

# EU CO<sub>2</sub>-based tolling – Eurovignette Directive and EFC standards

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# Outline

1. Overview of standards and Electronic Fee Collection (EFC) standardization
2. Impact of the updated Directive [1999/62](#) on EFC standards
3. Overview of CO<sub>2</sub>-related requirements from EU legislation that stem from the updated Directive [1999/62](#) and how these are supported by EFC standards
4. Examples of the calculation of the CO<sub>2</sub> emission classes for heavy-duty vehicles (HDVs)
5. [Update on new developments since Oct 2025](#)

# 1. Overview of standards and EFC standardization

# Overview of standards and EFC standardization

- **What is a standard?**

- A document approved by a recognized standardization body (CEN, ISO,...), intended to be used repeatedly, creating synergies and reducing costs, maintained to keep abreast with market developments and technology advancements
- Standards are not laws but sometimes referred to in legislation. For example, 8 CEN EFC standards are referred to in the European electronic toll service (EETS) legal acts ([Directive](#), [Delegated Act](#) and [Implementing Act](#))



- **EFC standardization**

- Create and ensure the long-term stability of the EFC ecosystem, support agreement, open market and interoperability
- 50+ published standards, technical specifications and technical reports  
System architecture, vocabulary, data dictionary, information exchanges for charging and compliance checking, security, testing for conformance assessment
- For more details – see [Introduction to standards on electronic fee collection \(EFC\)](#)

## 2. Impact of the updated Directive 1999/62 on EFC standards

# Directive 1999/62



European Union (EU) [Directive 1999/62](#) (aka the Eurovignette Directive) sets out how EU Member States can charge vehicles for using their road infrastructure, with the aim to:

- establish an internal market in road transport with a level playing field and ensure uniform and non-discriminatory application of rules
- strengthen the application of the user and polluter pays principles
- contribute to the financing of road infrastructures
- tackle congestion and the negative environmental and health impacts of air pollution and noise
- boost transport decarbonization by contributing to the implementation of the [Paris Agreement](#) on climate change and the EU's plans to reduce CO<sub>2</sub> emissions

# Directive 1999/62 and EFC standardization



## **The Directive does not refer to EFC standards**

- No automatic review procedure or request to update standards from the EC
- EFC stakeholders want the updated Directive to be underpinned by standards
- CEN EFC standardization group launched a review and updating procedure to
  - Identify the relevant changes in the new directive
  - Identify the need for changes in the standards
  - Work out, agree and implement the solutions

# Main changes to the Directive 1999/62 and their impacts on EFC standards

Change	Impact on EFC standards
All kinds of vehicles with at least four wheels (buses, heavy- and light-duty vehicles...)	None, already supported
In principle, time-based user charges are no longer permitted for HDVs from 25 March 2030	
Detailed regulations on time-based user charges for all types of vehicles	
Regulations on congestion charges	
<p><b>HDVs are to be categorized into one of five CO<sub>2</sub> emission classes</b></p> <ul style="list-style-type: none"> <li>• Infrastructure charge may be varied according to CO<sub>2</sub> emission class</li> <li>• An external cost-charge may be added for CO<sub>2</sub> emissions and be modulated depending on the CO<sub>2</sub> emission class</li> </ul>	<p><b>Yes</b>, current CO<sub>2</sub> class scheme is based on a static structure based on <b>CO<sub>2</sub> g/km</b> value ranges</p> <p>The new classification scheme is based on a CO<sub>2</sub> emission class (<b>CO<sub>2</sub> g/tkm</b>) and the classification of the vehicle is reassessed every six years</p>

# New CO<sub>2</sub> emission scheme in a nutshell

## Example Truck:

- Specific CO<sub>2</sub>-Emissions: 41,6 g/tkm
- Vehicle sub-group: 5-LH (tractor unit, >16t, 4 axles, sleeper cab, ≥ 265 kW)
- Initial Vehicle Registration date: 01.08.2021



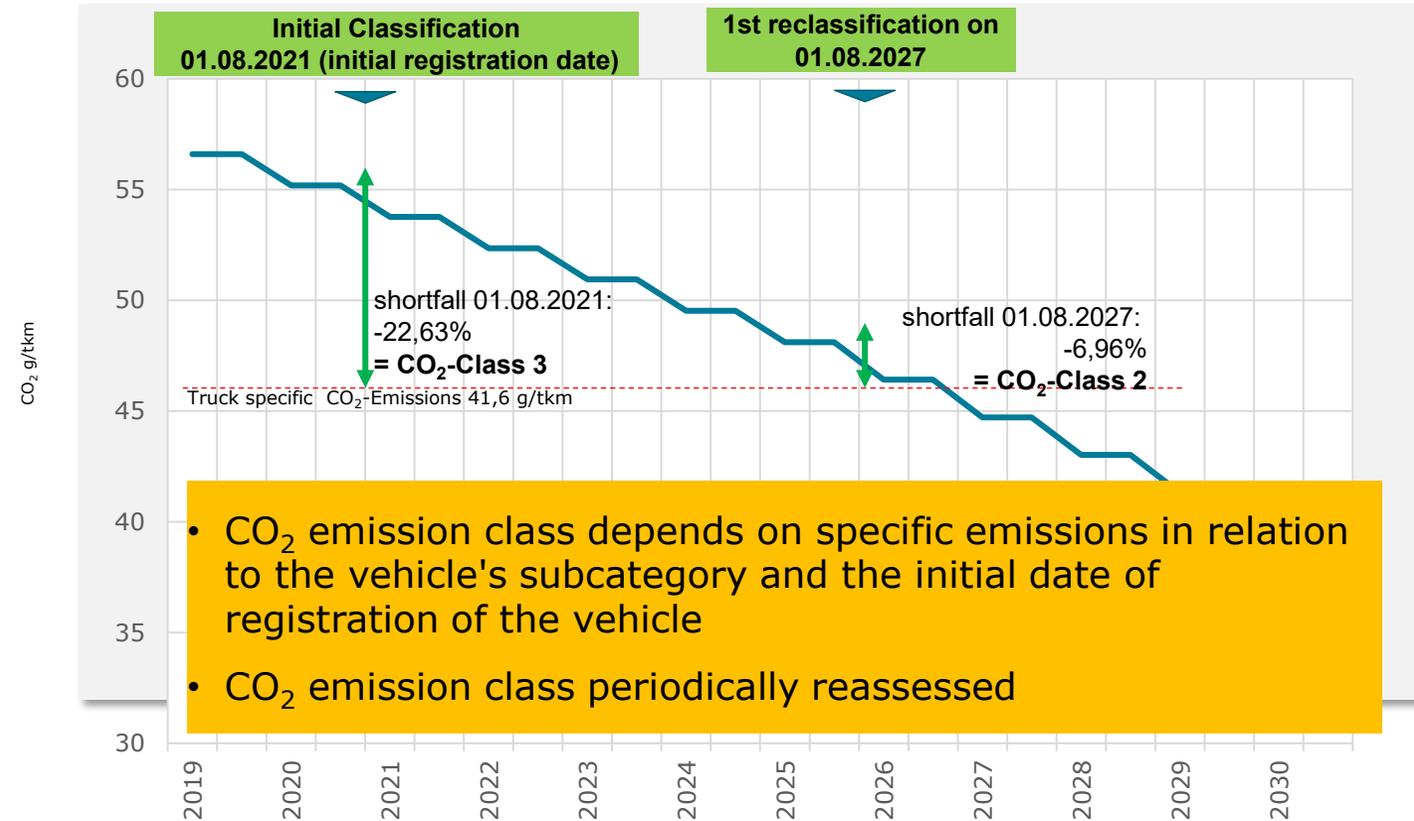
**Reference CO<sub>2</sub> emissions for the period of 1 July 2019 to 30 June 2020 for vehicle sub group 5-LH: 56,60 g/tkm**

## Initial classification 01.08.2021:

- CO<sub>2</sub>-limit for reporting period 2021: 53,77 g/tkm
- shortfall: -22,63%  
**= CO<sub>2</sub>-Class 3**

## 1st reclassification 01.08.2027:

- CO<sub>2</sub>-limit for reporting period 2027: 44,71 g/tkm
- shortfall: -6,96%  
**= CO<sub>2</sub>-Class 2**



[Source: based on slide of CEN/TC 278/WG 1 task force on the Eurovignette]

# Relevant data for new CO<sub>2</sub> emission classification scheme

## Relevant for toll calculation according to new directive

- CO<sub>2</sub> emission class (1-5)

- The **CO<sub>2</sub> emission class** is **the only new relevant attribute** to calculate the toll adhering to the new directive
- The toll may still be differentiated according to other parameters like axles

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## Relevant for classification and reclassification of vehicle

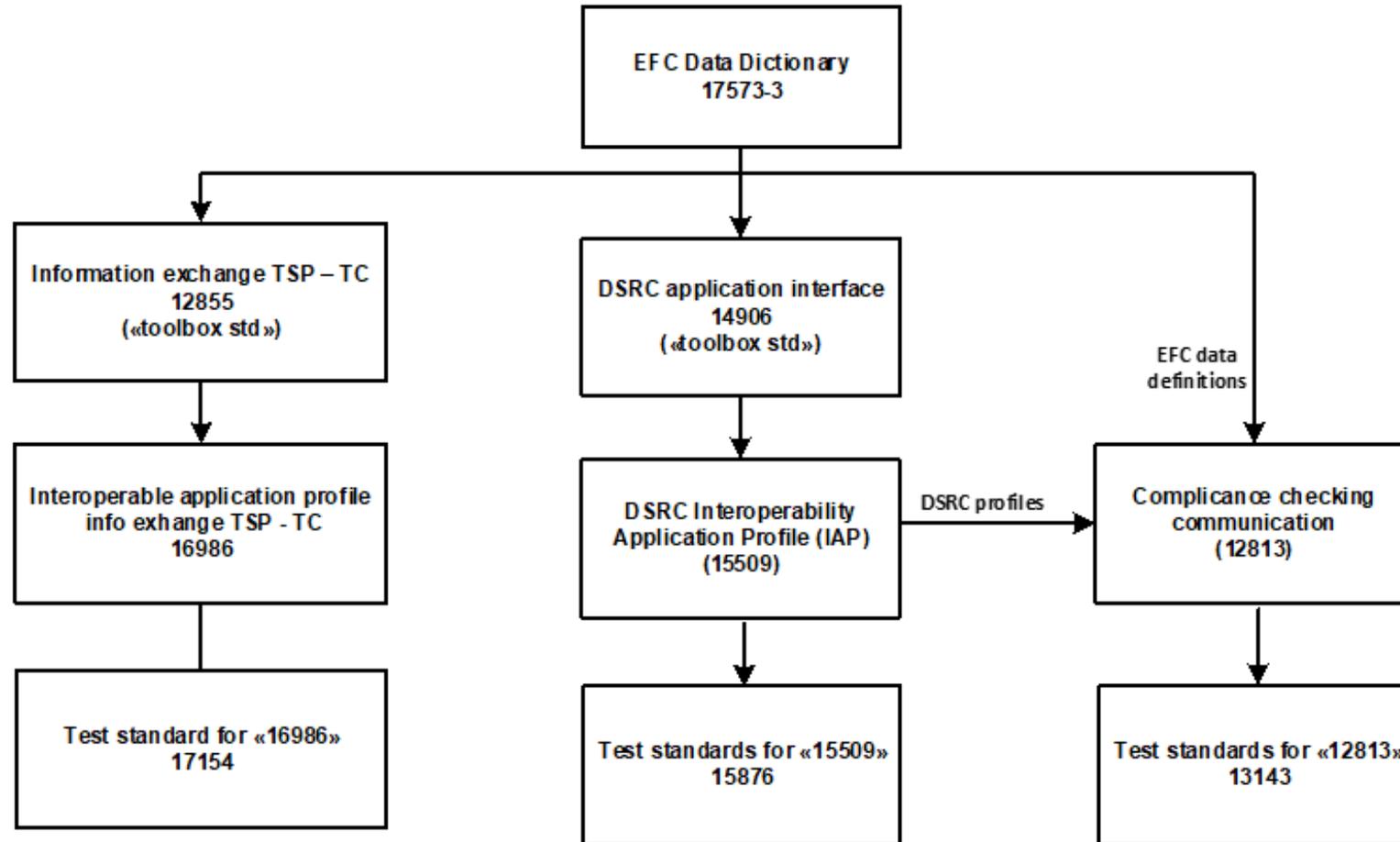
- Vehicle specific CO<sub>2</sub> value in [g/tkm]
- Initial vehicle registration date
- Vehicle group and sub-group
- Reference CO<sub>2</sub> value for vehicle sub-group

- Classification and re-classification is relevant to the vehicle owner and his TSP
- TCs have to consider a change of the emission class after re-evaluation when calculating the toll
- Enforcement operators may require this information to check the TSPs provided vehicle classification

# Overview of impacts on standards

Change	Impact on EFC standards
CO <sub>2</sub> emission classes (1-5)	<b>Yes</b> , should be supported for exchange on the white list and over the DSRC interface
Vehicle-specific CO <sub>2</sub> emission value [g/tkm]	<b>Yes</b> , should be supported for exchange on the white list for toll calculation and for enforcement purposes
Initial vehicle registration date	
Vehicle group or sub-group	
Reference CO <sub>2</sub> value for vehicle sub-group	No, this information is available in published EU legislative acts for each vehicle group and sub-group. The vehicle sub-group is determined by base values <i>vehicle group, vehicle type, axle or tyre configuration, cabin type and engine power.</i>
Vehicle identification number (VIN)	<b>Yes</b> . It is already exchangeable via "Provide User Data" but it is currently not part of the nominal vehicle attributes, which will also be supported in the future

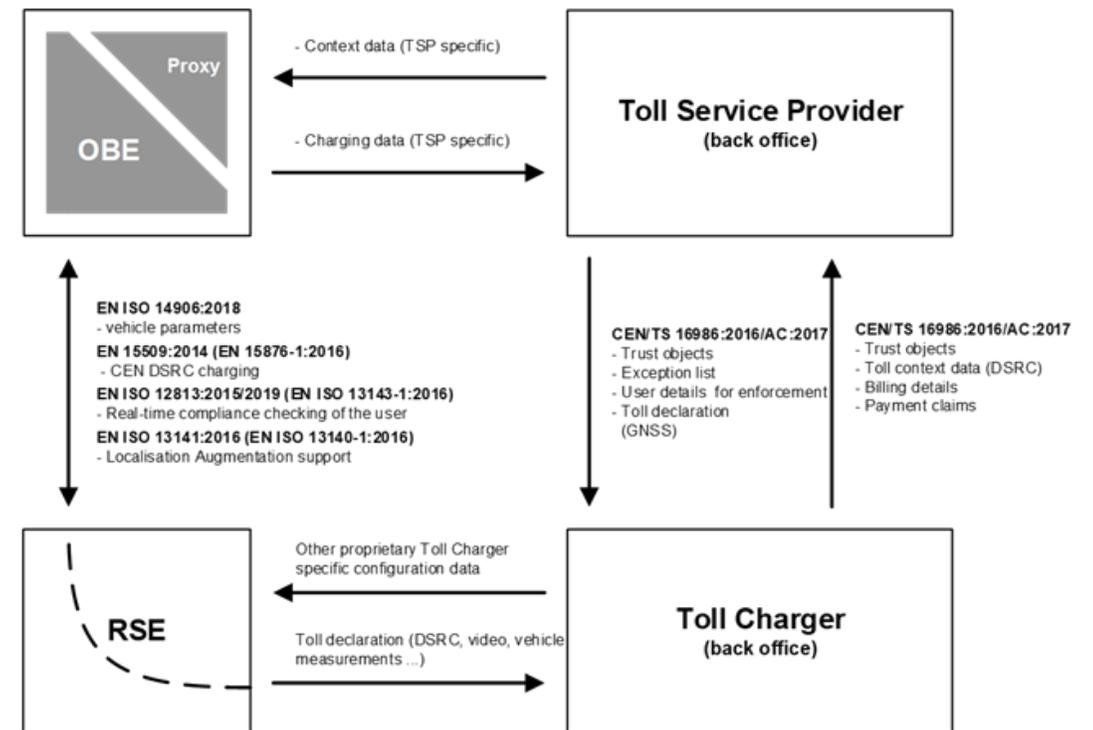
# Relationship between relevant standards



# Summary

- Standards are maintained to be kept up to date
- EFC standards have been updated with extended vehicle related-data (CO<sub>2</sub> emissions...) to underpin the new Directive
- EN 16986:2024 incl. the relevant data types to support the new Directive
- The recast of the EETS legislation refers to dated versions of standards. The legislator decides whether to refer to (updated) standards in legislation. Updated versions are not automatically adopted in the EETS legislation
- Most of the dated referenced standards have been updated (see [Introduction to standards on EFC](#), Annex – Published EFC CEN/ISO documents). Further updates are being prepared.

## CEN EFC standards referenced in the EETS legislation



### 3. Overview of CO<sub>2</sub>-related requirements from EU legislation that stem from the updated Directive 1999/62 and how these are supported by EFC standards

# Introduction

- EU legal acts are published in the Official Journal of the European Union and made available via the [EU law website](#). The date of entry into force is specified in the respective legal act
- EU legal acts are updated from time to time, either through recasts or amendments. A recast of legal act brings together in a single new act a legislative act and all the amendments to it. The new act passes through the full legislative process and repeals all the acts being recast
- Example: Directive 2022/362 refers to Regulation (EU) 2017/2400, Annex I, Table 1 – vehicle groups for vehicles of category N. Regulation 2017/2400 has been subject to amendments
- Text of **12 August 2020: vehicle groups: 0-17**
- Text of **12 August 2022: vehicle groups: 0-19**
- **Hence, the EU CO<sub>2</sub> tolling-related legislation has evolved since the publication of the Directive 1999/62 on 24 March 2023**
- **Other changes or amendments to EU CO<sub>2</sub> tolling-related legal acts are likely to happen in the next few years, e.g. the current legal initiative on the trailer amendment ...**

# Approach used to present the inventory of requirements 1(3)

The following slides build on and provide further details on the relevant data for new CO<sub>2</sub> emission classification scheme

1. CO<sub>2</sub> emission class: The only new relevant data to calculate the toll according to the updated Directive [1999/62](#)
2. Relevant parameters for CO<sub>2</sub> emission classification and reclassification of the heavy-duty vehicle (HDV)
  - a) vehicle specific CO<sub>2</sub> value in g/tkm
  - b) initial vehicle registration date
  - c) vehicle group and sub-group
  - d) reference CO<sub>2</sub> emissions per vehicle sub-group

# Approach used to present the inventory of requirements 2(3)

## 3. Relevant parameters for verification of the heavy-duty vehicle sub-group

- a) axle configuration
- b) chassis configuration
- c) permissible maximum laden weight
- d) cab type
- e) engine power

NB: vehicle identification number and licence plate number are assumed to be known to the audience, and therefore not further discussed in this presentation

### Regulation 2017/2400

vehicle groups			Vehicle group
Axle configuration	Chassis configuration	Technically permissible maximum laden mass (tons)	
4 × 2	Rigid lorry	> 3,5 – 7,5	(0)
	Rigid lorry (or tractor) (**)	> 7,5 – 10	1
	Rigid lorry (or tractor) (**)	> 10 – 12	2
	Rigid lorry (or tractor) (**)	> 12 – 16	3

### Regulation 2019/1242

Table 1  
Vehicle sub-groups (sg)

Heavy-duty vehicles	Cab type	Engine power	Vehicle sub-group (sg)
Rigid lorries with axle configuration 4 × 2 and technically permissible maximum laden mass > 16 tonnes	All	< 170 kW	4-UD
	Day cab	≥ 170 kW	4-RD
	Sleeper cab	≥ 170 kW and < 265 kW	
	Sleeper cab	≥ 265 kW	4-LH
Rigid lorries with axle configuration 6 × 2	Day cab	All	9-RD

# Approach used to present the inventory of requirements 3(3)

## Columns in the table below

- What – structured according to the previous slides
- Reference to EU legal provisions (**legal act** and relevant part within the act)
- Reference to how these are underpinned by EFC standards (reference to the clause in the main document)
  - Data dictionary (**EN ISO 17573-3:2024**)
  - Interoperable application profiles for information exchange between Service Provision and Toll Charging (**EN 16986:2024**, reference to the information and table)
  - Vehicle holder data exchanges: User parameter request (table 11) + User parameter response details (table 16)
  - Exception list entries extended
    - 12855's extended Nominal vehicle parameters (table 15)
    - 16986's constrained Nominal vehicle parameters (table 41; `NominalVehicleParameters`)
  - AduReasonCode (table 5) and ICS Proforma (Annex B): also extended but not discussed in the slides below

# Inventory of requirements 1(4)

What	EU legal provisions	EN ISO 17573-3:2024	EN 16986:2024
1) CO <sub>2</sub> emission class	<p>Directive (EU) <a href="#">2022/362</a> and Directive <a href="#">1999/62/EC</a>            Article 7ga (2) defines the CO<sub>2</sub> emission classes for heavy-duty vehicles (slide 24 provides further details)</p> <p><a href="#">Directive 1999/37/EC</a>, Annex I, (V.10) CO<sub>2</sub> emission class of heavy-duty vehicles determined at the moment of first registration</p>	5.2.8 (part of Future Characteristics)	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)
2a) CO <sub>2</sub> emissions	<p><a href="#">Commission Regulation (EU) 2017/2400</a>, Annex IV, Part II (Customer information file), 2.6.1 - Specific CO<sub>2</sub> emissions [gCO<sub>2</sub>/tkm] (01.03.2025 edition)</p> <p>NB: point 2.3 in 12.8.2020 version</p>	5.2.10	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)
2b) Initial registration date	<p><a href="#">Council Directive 1999/37/EC</a> on the registration documents for vehicles, Annex I, Part I, II.5: (B) date of first registration of the vehicle</p>	5.4.6	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)

# Inventory of requirements 2(4)

What	EU legal provisions	EN ISO 17573-3:2024	EN 16986:2024
2c) Vehicle group and vehicle sub-group	<p><a href="#">Commission Regulation (EU) 2017/2400</a>, Annex I, Table 1 - Vehicle groups for vehicles of category N. Consolidated text of 01.01.2023, incorporating M1-M3</p> <p><a href="#">Regulation (EU) 2019/1242</a>, Annex I, Table 1 - Vehicle sub-groups (sg)</p>	<p>5.3.11 EuVehicleGroup</p> <ul style="list-style-type: none"> <li>• mainEuVehicleGroup</li> <li>• subGroup</li> </ul>	<p>UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)</p>
2d) Reference CO2 emissions per vehicle sub-group	<p><a href="#">Commission Implementing Decision (EU) 2021/781</a>, Annex II - reference CO2 emissions referred to in Regulation (EU) 2019/1242 (see slides 26-27 for details)</p>	N/a	N/a

# Inventory of requirements 3(4)

What	EU legal provisions	EN ISO 17573-3:2024	EN 16986:2024
3a) axle configuration	<p><a href="#">Commission Regulation (EU) 2017/2400</a>, Annex I, Table 1 (vehicle groups for vehicles of category N), Axle configuration: 4 x 2, 4 x 4, 6 x 2, 6 x 4, 6 x 6, 8 x 2, 8 x 4, 8 x 6 and 8 x 8.</p> <p><a href="#">Regulation (EU) 2019/1242</a>, Annex I, Table 1 - Vehicle sub-groups (sg)</p>	5.3.29 (wheels configuration)	<p>UserParameterRequest (Table 11)</p> <p>UserParameterResponseDetails (Table 16)</p> <p>NominalVehicleParameters (Tables 15/41)</p>
3b) chassis configuration	<p><a href="#">Regulation (EU) 2019/1242</a>, Art 3, definitions: (6) rigid lorry, (7) tractor</p>	5.2.7	<p>UserParameterRequest (Table 11)</p> <p>UserParameterResponseDetails (Table 16)</p> <p>NominalVehicleParameters (Tables 15/41)</p>
3c) permissible maximum laden weight	<p><a href="#">Directive (EU) 2022/362</a>, Art 3, Part I (data relating to vehicles) – technically permissible maximum laden mass of the vehicle</p> <p><a href="#">Directive 1999/37/EC</a>, Annex I, (F.1) maximum technically permissible laden mass, except for motorcycles</p>	5.2.69	<p>UserParameterRequest (Table 11)</p> <p>UserParameterResponseDetails (Table 16)</p> <p>NominalVehicleParameters (Tables 15/41)</p>

# Inventory of requirements 4(4)

What	EU legal provisions	EN ISO 17573-3:2024	EN 16986:2024
3d) Cab type	<a href="#">Regulation (EU) 2019/1242</a> , Annex I, Table 1 - Vehicle sub-groups (sg), 1st para below the table “Sleeper cab’ means a type of cab that has a compartment behind the driver’s seat intended to be used for sleeping as reported pursuant to Articles 13a and 13b”	5.2.6	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)
3e) Engine power	<a href="#">Commission Directive 2003/127/EC</a> , Annex I, II.5, (P.2) maximum net power (in kW) (if available),	5.3.10 (part of EngineDetails)	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)

## 4. Examples of the calculation of the CO<sub>2</sub> emission classes for HDVs

# HDVs - Determination of CO<sub>2</sub> emissions classes per vehicle sub-group

## How are the heavy-duty vehicle CO<sub>2</sub> emission classes defined?

- CO<sub>2</sub> emission classes are defined per vehicle sub-group (sg)
  - Reference CO<sub>2</sub> emissions classes are specified by vehicle sg
  - Relevant emission reduction trajectory is specified
- ➔ Allows determination of the thresholds for CO<sub>2</sub> emission classes per vehicle sg, and hence the CO<sub>2</sub> emission class for a specific vehicle

Two examples are used to illustrate how to determine these in practice

# HDVs - CO<sub>2</sub> emissions classes per vehicle sub-group

Directive [1999/62](#), Article 7ga (2) defines the CO<sub>2</sub> emission classes for HDVs

- a) **CO<sub>2</sub> emission class 1** – vehicles that do not belong to any of the CO<sub>2</sub> emission classes;
- b) **CO<sub>2</sub> emission class 2** – vehicles of the vehicle sg registered for the first time in the reporting period of the year Y with CO<sub>2</sub> emissions more than 5 % below the emission reduction trajectory for the reporting period of the year Y and the vehicle sg but not belonging to any of the CO<sub>2</sub> emission classes 3-5;
- c) **CO<sub>2</sub> emission class 3** – vehicles of the vehicle sub-group registered for the first time in the reporting period of the year Y with CO<sub>2</sub> emissions more than 8 % below the emission reduction trajectory for the reporting period of the year Y and the vehicle sg not belonging to any of the CO<sub>2</sub> emission classes 4-5;
- d) **CO<sub>2</sub> emission class 4** – low-emission HDVs (Art 2, point 30);
- e) **CO<sub>2</sub> emission class 5** – zero-emission vehicles (Art 2, point 29).

The **classification of a vehicle belonging to CO<sub>2</sub> emission class 2 or 3 is reassessed every six years** after the date of its first registration and that, where relevant, the vehicle is reclassified in the relevant emission class based on the thresholds applicable at that time

# HDVs - reference CO<sub>2</sub> emissions for heavy-duty vehicle groups 1(2)

[Commission Implementing Decision \(EU\) 2021/781](#), Annex II - Reference CO<sub>2</sub> emissions referred to in Article 1, second paragraph, of Regulation (EU) 2019/1242:

Below the reference CO<sub>2</sub> emissions for the sub-groups of **vehicle-duty vehicle groups 4, 5, 9 and 10** for the period from 1 July 2019 to 30 June 2020.

Sub-group <i>sg</i>	<i>rCO<sub>2sg</sub></i> in g/tkm
4-UD	307,23
4-RD	197,16
4-LH	105,96
5-RD	84,00
5-LH	56,60
9-RD	110,98
9-LH	65,16
10-RD	83,26
10-LH	58,26

# HDVs - reference CO<sub>2</sub> emissions for heavy-duty vehicle groups 2(2)

[Commission Implementing Decision \(EU\) 2023/2698](#), Annex I - Reference CO<sub>2</sub> emissions for vehicle groups not covered by Regulation (EU) 2019/1242:

Below the reference CO<sub>2</sub> emissions for the heavy-duty vehicle groups 1, 2, 3, 11, 12 and 16.

Vehicle group	Reference CO <sub>2</sub> emissions in g/tkm
1	410,1
2	267,9
3	207,2
11	157,0
12	104,4
16	110,3

# HDVs - emission reduction trajectory

Directive [1999/62](#), Article 2 (point 37) defines the (CO<sub>2</sub>) 'emission reduction trajectory'

for the reporting period of a year (Y) and vehicle sub-group (sg), namely ETY,sg, means the product of the annual CO<sub>2</sub> emissions reduction factor (R-ETY) times the reference CO<sub>2</sub> emissions (rCO<sub>2</sub>sg) of the sub-group (sg), namely  $ETY,sg = R-ETY \times rCO_2sg$ ; for years  $Y \leq 2030$ , R-ETY and rCO<sub>2</sub>sg are both determined in accordance with point 5.1 of Annex I to Regulation (EU) 2019/1242; for years  $Y > 2030$ , R-ETY is 0,70; rCO<sub>2</sub>sg applies as adjusted by delegated acts adopted in accordance with Article 11(2) of Regulation (EU) 2019/1242 for the reporting periods commencing after the respective dates of application of those delegated acts;



- HDVs reference CO<sub>2</sub> emission values and thresholds for classes 2-3
  - From 1 July 2019 to 30 June 2026 (a six-year period) a linear reduction of **2.5% per year**
  - From 1 July 2026 to 30 June 2031 (a five-year period) a linear reduction of **3.0% per year**

# Thresholds for CO<sub>2</sub> emission classes per year per sg 5-LH

		ref Y	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+11
Year trajectory		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		100%	97.5%	95.0%	92.5%	90.0%	87.50%	85%	82.0%	79.0%	76.0%	73.0%	70.0%
Reference CO2 emissions													
rCO <sub>2sg</sub> in g/tkm	56.6	56.6	55.2	53.8	52.4	50.9	49.5	48.1	46.4	44.7	43.0	41.3	39.6
class 2	53.77	53.8	52.4	51.1	49.7	48.4	47.0	45.7	44.1	42.5	40.9	39.3	37.6
class 3	52.07	52.1	50.8	49.5	48.2	46.9	45.6	44.3	42.7	41.1	39.6	38.0	36.5
class 4 LE HDVs	28.30	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
class 5 (ZEV)	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

# Thresholds for CO<sub>2</sub> emission classes per year per sg 5-LH

		ref Y	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+11
Year trajectory		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		100%	97.5%	95.0%	92.5%	90.0%	87.50%	85%	82.0%	79.0%	76.0%	73.0%	70.0%
Reference CO2 emissions													
rCO <sub>2sg</sub> in g/tkm	56.6	56.6	55.2	53.8	52.4	50.9	49.5	48.1	46.4	44.7	43.0	41.3	39.6
class 2	53.77	53.8	52.4	51.1	49.7	48.4	47.0	45.7	44.1	42.5	40.9	39.3	37.6
class 3	52.07	52.1	50.8	49.5	48.2	46.9	45.6	44.3	42.7	41.1	39.6	38.0	36.5
class 4 LE HDVs	28.30	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
class 5 (ZEV)	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Example:** threshold for class 2 at the time of the 1st reclassification

**Example:** threshold for class 3 at the time of the initial registration

**Example: specific CO<sub>2</sub> emissions 41.6 g/tkm, initial registration date 1 Aug 2021**

- CO<sub>2</sub> emission class at the initial registration date: **class 3**
- CO<sub>2</sub> emission class at the 1<sup>st</sup> reclassification (6 years later, i.e. 1 Aug 2027): **class 3**

# Thresholds for CO<sub>2</sub> emission classes per year per sg 10-RD

		ref Y	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+11
Year trajectory		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		100%	97.5%	95.0%	92.5%	90.0%	87.50%	85%	82.0%	79.0%	76.0%	73.0%	70.0%
Reference CO2 emissions													
rCO <sub>2sg</sub> in g/tkm	83.3	83.3	81.2	79.1	77.0	74.9	72.9	70.8	68.3	65.8	63.3	60.8	58.3
class 2	79.10	79.1	77.1	75.1	73.2	71.2	69.2	67.2	64.9	62.5	60.1	57.7	55.4
class 3	76.60	76.6	74.7	72.8	70.9	68.9	67.0	65.1	62.8	60.5	58.2	55.9	53.6
class 4 LE HDVs	41.63	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6
class 5 (ZEV)	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

# Thresholds for CO<sub>2</sub> emission classes per year per sg **10-RD**

		ref Y	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+11
	Year trajectory	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		100%	97.5%	95.0%	92.5%	90.0%	87.50%	85%	82.0%	79.0%	76.0%	73.0%	70.0%
Reference CO2 emissions rCO <sub>2sg</sub> in g/tkm	83.3	83.3	81.2	79.1	77.0	74.9	72.9	70.8	68.3	65.8	63.3	60.8	58.3
class 2	79.10	79.1	77.1	75.1	73.2	71.2	69.2	67.2	64.9	62.5	60.1	57.7	55.4
class 3	76.60	76.6	74.7	72.8	70.9	68.9	67.0	65.1	62.8	60.5	58.2	55.9	53.6
class 4 LE HDVs	41.63	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6
class 5 (ZEV)	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Example:** threshold for class 3 at the time of the initial registration

**Example:** threshold for class 3 at the time of the 1st reclassification

## Example: specific CO<sub>2</sub> emissions **61.2 g/tkm**, initial registration date **5 April 2021**

- CO<sub>2</sub> emission class at the initial registration date: **class 3**
- CO<sub>2</sub> emission class at the 1<sup>st</sup> reclassification (6 years later, i.e. 5 April 2027): **class 3**

## 5. Update on new developments since Feb 2024

# Update of regulation 2019/1242 “CO<sub>2</sub> emission performance for new HDVs”

- Regulation [2019/1242](#) has been amended by Regulation [2024/1610](#) and must be applied from 1 July 2024
- Main changes are:
  - Inclusion of further vehicle categories in the scope (M2, M3, N1, N2, N3, O3 and O4)
  - Definition of vehicle subgroups for every vehicle group
  - Introduction of a new vehicle property (operational range) for assigning subgroups and therefore potential re-classification of existing vehicles
  - New definition of zero-emission vehicles
  - New or updated emission reduction curves for vehicle subgroups

CO <sub>2</sub> emissions reduction targets $r_{fg}$ and $r_{fp}$					
Vehicle sub-groups $sg$		Reporting periods of the years			
		2025 – 2029	2030 – 2034	2035 – 2039	As from 2040
Medium lorries	53, 54	0	43 %	64 %	90 %
Heavy lorries > 7,4t	1s, 1, 2, 3	0	43 %	64 %	90 %
Heavy lorries > 16 t with 4x2 and 6x4 axle configurations	4-UD, 4-RD, 4-LH, 5-RD, 5-LH, 9-RD, 9-LH, 10-RD, 10-LH	15 %	43 %	64 %	90 %
Heavy lorries > 16 t with special axle configurations	11, 12, 16	0	43 %	64 %	90 %
Vocational vehicles	53v, 1sv, 1v, 2v, 3v, 4v, 5v, 9v, 10v, 11v, 12v, 16v	0	0	64 %	90 %

\* Further definitions for buses and trailers in the regulation

# Update of reference values and new reference values for vehicle subgroups

- Existing reference values for vehicle subgroups 4, 5, 9 and 10 are likely to be updated by June 2025. For Eurovignette, the date of application would be the next reporting period (i.e. starting on 1 July 2026)
- Reference values for subgroups 1,2,3,11,12 and 16 are being discussed. The publication is expected sometime between Q2 2025 to Q2 2026. The current very short implementation period (i.e. the new reference values enter into force 20 days after their publication) is being discussed. The publication of [2023/2698](#) is irrelevant since it covers the reference period 1 July 2020 to 30 June 2021. The reduction curve according to [2024/1610](#) starts on 1 July 2021

## New Euro 7 legislation

- In May 2024, Regulation [2024/1257](#) has been published – “on type-approval of motor vehicles and engines and of systems, components and separate technical units intended for such vehicles, with respect to their emissions and battery durability (Euro 7)”
- New Euro 7 classes: Euro 7G, Euro 7ext, Euro 7Gext
  - G – geofencing technology to monitor driving in zero emission mode
  - Ext – type approval of N2 vehicles based on N1 vehicle requirements
  - Gext – combination of both properties
  - Euro 7 classes for N1 vehicles (I, II and III)

# Impact of new legislation on EU tolling schemes

- Toll schemes that already have or plan to implement it in the future, need to respect the new or updated rules for determination of the CO<sub>2</sub> emission class of a vehicle
- Vehicles that could not be categorized so far, because of missing reference values, can now be assigned better CO<sub>2</sub> emission classes than 1
- New rules need to be implemented for re-classification of vehicles 6 years after initial registration or vehicles with an initial registration date after 1 July 7 2025 (new reference values for subgroups 4, 5, 9 and 10)
  - CO<sub>2</sub> emission calculators need to be significantly updated
- Inclusion of almost all types of vehicles into the CO<sub>2</sub> reduction schemes (buses), different treatment of vocational vehicles needs to be applied
- Complex interactions of different dates of entry into force need to be analysed (start of the reduction curves, publication of the reference values, the initial registration dates of vehicles)
- A number of details of actual implementation of these new rules could be clarified with the EC. Some points remain open (e.g. which initial registration date needs to be recognized for classification of subgroups 1,2,3,11,12 and 16)

# Impact of new legislation on standards

The following new parameters have been implemented in EN ISO 17575-3:2024 and EN ISO 12855:2025

```

EuroValueSubClass ::= INTEGER {
    noEntry           (0),
    euro7G            (1),
    euro7ext          (2),
    euro7Gext         (3)
    -- (4-255) are reserved for future CEN and ISO use
}(0..255)
    
```

Table 27 — EuroValueSubClass

Subtype	Parent type	Semantics
-	INTEGER	<p><b>EuroValueSubClass</b> represents the vehicle's sub-category which is defined for certain Euro emission categories as defined in EU Regulation 2024/1257.<sup>[12]</sup></p> <p>The following semantics are assigned:</p> <ul style="list-style-type: none"> <li>— <b>euro7G</b>: Indicating a subgroup for vehicles equipped with internal combustion engines with geofencing technologies. <b>NOTE</b> These vehicles are equipped with a driver warning system to inform the user when the traction batteries are nearly empty and to stop the vehicle if not charged within 5 km from the first warning while on zero-emission mode inside the geofencing area;</li> <li>— <b>euro7ext</b>: Indicating a subgroup for vehicles of category N2 between 3,5 t and 5 t maximum mass originating from a type of vehicle of category N1 if the vehicle meets the requirements for a type of vehicle of category N1;</li> <li>— <b>euro7Gext</b>: Indicating a subgroup for vehicles that meet both the characteristics of <b>euro7G</b> and <b>euro7ext</b>.</li> </ul>

Table 64 — VehicleOperationalRange

Subtype	Parent type	Semantics
Int2Unsigned		<p><b>VehicleOperationalRange</b> defines the distance a vehicle can travel under long haul transport conditions without being re-charged or re-filled. The value shall be stated in km.</p>

VehicleOperationalRange ::= Int2Unsigned

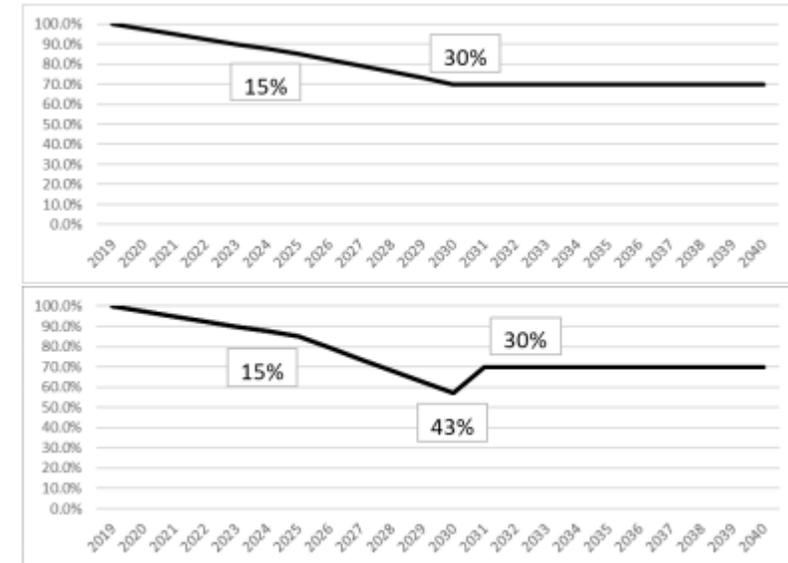
Update of VehicleDescription was done during implementation of DIS comments in ISO/FDIS 12855

# Updated proposal to amend the Eurovignette Directive

- On 2 Oct 2025, the [EC adopted an amended proposal \(COM/2025/589\)](#) for amending the Eurovignette Directive and further affected Directives as regards the CO<sub>2</sub> emission class of heavy-duty vehicles (HGVs) with trailers
  - The EC proposes a targeted amendment of EU rules on road tolls and user charges to clarify and simplify certain provisions
  - An overview of that concept was presented at the WG 1/WG 5 meeting in Oct 2023 (cf. N 3282)
  - It updates the original proposal from 2023, while preserving its original aim, to consider the effect of trailers on the CO<sub>2</sub> emissions of HGVs in road charging schemes that differentiate tolls based on vehicles' CO<sub>2</sub> emissions. It notably includes consideration of the CO<sub>2</sub> emissions of the vehicle combination in operation
  - The concept underlying the proposal remains essentially unchanged
  - Next steps:
    - The proposal will now be considered by the European Parliament and the Council under the ordinary legislative procedure
    - The EC holds a Eurovignette expert group meeting on trailers on 30 Oct 2025
    - **A significant opposition of Member States led to a modified proposal of the amendment which does not include any provisions on the inclusion of trailers in the determination of the CO<sub>2</sub> emission class**

# Overview of the main proposed changes to the Eurovignette Directive

- ~~Introduction of trailer based determination of CO<sub>2</sub> emissions of a vehicle combination~~
- Clarification of some **definitions** and replacing own definitions by referencing to other Directives and Regulations
- **Adjusted emission trajectories** to be applied for tolling in contrast to trajectories in Regulation (EU) [2019/1242](#)
- Allow lead time of **six months for introduction with two possible dates (1 January or 1 July)** each year for new or updated reference values for CO<sub>2</sub> emissions of vehicle subgroups to allow for technical implementation
- Clarification on determining CO<sub>2</sub> emission classes for vehicles which **initial registration date** was before the start of the emission trajectory
- Clarification on determining the CO<sub>2</sub> emission class for emission free vehicles with **range extenders**
- Allowing a re-calculation of CO<sub>2</sub> emissions of **dual fuel** vehicles
- Clarification for determining CO<sub>2</sub> emission class for **vocational** vehicles
- **Evaluation of options for determining CO<sub>2</sub> emissions for retrofitted vehicles (two-year evaluation)**



# Prolongation of toll exemptions for emission free vehicles

- The EC proposed another amendment to prolong toll exemptions for emission free vehicles – document 2025/0188 (COD)

## *Article 1*

In of Article 7ga(1), fifth subparagraph, of Directive 1999/62/EC, the date ‘31 December 2025’ is replaced by ‘30 June 2031’, and the date ‘1 January 2026’ is replaced by ‘1 July 2031’.

Without prejudice to the reduction of rates provided for in paragraph 3, Member States may provide for reduced rates of infrastructure or user charges, or exemptions to pay infrastructure or user charges for zero emission vehicles of any vehicle group from 24 March 2022 until 31 December 2025. From 1 January 2026, such reductions shall be limited to 75 % compared to the charge applicable to CO<sub>2</sub> emission class 1, as defined in paragraph 2.

- The proposal was adopted by the EU parliament on 7 Oct 2025, which the Council is likely to confirm. That means that EU Member States may exempt emission free vehicles from paying infrastructure charges until 30 June 2031

# Update of reference values for subgroups 4,5,9,10

- On 15<sup>th</sup> Dec 2025, a regulation was adopted that changes the reference values for the vehicle subgroups 4,5,9,10 (EU 2025/2545)
- For the purpose of tolling, these values need to be used for classifications as of 1<sup>st</sup> Jul 2026:
  - Initial registration date before 1<sup>st</sup> Jul 2026 and automatic reclassification from 1<sup>st</sup> Jul 2026
  - Initial registration date from 1<sup>st</sup> Jul 2026 and initial classification or reclassification from 1<sup>st</sup> Jul 2026
- The actual values for classification also depend on the approval of the planned amendment of the Eurovignette Directive as it corrects a mistake of the emission reduction curves
- The EC published tables with the annual [reference values](#) to support the implementation of CO<sub>2</sub> calculators

Sub-group sg	Reference CO <sub>2</sub> emissions in respective reporting periods	
	Reporting periods of the year 2019 and onwards	Reporting periods of the year 2025 and onwards
	i = 0 (non-adjusted)	i = 1 (adjusted)
	rCO <sub>2,sg,0</sub> in g/tkm	rCO <sub>2,sg,1</sub> in g/tkm
4-UD	307,23	299,57
4-RD	197,16	195,77
4-LH	105,96	103,32
5-RD	84,00	83,53
5-LH	56,60	55,02
9-RD	110,98	110,56
9-LH	65,16	63,47
10-RD	83,26	82,75
10-LH	58,26	56,84'

# Want to know more or participate?

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