Real-world usage of plug-in hybrid electric vehicles
Fuel consumption, electric driving, and CO$_2$ emissions

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The EU CO₂ standards for new passenger cars

Historical emissions

- 2015 target: 130 g/km
- 2021 target: 95 g/km
- 2025 target: -81 g/km
- 2030 target: -59 g/km

The EU CO₂ standards for new passenger cars

- **Up until 2022**: Each vehicle <50 g/km (NEDC) qualifies for a super credit

- **From 2025 onwards**: Zero- and low-emission vehicle (ZLEV) credits will apply depending on (WLTP) CO₂ level

A 50 g/km PHEV is counted as 0.3 ZLEVs

50 g/km test cycle currently equals about 100-200 g/km real-world
Recommendations – European Union level

• CO₂ threshold (currently 50 g/km) for **super credits** should be lowered.

• CO₂ threshold (currently 50 g/km) for **ZLEV credits** should be lowered and **multiplier** (factor 0.7) should be removed.

• Qualification for **super credits / ZLEV credits** should be demonstrated using (**on-board fuel consumption meter**) real-world usage data.

• Testing procedures (**WLTP utility factor assumptions**) should be updated.
Recommendations – National level

- Fiscal (and other) incentives should prefer PHEVs with a high all-electric range and a high ratio of electric motor power to combustion engine power.
- Qualification for incentives should be demonstrated using utility factor data collected from on-board fuel consumption meters or regular technical inspections.
- Legal and financial barriers for installing home charging should be reduced.
- Company-car incentives should be issued only if sufficient workplace charging infrastructure or support of home / public charging.
- Charging costs should be lowered, while taxes on fuel should be raised, as well as limiting deductibility of fuel costs for companies.
Recommendations – Vehicle manufacturers

- Should **increase the all-electric range** of their PHEVs from ~50 km today to ~90 km.
- Should **limit the power** of their PHEV combustion engines, not only for urban but also extra-urban driving.
- Should **inform and encourage customers** to select a PHEV only if a fit with suitable driving and charging behavior.
Recommendations – Fleet managers

- Should recommend a PHEV only to those company car users with a suitable driving and charging behavior.
- Should limit the budget for gasoline / diesel fuel on tank cards, while incentivizing re-charging of electricity.
Recommendations – Summary

- PHEVs can electrify many kilometers — if they provide sufficiently long all-electric ranges and are driven mainly on electricity.
- Current PHEV policies do not fully support these aspects and should be revised accordingly.
Questions?