



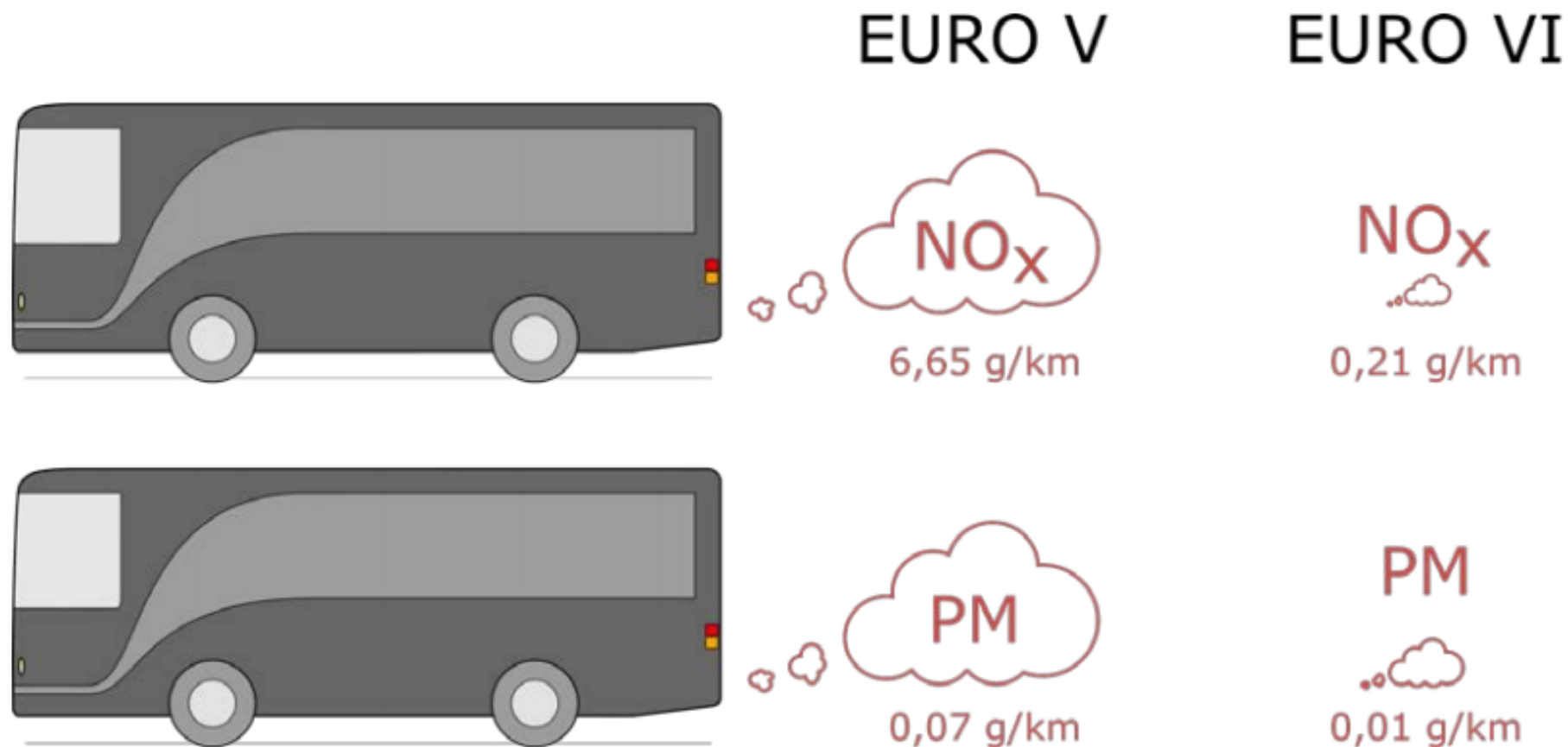
Statens vegvesen



Bedre byluftforum

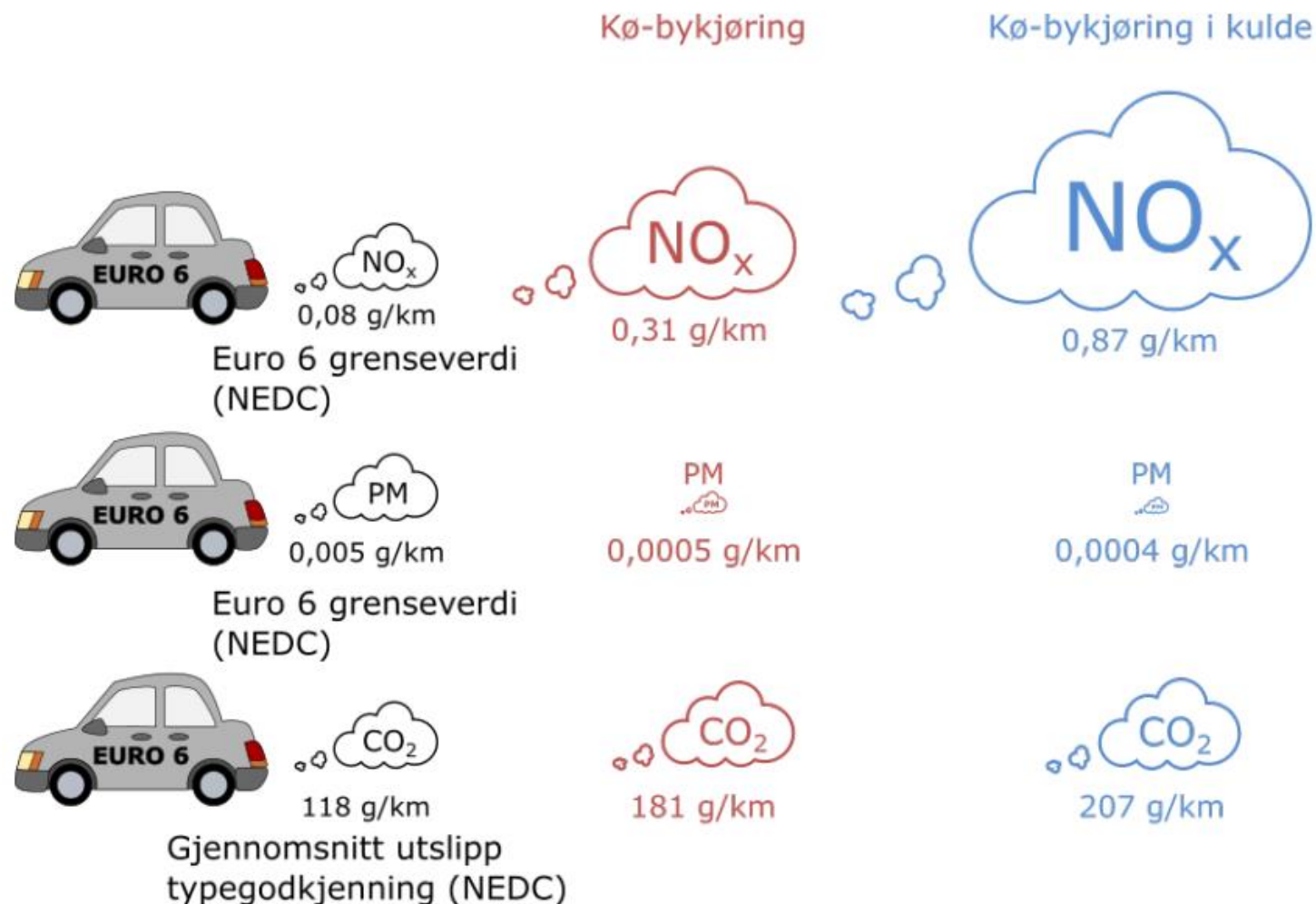
Post Euro 6/VI, Euro 7/VII: Nye utslippskrav til kjøretøy

Sigve J. Aasebø, Kjøretøy teknisk



Figur S 1: Gjennomsnittlig utslipp av NO_x og avgasspartikler PM i g/km. Målt ved ca. +23 °C for 11 busser med Euro VI-dieselmotorer ved kjøring av Braunschweig bykjøringssyklus, sammenlignet med utslippet fra en typisk buss med Euro V-motor. Arealet av skyene for Euro VI-gjennomsnittet er skalert i forhold til utslippstallet fra Euro V-klassen.

EMIROAD testresultater – SVV, TØI, VTT



Figur S 2: Sammenligning av avgasskravet (grenseverdi)/gjennomsnitt NO_x, PM og CO₂ ved typegodkjenning av Euro 6-dieslbiler (med den standardiserte NEDC kjøresyklusen) (sort sky) og gjennomsnittlige avgassutslipp fra syv Euro 6-personbiler med dieselmotor ved bykjøring, 23 °C (rød sky) og ved bykjøring i kulde, -7 °C (blå sky). Størrelsen av gasskyene tilsvarende utslippenes størrelse i forhold til typegodkjenningskravet.

Zero-emission vehicle goals in Norway

2025

- Cars
- City buses (or biogas)
- Light delivery vans (less than 1760 kg)

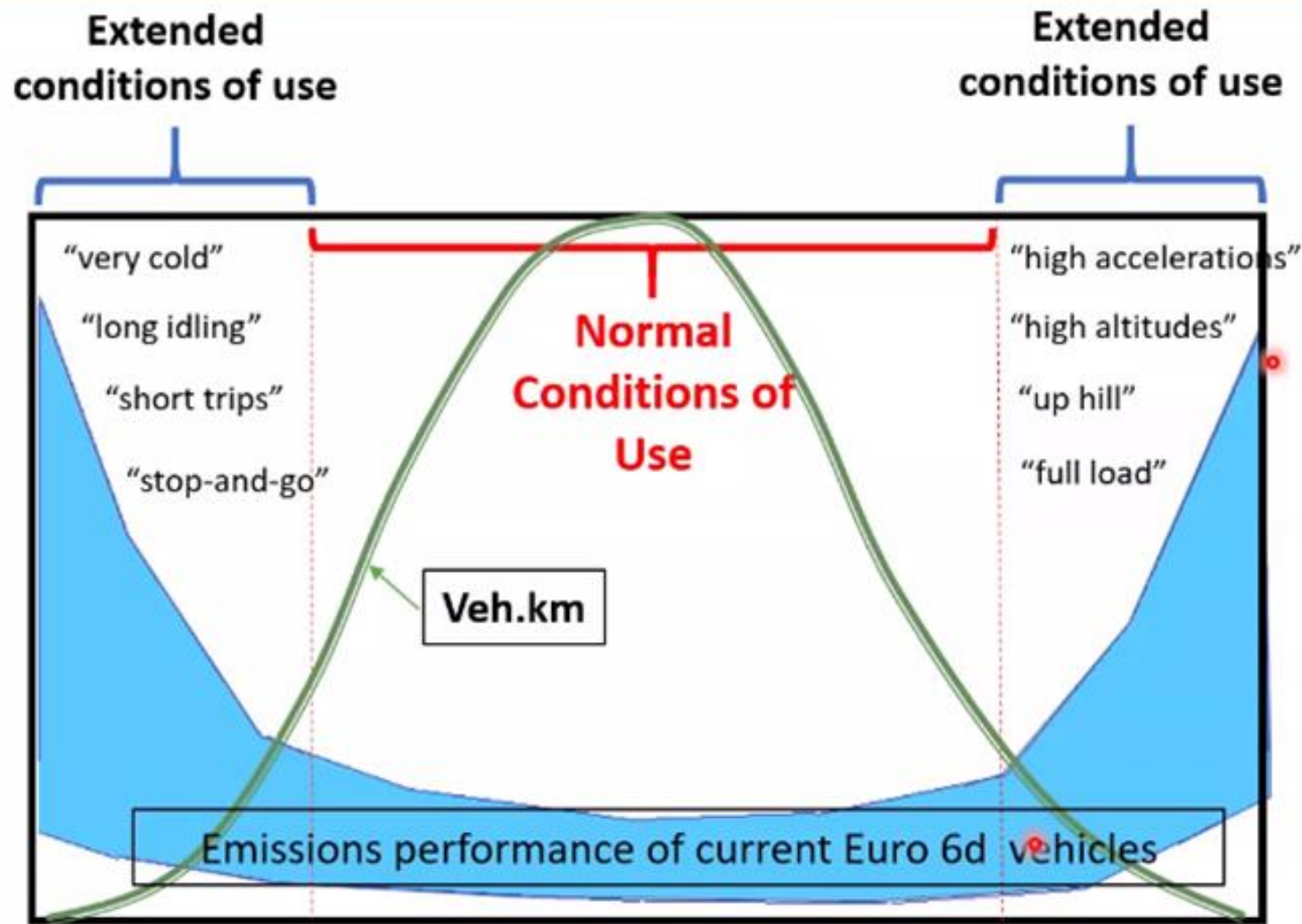
2030

- Heavy vans (1760-3500 kg)
- 75 % long-distance buses
- 50 % trucks/lorries (over 3500 kg)
- Goods delivery in major city centres (almost)



Testing conditions for Euro 7

Viewing Zissis Samaras's screen



Tunge kjøretøy – ett trinn, flere mulige ambisjonsnivå

Technology packages HD Diesel

Viewing Stefan Hausberger's screen



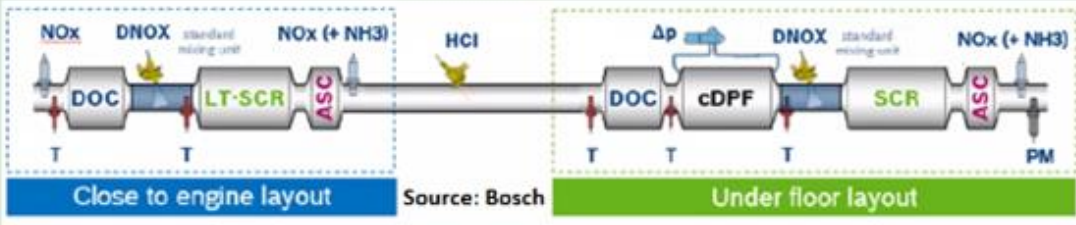
Technology scenarios considered		Description
HD0	Average EU VI D	With and without EGR, DOC, DPF and SCR in EATS box
HD1	Best NOx performing EU VI D	Good thermal management, EGR, DOC, DPF and SCR in EATS box

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HD0	Average EU VI D	With and without EGR, DOC, DPF and SCR in EATS box
HD1	Best NOx performing EU VI D	Good thermal management, EGR, DOC, DPF and SCR in EATS box
HD2	Optimised diesel with cc SCR	<p>Close couple DOC & deNOx + twin AdBlue dosing, ca. 6.5 : 1 = EATS : engine volumes:</p>  <p>Engines: hot and cold EGR, low raw NOx during cold starts (<2g/kWh), optimized thermal management, improved turbo-charging, fuel-injection,....</p>

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Tunge kjøretøy – ett trinn, flere mulige ambisjonsnivå

Technology packages HD Diesel



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HD3	Optimised diesel with cc SCR and pre heating of EATS	= HD 2 + pre heating with diesel burner (5 minutes at 60kW for 330kW engine)

Shown in presentation

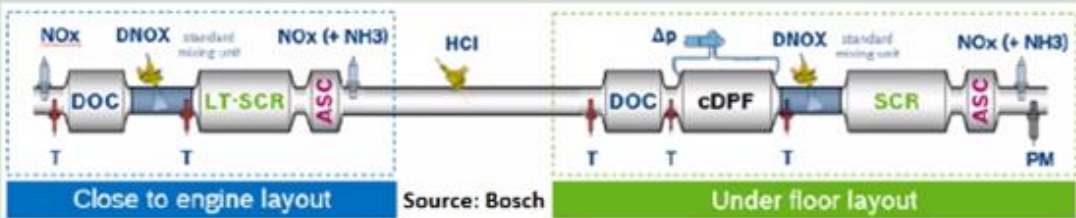
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Technology packages HD Diesel



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HD2	Optimised diesel with cc SCR	<p>Close couple DOC & deNOx + twin AdBlue dosing, ca. 6.5 : 1 = EATS : engine volumes:</p>  <p>Source: Bosch</p> <p>Engines: hot and cold EGR, low raw NOx during cold starts (<2g/kWh), optimized thermal management, improved turbo-charging, fuel-injection,....</p>
HD3	Optimised diesel with cc SCR and pre heating of EATS	= HD 2 + pre heating with diesel burner (5 minutes at 60kW for 330kW engine)
HL2	Optimised LNG HPDI engine	LNG CI engine with diesel ignition injection; emission control technology similar to HD2
HC2	Optimised SI CNG engine	Stoichiometric CNG engine with additional close couple 3WC and GPF, optimised Lambda control, low lube oil losses,...
HD4	Optimised diesel full hybrid with cc SCR and pre heating of EATS	= HD3 + full hybrid (optional electric pre heating instead of diesel burner)



Hva nå?

- 2019/20/21: CLOVE consortium utreder
Løpende møter i
Advisory Group on Vehicle Emission Standards
- Høsten 2021: EU kommisjonen:
Legge frem forslag
- 2022?: EU parlamentet/Forhandlinger
- 2025: Implementering? /
overgangsordninger?

