

**EURO 7 IMPACT ASSESSMENT: THE OUTLOOK FOR AIR QUALITY COMPLIANCE IN THE EU
AND THE ROLE OF THE ROAD TRANSPORT SECTOR**

Scenarios modelled

ACEA Webinars 24 and 29 March 2021

Scenario 1 - Alignment of diesel emissions limits with gasoline limits

PC and LCV N1-I, II, III technology neutral alignment of diesel NOX emission limits with gasoline emission limits. Coefficients of 0.75 for diesel passenger cars and 0.65 for diesel light duty vehicles were applied to newly registered vehicles from both 2025 and then 2027. These coefficients were calculated by dividing the gasoline Euro 6d emission factor mg/km by the diesel equivalent i.e., 60/80 for PCD and LCV N1-I and 75/115 for LCV N1-II and LCV N1-III.

Scenario 2 - Reduced diesel emission limits: NOX 25mg/km, PM2.5 2.5 mg/km

This scenario is a stakeholder-based request for a 'lower than Ricardo Scenario' (see below) based on NOX diesel emission factors of 25 mg/km and PM2.5 exhaust emission factors of 2.5mg/km. The corresponding NOX emission coefficients were 0.31 for PCD and LCV N1-I and 0.22 for LCV N1-II and LCV N1-III. For PM2.5 exhaust a coefficient of 0.56 was applied to both the PCD and LDV elements of the fleet.

Scenario 3 - 'Ricardo' median EURO 7 diesel emission limits: NOX 35mg/km, PM2.5 2.5mg/km

In an early stakeholder briefing, Ricardo presented a view of possible Euro 7/VII emission limits. This suggested a NOX EF range of 30-40 mg/km and a PM2.5 EF of 2.5mg/km. Using the midpoint of the suggested NOX EF resulted in coefficients for PC and LCV N1-I of 0.44 and (by interpolation) for LCV N1-II and LCV N1-III of 0.38. For PM2.5 exhaust a coefficient of 0.56 was applied to both fleet the PCD and LDV elements.

Scenario 7 - Diesel PC and LCV: NOX 0, PM2.5 0

This scenario was run to give a hypothetical 'book end' to possible emissions reductions. For diesel PC and LCV N1-I both NOX and PM2.5 exhaust emission factor coefficient were set to zero.

Scenario 8 - Diesel LCV N1-II and LCV N1-III: NOX 0, PM2.5 0

This scenario was run to give a hypothetical 'book end' to possible emissions reductions. For diesel LCV N1-II and LCV N1-III both NOX and PM2.5 exhaust emission factor coefficient were set to zero.

Scenario 4 - Diesel LCV N2 and HDV aligning the WHTC with WHSC limits

This scenario tested the benefit of aligning the NOX WHTC 4 limit with the stricter WHSC5 limit. For both diesel LCV N2 and HDV the NOX emissions coefficient was set to 0.87 (i.e., 400/460)

Scenario 5 - Low NOX scenario (Diesel HCV) NOX limit of 230 mg/kWh

Low NOX scenario modelling a reduction in NOX limit to 230 mg/kWh by applying a coefficient of 0.58 to diesel LCV N2 and HDV emissions.

Scenario 6 - Very-Low NOX scenario (Diesel HCV) NOX limit of 100 mg/kWh

A more ambitious low NOX scenario modelling a reduction in NOX limit to 100mg/kWh by applying a coefficient of 0.25 to diesel LCV N2 and HDV emissions.

Scenario 12 - Ultra-Low NOX scenario (Diesel HCV) NOX limit of 30 mg/kWh

Stakeholder request for an ultra-low NOX scenario modelling a reduction in NOX limit to 30mg/kWh by applying a coefficient of 0.075 to diesel LCV N2 and HDV emissions.

Combined Scenarios

Scenario 13 - Scenario 1 + Scenario 4

Scenarios 1 and 4 emissions applied together in one scenario.

Scenario 14 - Scenario 3 + Scenario 5 (Introduction of combined Euro 7/VII)

Scenarios 3 and 5 emissions applied together in one scenario.

Other Scenarios

Scenario 9 - Zero Emissions from Domestic & Commercial Combustion

A hypothetical 'book end' scenario to test the impact on air quality if residential and commercial emissions of both NOX and PM2.5 were reduced to zero from 2025.

Scenario 10 - NH3 Emissions from Agricultural Sector: 50%

Scenario 11 - NH3 Emissions from Road Transport: 50%

A pair of comparison scenarios to test the relative impacts on air quality of NH3 emissions from agriculture (Scenario 10) or Road transport (Scenario 11) being halved from 2025 onwards.

Scenario 15 - VOC Emissions from Road Transport: Zero

A hypothetical 'book end' scenario to test the impact on air quality of eliminating all VOC emissions from road transport from 2025.

Scenario 16 - VOC Emissions from Solvent and Product Use sector: 50%

A hypothetical 'book end' scenario to test the impact on air quality of eliminating all VOC emissions from the 'solvent and product use' sector from 2025.