

OICA comments on GTR 22  
EVE-IWG #61  
25.-26.04.2023

**Background:**

- UNECE GTR 22 states, that the MPR for Category 2 vehicles shall be for monitoring in phase 1
- The Euro 7 draft was published with an MPR for N1 (Category 2) as below

**Table 2: Euro 7 Minimum performance requirements (MPR) for battery durability for N<sub>1</sub> vehicles**

Battery energy based MPR	Start of life to 5 years or 100 000 km whichever comes first	Vehicles more than 5 years or 100 000 km, and up to whichever comes first of 8 years or 160 000 km	Vehicles up to additional lifetime*
OVC-HEV	75%	65%	
PEV	75%	65%	

- EVE-IWG agreed, that LCV have a different usage of the Battery than passenger cars that has to be reflected in the MPR
  - Wide variation of usecases
  - Continuous use in a stationary state
  - Higher loads during operation that are different from WLTP

**OICA proposed in prior meetings the metric of Energy Throughput (Wh) as appropriate to assessment for the extended usage of the Battery in Category 2 vehicles**

- Light commercial vehicles are **work tools** chosen to meet specific operational needs addressing a **broad range of use cases. Different from Category 1 vehicles**
- No / limited data available for commercial vehicles - preliminary simulations show up to **5-10% additional degradation** over 8 years compared to passenger cars
- Battery ageing significantly influenced by **battery cycling** (mileage, high payload, & external loads – worst case external load whilst driving) and fast charging
- **Energy Throughput (Wh) concept** developed to define performance targets against mileage, age and battery throughput (Wh)



Sample Customer	Profile Examples
<b>Ambulance</b>	High up-time with long daily shifts
	Low mileage
	High aux load
	Multiple daily DCFC
<b>Rural delivery</b>	Medium up time - high mileage/av. speed
	Daily AC charge with multiple daily DC top-ups
	Food delivery including refrigeration – high V2L
<b>City delivery</b>	Medium-high up time - med mileage, lower av. speed than non-city
	Daily AC charging, with DCFC top-ups when required
	Food delivery including refrigeration – high V2L
<b>Local trades</b>	Low driving time - commuting mileage
	High aux load V2L
	Daily AC charge at home - No DCFC
<b>Park-at-home utility operator (no home charger access)</b>	Medium up time
	DC only charging
	Low-med aux load for tablet/power tool chargers.

**Many more use cases / scenarios possible**

Load situation	Static / Dynamic	Covered by V2X
Stationary V2G, V2H, V2L	Static	YES
Drive with max payload	Dynamic	NO
Cooling / refrigeration demands	Dynamic	NO
Towing / Trailer	Dynamic	NO
Heating demands	Dynamic	NO
On-board power delivery	Dynamic	NO

In case of an uncomplete vehicle, the later usage is completely unknown for the OEM

- ❖ Possible Scenarios including the impact on the V2X definition for discussion  
The existing V2X concept has not the purpose to cover the different usage of a Category 2 vehicle

## Scenario 1

**Euro 7 proposal as it stands**

### **V2X Definition**

- Major modifications, **that cover Battery discharge for other purpose than vehicle propulsion**, will be required in order to cover the different loads from LCV.
- Different V2X definitions for Cat. 1 and Cat. 2 could be required

- ❖ Definitely not monitoring as agreed in GTR 22
- ❖ Vehicles with high additional energy discharge will not comply with the MPR
- ❖ Additional Capacity reserve for all is needed to ensure compliance of a certain number of vehicles
- ❖ No data available to anticipate the additional loads in detail
- ❖ No experience how many vehicles are affected

## Scenario 2

**Euro 7 proposal + Energy Throughput**

### **V2X Definition**

- **Only minor modifications could be required. (Details will be presented separately)**
- Different loads from LCV are covered by Energy Throughput.
- Same V2X definitions for Cat. 1 and Cat. 2

- ❖ Thresholds for the Energy Throughput need to be defined
- ❖ Synergies from HD requirements could be used

➤ **Scenario 1 is not acceptable for OICA and provides no benefit for the environment**

➤ **Scenario 2 would be a proper solution for a correct assessment of the extended Battery usage**

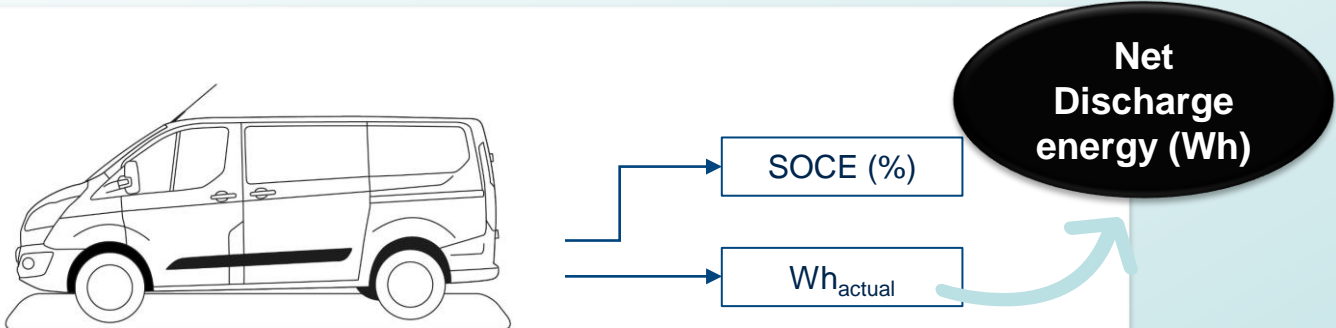
Capacity Retention	M1 PHEV / BEV Minimum Performance (EU7)
Up to 5 years or 100,000 km	80%
Up to 8 years or 160,000 km	70%

Capacity Retention	N1 PHEV / BEV Minimum Performance (EU7)
Up to 5 years or 100,000 km or x Wh	Monitoring 75 %
Up to 8 years or 160,000 km or x Wh	Monitoring 65 %

The GTR 22 HD concept is currently under development

The use of external loads is even more significant as for the Category 2 vehicles

Possible synergies should be identified if possible



5 year maximum discharge energy (Wh) = ■ Wh

8 year maximum discharge energy (Wh) = ■ Wh

Vehicles exceeding maximum discharge energy excluded from MPR assessment

$$Wh_{5 \text{ year nominal WLTP}} = TMH \text{ Energy consumption}_{WLTP} \left( \frac{Wh}{km} \right) \times 100\,000 \text{ km}$$

$$Wh_{8 \text{ year nominal WLTP}} = TMH \text{ Energy consumption}_{WLTP} \left( \frac{Wh}{km} \right) \times 160\,000 \text{ km}$$

**Possible Solution:**

**Worst Case WLTP (TMH Energy Consumption Wh/km)**

Backup

**Japan Proposal: Revision of additional text and the verification process of on board V2X**

**Revision of additional text**

**Original;**

or on-board power delivery when the vehicle is stationary for Category 2 vehicles.

**Proposal**

or on-board power delivery **which is used for purposes(\*) other than vehicle traction** for Category 2 vehicles.

*\*note: Electric refrigerator truck , luxury small Electric bus , Electric cement mixer truck, Electric aerial ladder truck, etc...*



W/High-spec.A/C & refrigerators



Only stationary usage

Some equipment, such as electric cement mixer, will always use large amounts of power from batteries, therefore there is no reason to limit V2X addition when the vehicle is stationary.

**Verification process of on board V2X**

**The accuracy of the amount of discharge energy\* for V2X purposes must be ensured.**

\*The amount of V2X energy used in the calculation of virtual mileages is calculated on-board, but the validation procedure for the on-board values is not described.

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1. Add requirement for verification of V2X power supply vs. on-board V2X to Part A (threshold: [5]%)
2. Provide an Exemption/Waiver for the verification of V2X for OEM/authority to reduce burden.