

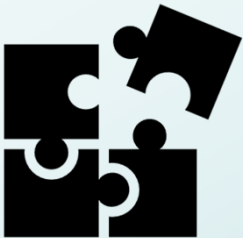
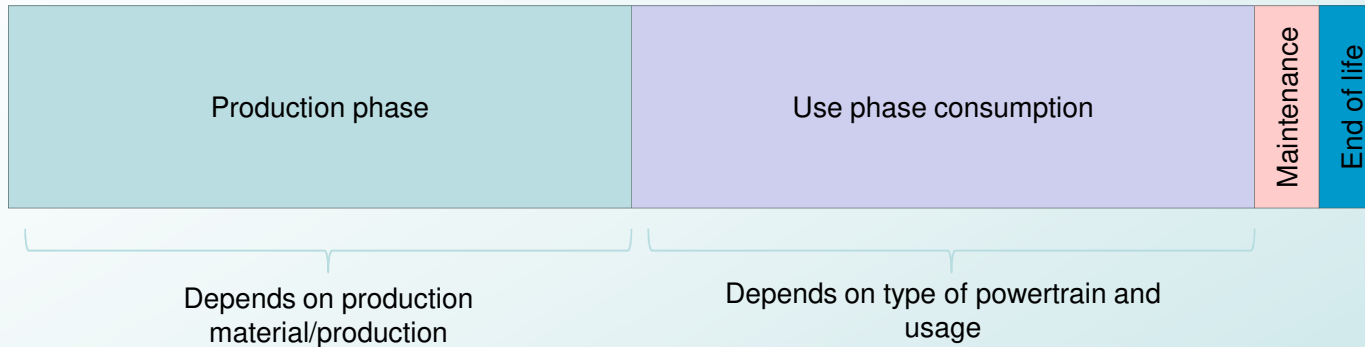


Representative Vehicle

Focus on ,**Use phase energy consumption**'



Representative Vehicle



- Due to complex nature of production and usage of vehicle, a '**modular approach**' will be suitable for carbon footprint calculation
- Modular approach: Each phase of life cycle of vehicle will be calculated separately and then combined for a given vehicle
- This reflects the present practice in industry



Modular Approach

Upstream Carbon footprint



- *Upstream carbon footprint does not depend on variation of powertrain for a given energy type*
- *LCA group criteria : body type, energy type , Battery etc.*

Downstream Carbon Footprint

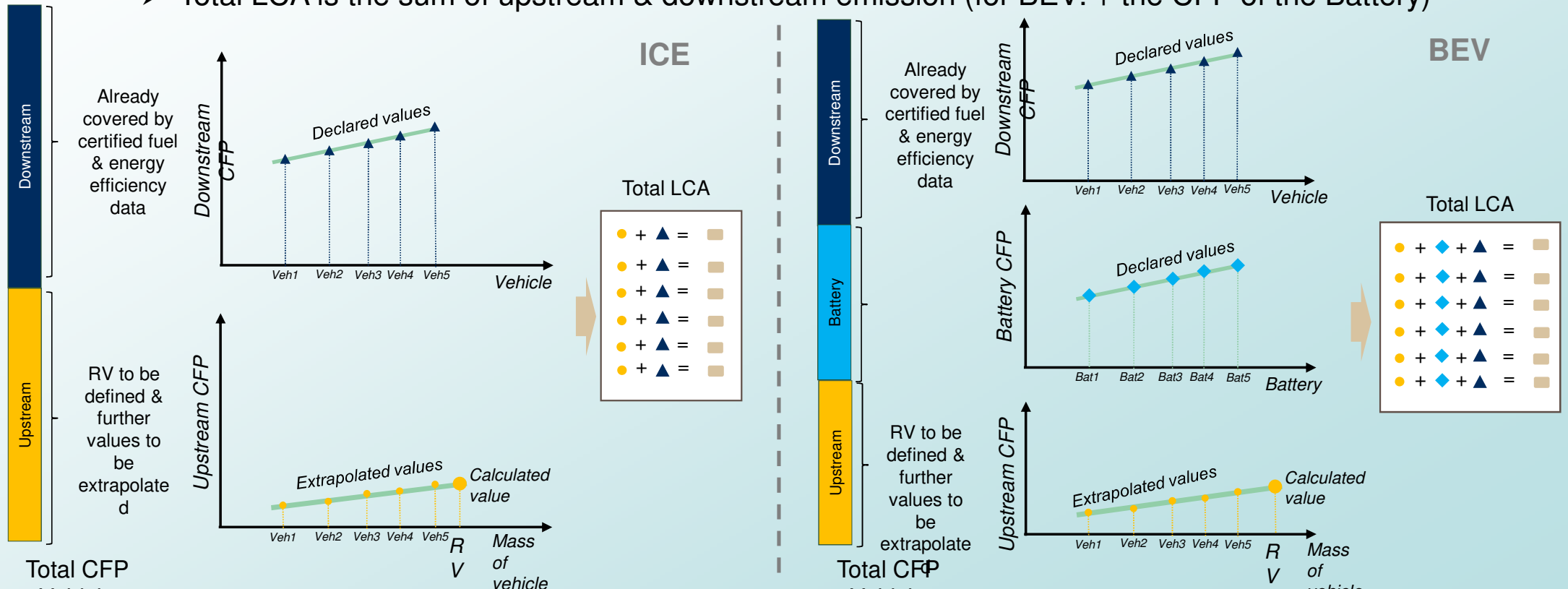


- *Use phase carbon footprint depends on type of powertrain*
- *A single LCA group can have multiple downstream family*



Modular approach

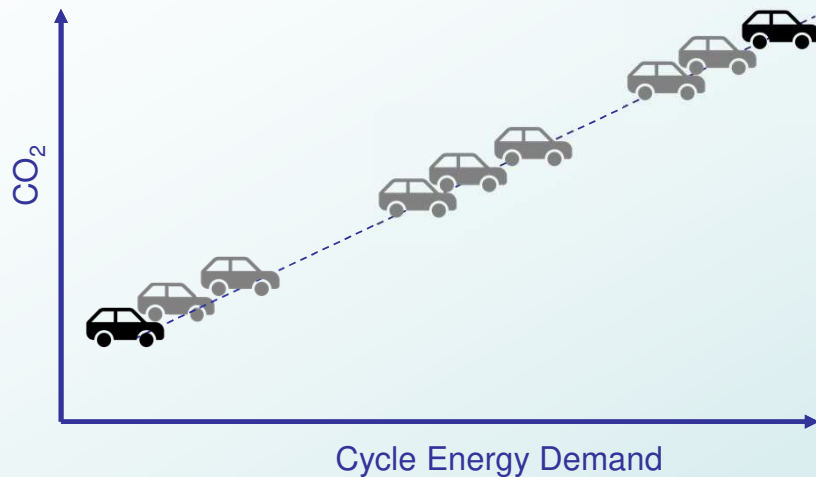
- Upstream emission & downstream emission to be handled separately in the RV discussion
- “LCA group” can be specified for upstream emission by “vehicle Type” & fuel/powertrain type
- Upstream emission (excluding the traction battery): One RV to be selected out of the LCA group, perform a full LCA and extrapolate LCA value for other vehicles in the same LCA group
- Total LCA is the sum of upstream & downstream emission (for BEV: + the CFP of the Battery)





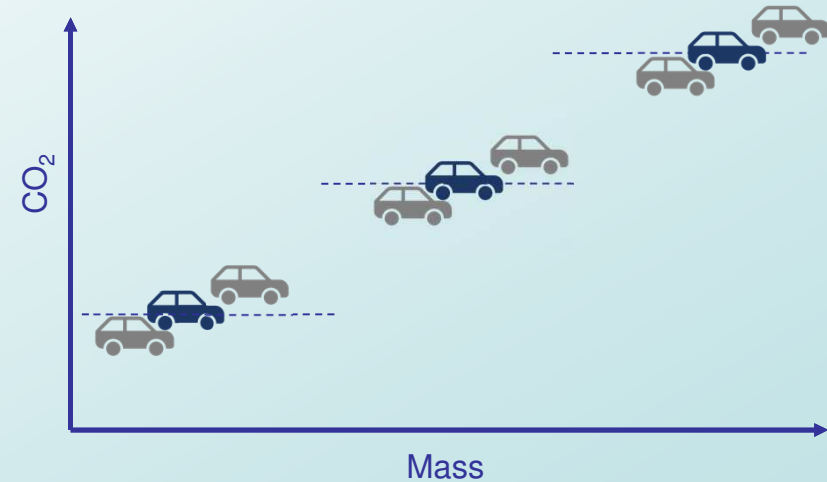
Energy consumption: 2 type of approach

- Each individual vehicle has 'energy consumption' value in the official document (COC etc.)
- Broadly there are two types of approach: Interpolation & Inertia class



Energy consumption of individual vehicle calculated by interpolation approach :

- Europe
- Japan
- China ?
- ...



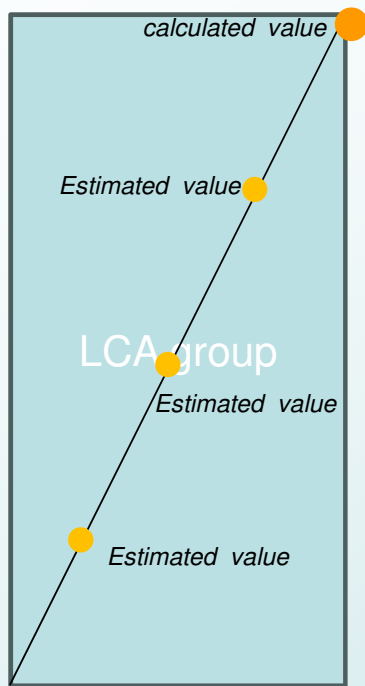
Energy consumption of individual vehicle calculated by inertia approach :

- Korea
- US
- Brazil
- ...

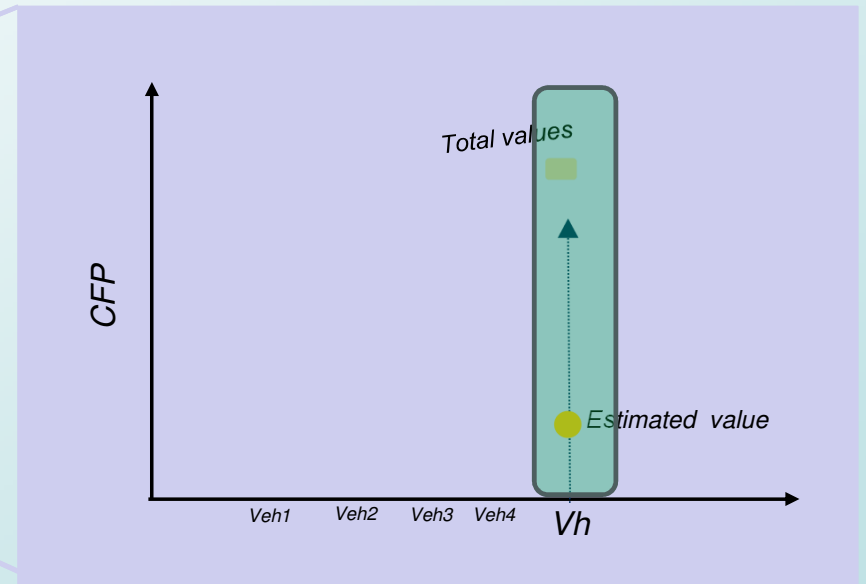
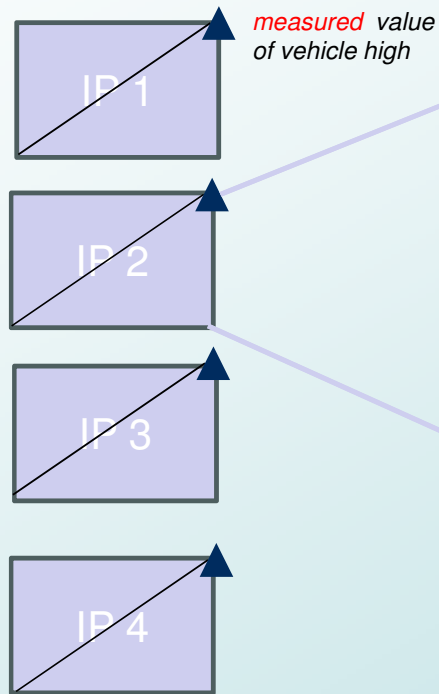


Energy consumption: level 3 (interpolation)

Upstream Emission



Downstream Emission



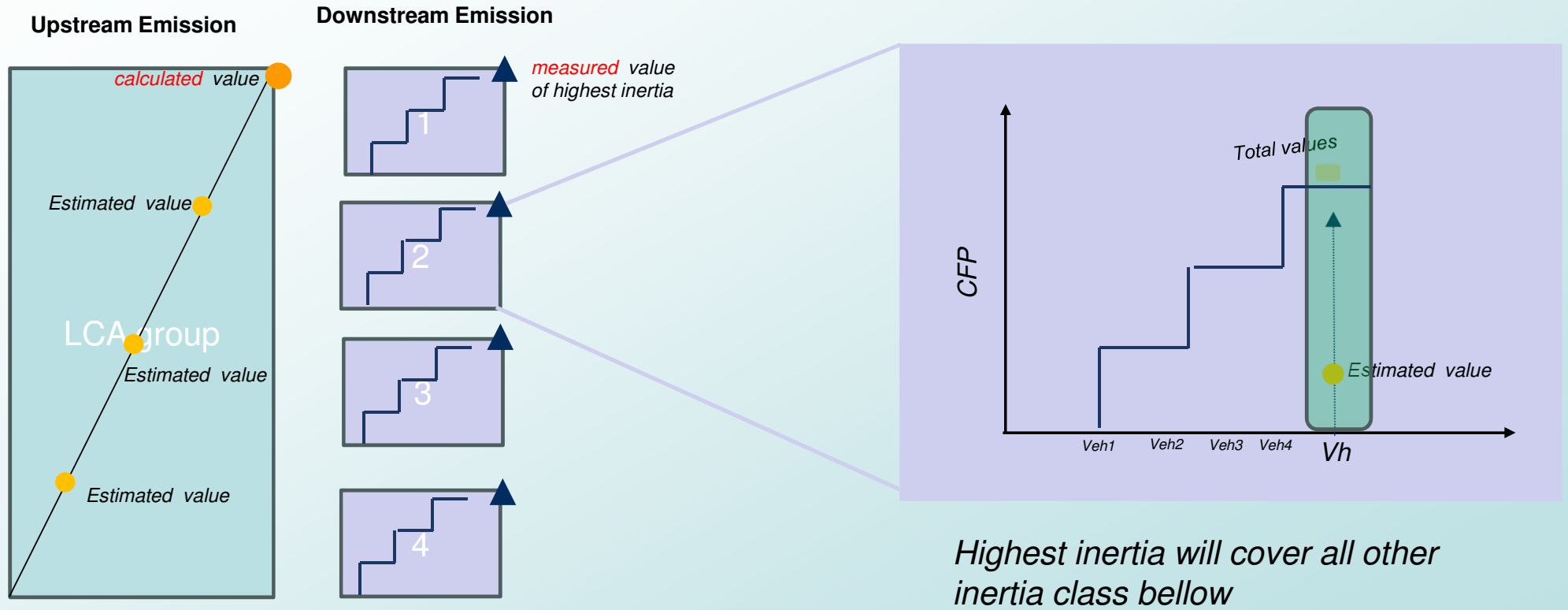
Vehicle high will cover all other vehicle in the interpolation family

A single LCA group can cover multiple type of powertrain of a given energy (i.e. all diesel powertrain)

*Powertrain configuration defines interpolation family
1.5 litre diesel and 2.0 litre diesel engines will be in separate family*

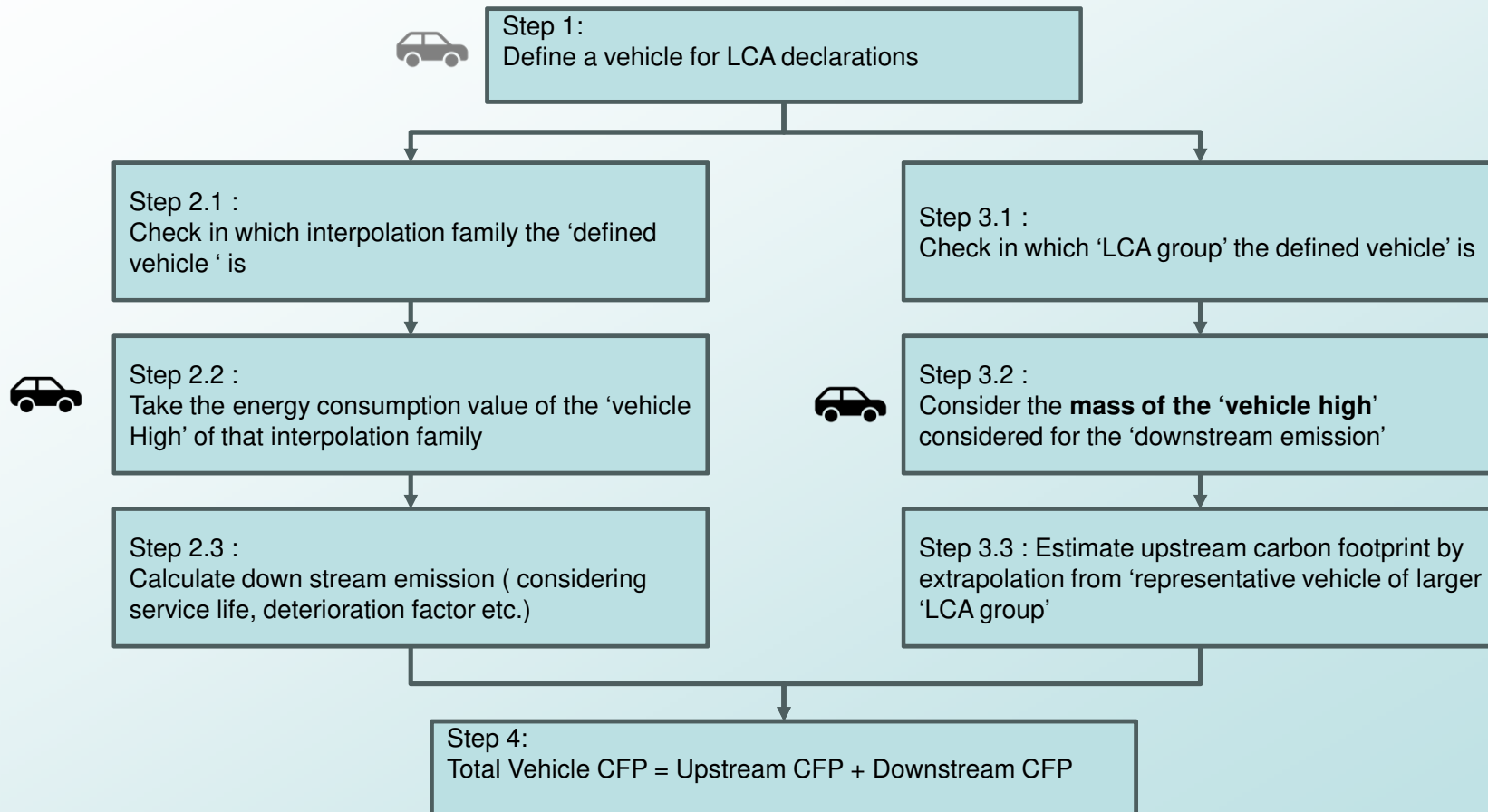


Energy consumption: level 3 (inertia class)



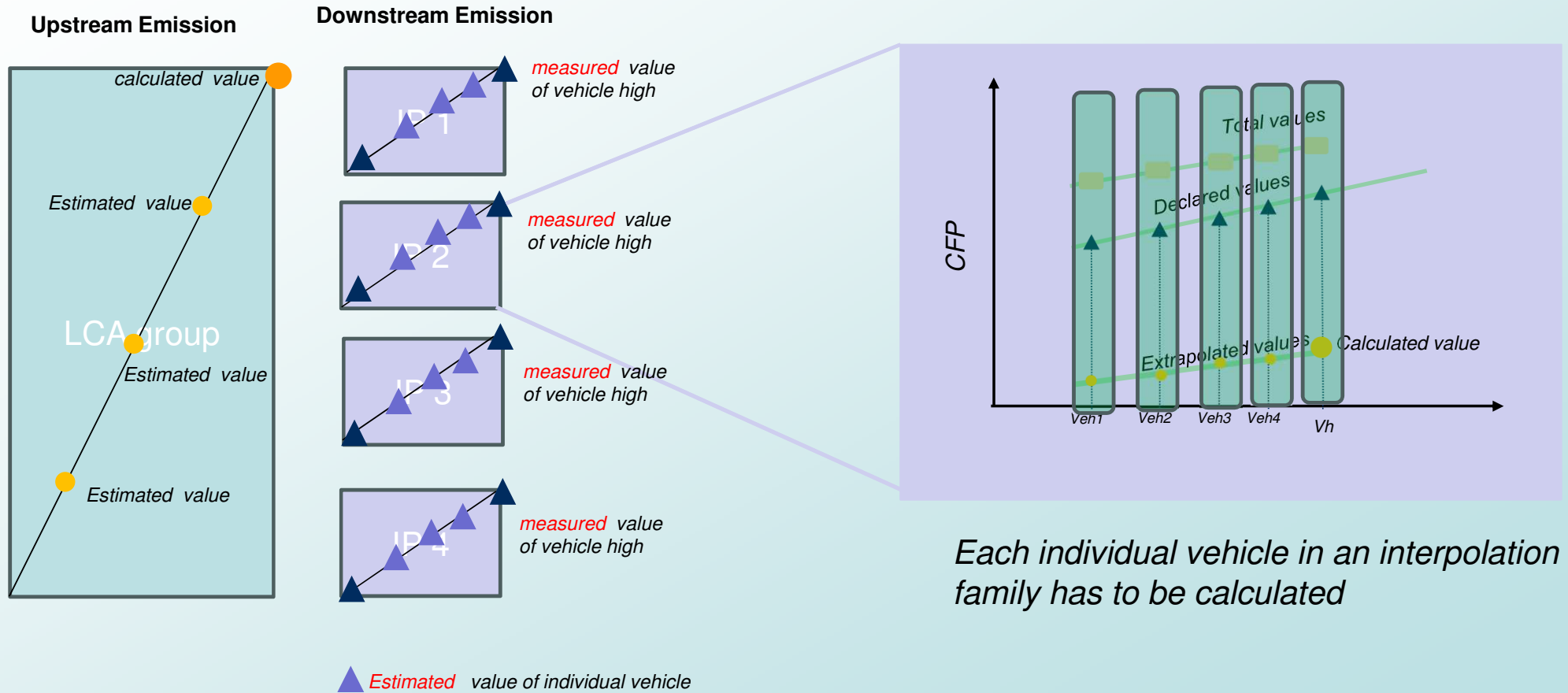


Energy consumption: Level 3 (interpolation)



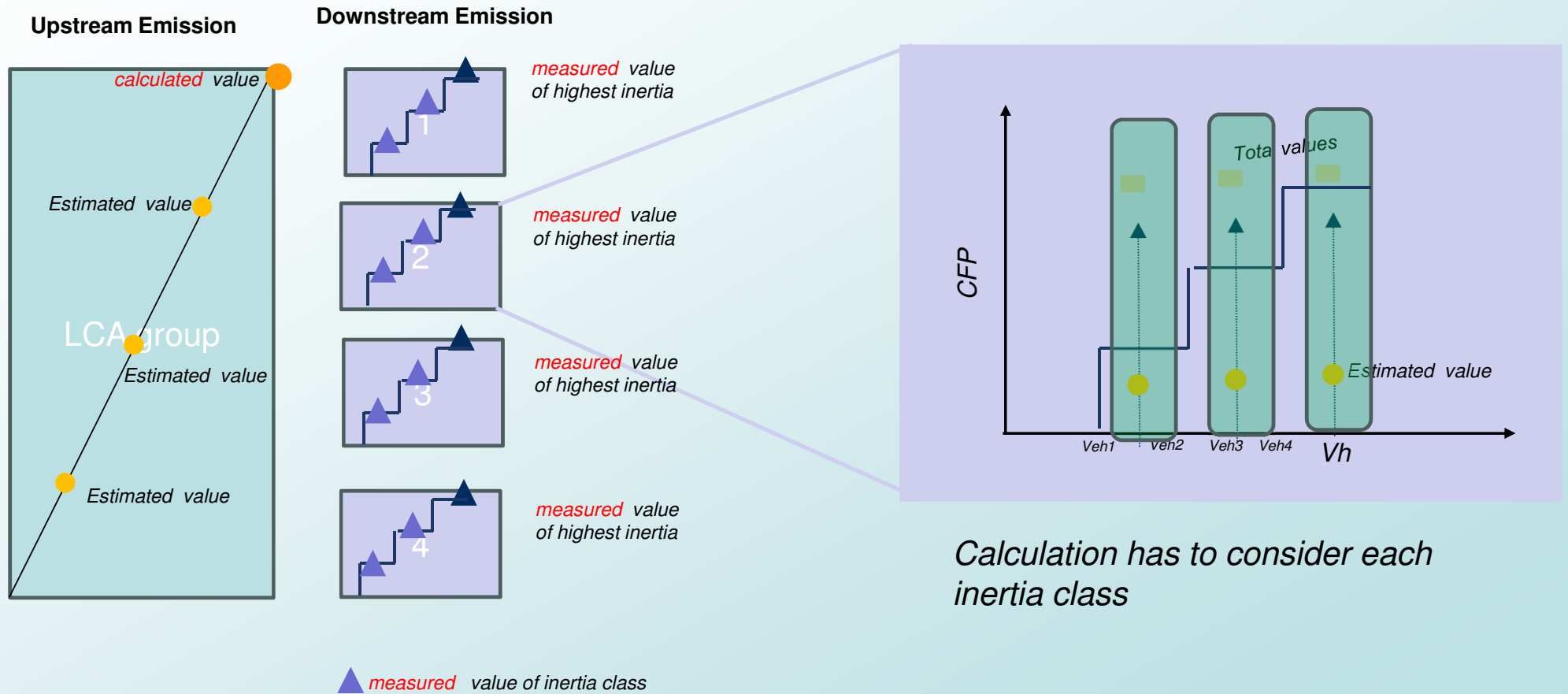


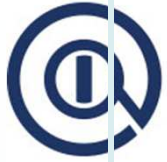
Energy consumption: level 4 (interpolation)





Energy consumption: level 4 (inertia class)





Energy consumption: OICA proposal

USE PHASE	Intended use	Reference Vehicle	Representativeness
Level 4 (LCA family)	OEM's & Suppliers official reporting Reporting for Govt Programs	Individual vehicle (as in COC)	Individual vehicle configuration (wltpl individual vehicle or inertia class)
Level 3 (OEM)	OEM's Official reporting Reporting for Govt Programs	Vehicle High Or Highest inertia class	Interpolation family Or Highest inertia class
Level 2			
Level 1 (Regional)	Stakeholders, policy makers, researchers analysts etc For future analysis and macro assessments	Vehicle High Or Highest inertia class	LCA group

➔ Reflect carbon footprint of a particular type of powertrain and vehicle configuration (mass, aerodynamic , tire etc.)

➔ Reflect carbon footprint of a particular type of powertrain (diesel 1.5 L or diesel 2.0 L or diesel 2.5L etc.)

➔ Reflect carbon footprint of a type of powertrain (diesel or petrol or electric or hybrid etc.)



Next steps

- How to consider 'End of life phase' and 'Maintenance'
- If concept agreed in SG4 then propose a draft