engine speed“ & “WLTC City cycle”

In gtr 15:

means the range of rotational speed at which an engine develops maximum power.
means a low phase followed by a medium phase.

Proposal:

delete

Reasoning:

The terminology is defined in the relevant technical annexes

4. - 3.8.1. „Periodically regenerating system”

In gtr 15:

means an exhaust emissions control device (e.g. catalytic converter, particulate trap) that requires a periodical regeneration process in less than 4,000 km of normal vehicle operation. During cycles where regeneration occurs, emission standards can be exceeded. If a regeneration of an anti-pollution device occurs at least once during vehicle preparation cycle, it will be considered as a continuously regenerating system which does not require a special test procedure.

Proposal:

delete the last 2 sentences ~~“During cycles where regeneration occurs, emission standards can be exceeded. If a regeneration of an anti-pollution device occurs at least once during vehicle preparation cycle, it will be considered as a continuously regenerating system which does not require a special test procedure.”~~ and integrate this in the technical annex without the reference to “continuously regenerating system which is not defined in light duty legislation

Reasoning:

Consistency with EU legislation and adherence to definitions guidelines (short and concise)