European Commission

Revision of EU GPP criteria for Transport

Interactive webinar – GHG emissions criteria for buses and waste collection vehicles – 16 March 14.00 CET

Joint Research Centre
the European Commission's
in-house science service

JRC Science Hub: ***ec.europa.eu/jrc***

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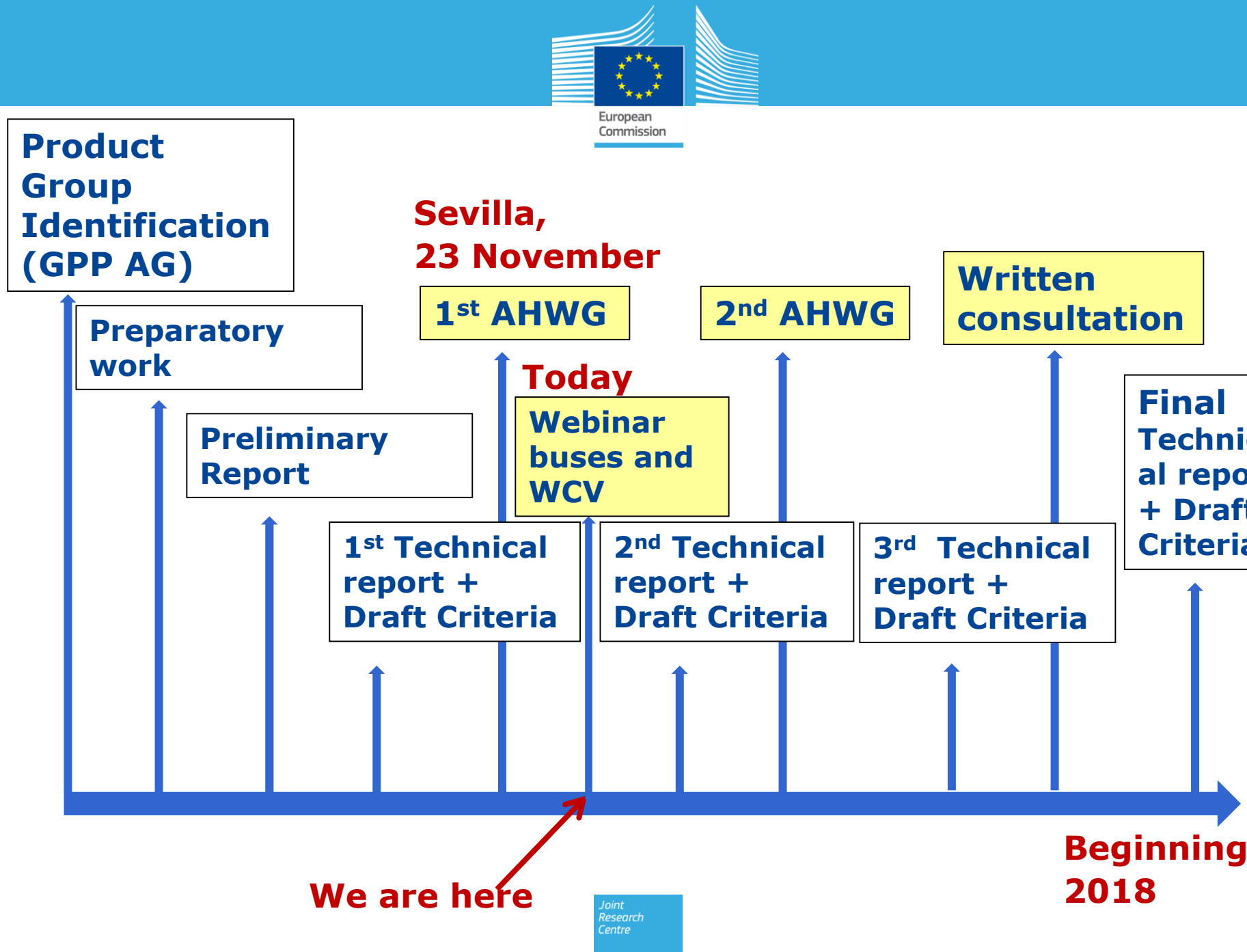
European Commission
Product Group Identification (GPP AG)
Preparatory work
Preliminary Report
1st Technical report + Draft Criteria
Sevilla, 23 November
1st AHWG
Today
Webinar buses and WCV
2nd Technical report + Draft Criteria
2nd AHWG
3rd Technical report + Draft Criteria
Written consultation
Final Technical report + Draft Criteria
We are here
Beginning 2018
Joint Research Centre

Agenda – webinar 16 March

	Topic (presentation or discussion)	**Time (CET)**
1.	Opening and welcome Tour-de-table checking audio connections	**14.00 - 14.15**
2.	Criteria proposal on Category 3 and 5 purchase or lease of buses and waste collection vehicles – GHG emissions	**14:15 - 14:45**
3.	Discussion and feedback from participants	**14:45 - 16:15**
4.	Summary and next steps - Wrap up of the webinar	**16:15 - 16:30**

PURCHASE OR LEASE OF BUSES AND PURCHASE OR LEASE OF WASTE COLLECTION VEHICLES

GHG emissions	GHG emissions
	Lower GHG emissions
Air polluting emissions	Zero tailpipe emissions
Technical options to reduce GHG emissions	Low viscosity lubricants
	Vehicle tyres – rolling resistance
	Tyre Pressure Monitoring Systems (TPMS)
	Air conditioning

Exhaust gas emissions	Exhaust pipe location and auxiliary units
Noise emissions	Tyre noise
	Vehicle noise
Vehicle manufacturing	Vehicle materials
	Lubricant oils
EV battery	Battery warranty
	Reuse of battery

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GHG EMISSIONS

TS1: GHG emissions – OPTION 1

Core: The vehicle shall demonstrate **WTW GHG emissions reduction** of
- BUSES: **15%** compared to an equivalent **EURO V/VI bus** (for discussion).
- Waste Coll TRUCKS: **10%** compared to an equivalent **EURO VI truck** (*)

The WTW GHG emissions will be calculated multiplying the energy consumption by the GHG emission factors in Table 4.

The **contracting authority** will set in the call for tender:
1) the **test method** to be used to measure the energy consumption according to recognised and validated standards, and
2) the WTW GHG emissions of the **vehicle to be used as reference.**

(*) there is an error in the technical report

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GHG EMISSIONS

TS1: GHG emissions – OPTION 1

Compr.: The vehicle shall demonstrate WTW GHG emissions reduction of BUSES: **25%** compared to an equivalent EURO V/VI bus (for discussion).
Waste Coll TRUCKS: **20%** compared to an equivalent EURO VI truck (*)

The WTW GHG emissions will be calculated multiplying the energy consumption by the GHG emission factors in Table 4.

The contracting authority will set in the call for tender:
1) the test method to be used to measure the energy consumption according to recognised and validated standards, and
2) the WTW GHG emissions of the vehicle to be used as reference.

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GHG EMISSIONS

Verification

The tenderer shall present the **test report according to the standard**, showing the results of **energy consumption** of the bus offered. The test shall be carried out or witnessed by technical services appointed by the type-approval authority.

The tenderer shall present a **declaration of the WTW GHG emissions** using the method set above.

In the case of the use of biofuels, the tenderer shall provide the composition of the blend, the **contract(s) with supplier(s),** their **certificates, issued by one of the voluntaries certification schemes** approved by the European Commission (https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels/voluntary-schemes), and the description of the **dedicated supply system** that avoids the mix with non-certificated suppliers.

In the case of the use of **biomethane or hydrogen**, the tenderer shall provide the **contract(s) with supplier(s)** and the description and technical specifications of the production and the **dedicated supply system**. Hydrogen produced with 100% RES electricity shall demonstrate the **on-site production of RES electricity**.

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GHG EMISSIONS

AC1 Lower GHG emissions – OPTION 1

Points will be awarded to those tenders offering a **larger WTW GHG saving** than the TS in proportion to the extra saving.

In case of **100% biofuel** vehicles, points will be awarded to those tenders that provide the contract(s) with supplier(s) of **advanced biofuels**, i.e. produced from lignocellulosic feedstocks (i.e. agricultural and forestry residues, e.g. wheat straw/corn stover/bagasse, wood based biomass), non-food crops (i.e. grasses, miscanthus, algae), or industrial waste and residue streams.

Verification: same as TS

GHG EMISSIONS

TS1 Use of technological improvement options – OPTION 2

The vehicle shall be equipped with one of the following **technologies** demonstrating WTW GHG emissions reduction

BUSES **Core:**

- Hybrid bus both diesel and natural gas
- Full Electric and Plug-in Hybrid Electric bus
- Fuel Cell Electric bus, for specific hydrogen pathways
- Biomethane bus
- 100% Biofuel bus, provided the biofuels comply with the requirements set by the RES Directive

WASTE COLL TRUCKS **Core and compr.:**

- Dedicated natural gas vehicles
- Hybrid trucks, both diesel and NG
- Biomethane vehicles
- 100% biofuels vehicles, provided the biofuels comply with the requirements set by the RES Directive
- Full Electric trucks
- Fuel Cell Electric trucks.

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GHG EMISSIONS

TS1 Use of technological improvement options – OPTION 2

Bus Compr:
The bus shall be equipped with one of the following technologies demonstrating WTW GHG emissions reduction

- Full Electric and Plug-in Hybrid Electric bus
- Fuel Cell Electric bus, for specific hydrogen pathways.
- Biomethane bus
- 100% Biofuel bus, provided the biofuels comply with the requirements set by the RES Directive

Verification:
Same as Option 1, but without test report for energy consumption

GHG EMISSIONS

AC1 Use of technological improvement options – OPTION 2

Points will be awarded to those tenders that provide the contract(s) with supplier(s) of:

- Electricity from 100% **renewable electricity**
- Hydrogen from 100% renewable electricity
- Biomethane from municipal **organic waste or manure**.
- **Advanced biofuels,** i.e. produced from lignocellulosic feedstocks (i.e. agricultural and forestry residues, e.g. wheat straw/corn stover/bagasse, wood based biomass), non-food crops (i.e. grasses, miscanthus, algae), or industrial waste and residue streams.

Verification: same as TS. 100% RES electricity shall demonstrate the on-site production of RES electricity

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Rationale (1/8)

- Lack of comparable data and harmonised standard on energy consumption of buses and waste collection vehicles
- VECTO tool is aimed at measuring and reporting CO_2 emissions from heavy vehicles, and this would be used also for buses
- UITP (International Association of Public Transport) standards: SORT, SORT for hybrid and SORT-E (for electric buses, which is still on-going)→ especially designed for buses.
- Other local cycles as the Millbrook London Transbus Bus cycle

Rationale (2/8)

- Given this situation, two options are proposed:

- Option 1 technology-neutral approach: the criterion is proposed to be based on the WTW GHG emissions, using default WTT factors for the different fuels and energy carriers.

- Option 2 technology-specific approach: the criterion is proposed to promote directly the technologies that have been identified as improvement options.

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Rationale (3/8)

Option 1: where it comes from

- 'Low Emission Buses' of DfT's Office of Low Emission Vehicles (OLEV) sets up a subsidies scheme to help reduce greenhouse gas (GHG) emissions from UK bus fleets

- 'Low Emission Bus' = one producing 15% less Well-to-Wheel (WTW) emissions compared with an equivalent Euro V diesel bus, based on a methodology developed by the LowCVP

Rationale (4/8)

Option 1: thresholds

Buses

- The results on performance of the buses studied suggest that a threshold of 15% WTW GHG savings will select hybrid buses. Some hybridisation packages are quite costly, but other ones have payback periods up to 1.5 years → core level
- A threshold above 24% would choose alternative fuel powertrains and a more complex level of hybridisation → comprehensive.

Waste collection trucks

- The results on performance of the trucks studied suggest that a threshold of 10% WTW GHG savings will select hybrid trucks and best NG trucks → core criterion.
- A threshold above 20% would choose electric vehicles and biomethane and renewable hydrogen → comprehensive level.

Rationale (5/8)

Option 1: reference vehicle

- Reference vehicle is crucial to formulate Option 1, and based on the market data and the current fleet → EURO V bus of the same characteristics (same as used by LowCVP)

- For buses there must be also data from SORT and other standards to measure fuel consumption

- But coming regulations aimed at measuring and reporting CO2 emissions of heavy duty vehicles will apply to new vehicles placed in the market, i.e. EURO VI vehicles, and thus, data of these buses and trucks will be available.

- For waste collection trucks: nothing similar to SORT → new truck

Rationale (6/8)

Option 1: WTT factors

- Factors are based on the joint work of JRC, EUCAR and Concawe (JEC - Joint Research Centre-EUCAR-CONCAWE collaboration, 2014), which is the most relevant reference in this field.
- Biofuels → the default value set by RES Directive as fossil fuel comparator, multiplied by 0.5, in line with the 50% saving requirement that will be in force in January 2017.
- Certificates → biofuel complies with the provisions of the RES Directive and lists the input materials used for its production.
- Electricity → the average carbon intensity over the period 2010 - 2020 recommended by the Methodology for Ecodesign of Energy-related Products (COWI; VHK, 2011).

Rationale (7/8)

Option 2: technology-specific approach

- Direct selection technologies with lower WTW GHG emissions, according to scientific and technical literature
- For fuel cell vehicles, WTW GHG saving potential heavily depends on the pathway to produce the hydrogen.
  - NG steam reforming raises some doubts: some studies show savings, other ones, no.
- It is proposed a provision to promote the use of renewable energy in the form of an award criterion.

Rationale (8/8)

Advanced biofuels

- Advanced biofuels, such as those made from wastes and algae, provide GHG savings with a low risk of causing indirect land-use change, and do not compete directly for agricultural land for the food and feed markets.
- Directive (EU) 2015/1513 limits the share of biofuels from crops grown on agricultural land that can be counted towards the 2020 renewable energy targets to 7%
- IEA data (IEA, 2012) show that advanced biofuels represent ~2.4% of the total worldwide biofuels production.
- Given that the ILUC emissions are not yet quantifiable and the low market availability of advanced biofuels, it is proposed to promote the use of advanced biofuels by means of an award criterion.

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Stakeholders comments

- **Option 1:**
  - Threshold set using one single test method to measure the fuel consumption: VECTO is regarded the best option, however VECTO timing exceeds this EU GPP revision timing.
  - Reference vehicles: Euro VI vehicle was the preferred one, since the EURO VI will have been in place enough time by 2018 to become a representative market reference.

- **Option 2**
  - Option 2 is recommended as interim solution, since it is very easy to implement, though not technology-neutral.
  - It needs to better distinguish urban city buses from long distance coaches.

- **General**
  - Fuels could not be specified for vehicles able to run on biodiesel or biomethane, since it is beyond the manufacturer responsibility

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Discussion and consultation questions

Option 1: technology-neutral

i. Do you agree that the thresholds should be set using one single test method, i.e. VECTO?
   - In that case, how would the reference vehicles be defined?
   - Are there data based on VECTO available?

ii. If VECTO option is not feasible for the time being, would it be possible to give leeway to the contracting authority to choose the test method and to define the reference vehicles, according to their specific conditions and needs?

iii. Do you agree with the thresholds proposed?

Option 2: technology-specific

i. Do you agree on Option 2 as interim solution, if Option 1 is not feasible for the time being?

ii. For buses, it has been suggested that there should three different lists of technologies, according to the duty cycles: city buses, interurban buses and coaches.
   - Do you agree with that?
   - Which technologies would fit in each list?

iii. For waste collection trucks, it will be very likely Option 2, which technologies should be in the list?

6. Conclusions, next steps and closure of the webinar

Next steps?

Following on from this webinar:

- **Meeting minutes and presentation** will be circulated

- You will receive news about the **2nd draft Technical report and criteria proposal** and dates for the **2nd AHWG meeting** in due time

Thank you very much

Stay in touch

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