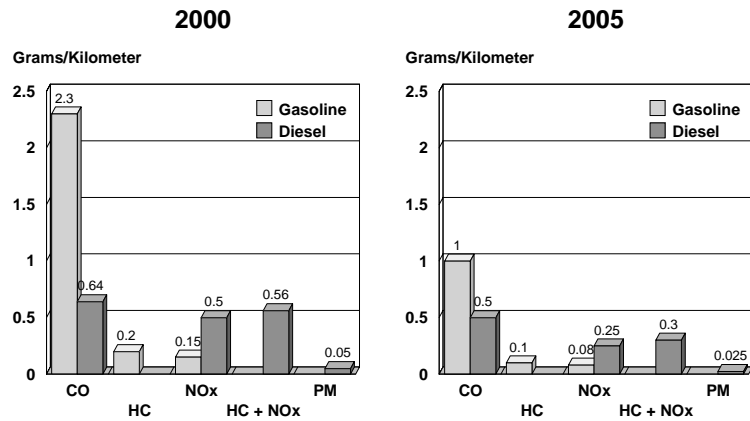


Vehicles, Fuels & Climate Change

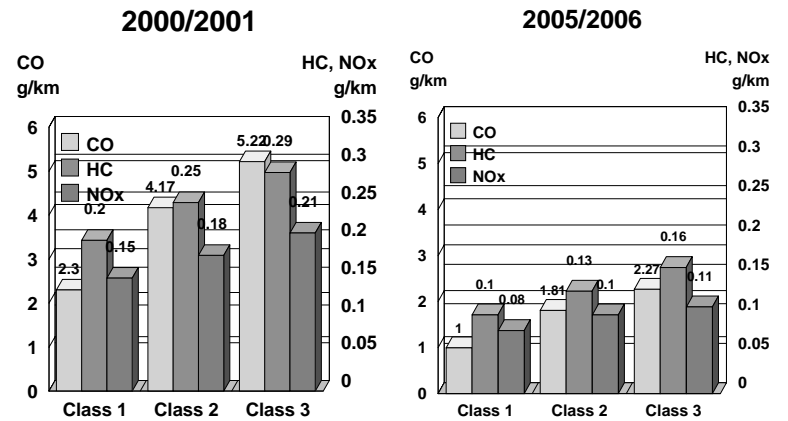
Recent Developments in Europe



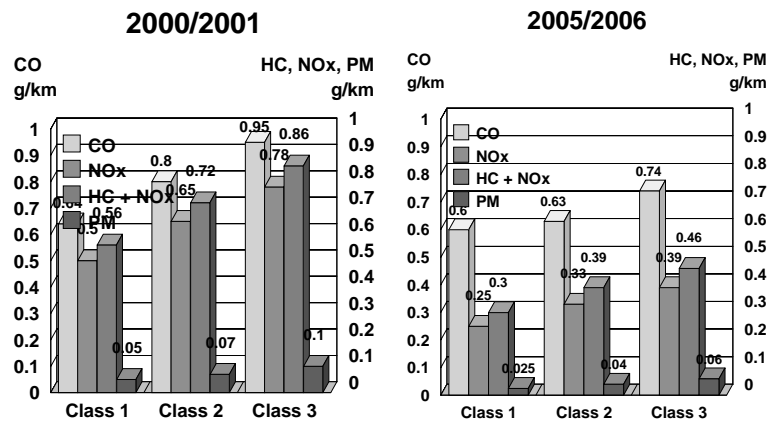
European Auto Standards



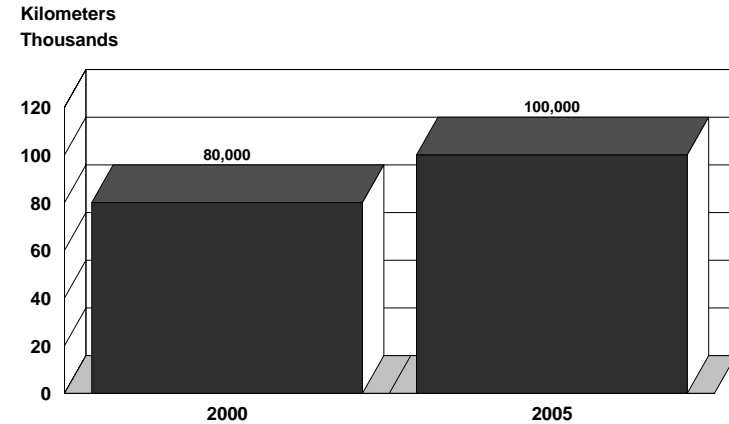
Gasoline Light Duty Truck Standards in EU



Diesel Light Duty Truck Standards in EU



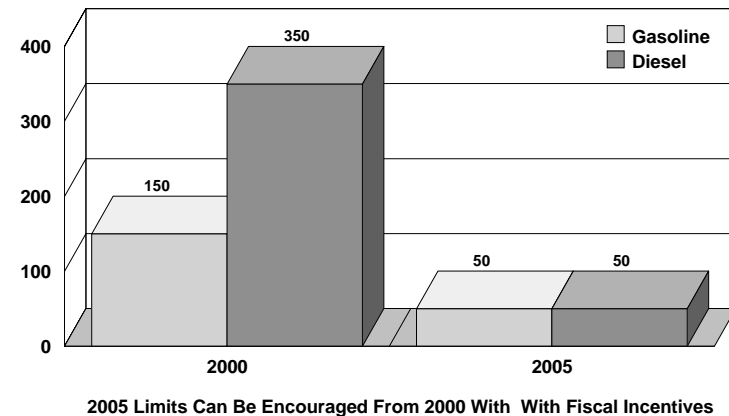
Useful Life Requirements



Other Aspects of the Decision

- Vehicle Related
 - ▶ OBD for Gasoline Cars, LDTs (2000), Diesel (2003), Heavier LDTs (2005)
 - ▶ Cold Test (7 C) for Gasoline Cars, LTDs (2002)
 - ▶ Encourage Fiscal Incentives for early introduction of 2005 Technologies
 - ▶ By end of '99, Commission Proposal:
 - Cold Test for heavier LDTs
 - OBD Limits for 2005
 - Address Longer Term Objectives

Maximum Fuel Sulfur Limits Adopted For Europe (PPM)

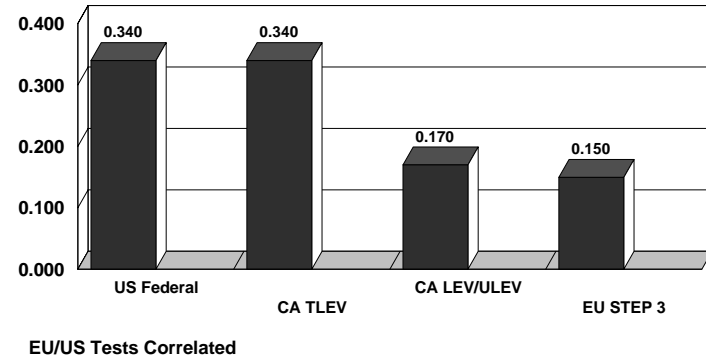


Other Aspects of the Decision (continued)

- ▶ Fuels Related
 - Lead Phase Out by 2000 (derogation up to 2005 in limited circumstances)
 - Allow very low sulfur fuels from 2000
 - Allow limited sulfur derogations (2003, 2007)
 - Establish uniform monitoring system to check fuel quality
 - Additional Proposals from Commission by end of 1999

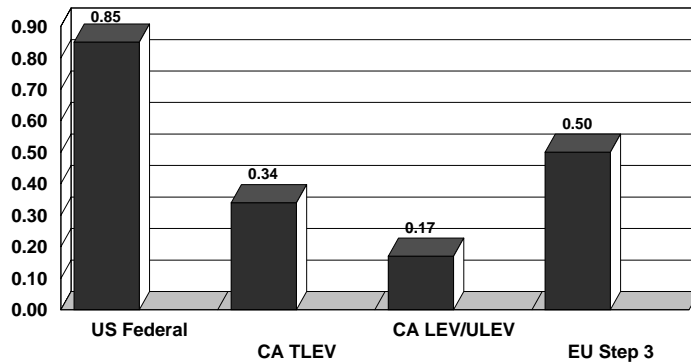
Gasoline Car NOx Standards For 2000

Grams/Kilometer
Applies for 80,000 KM



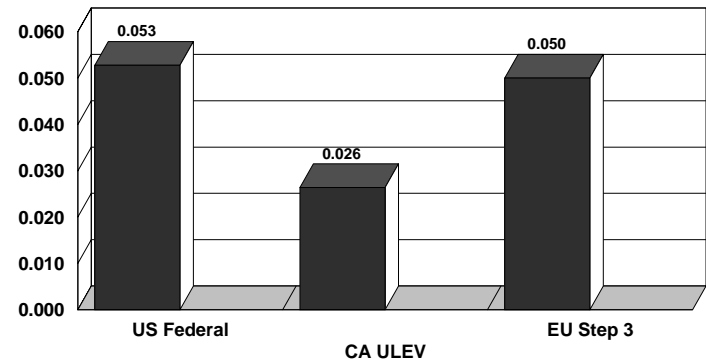
Diesel Car NOx Standards For 2000

Grams/Kilometer
Applies For 80,000 Km



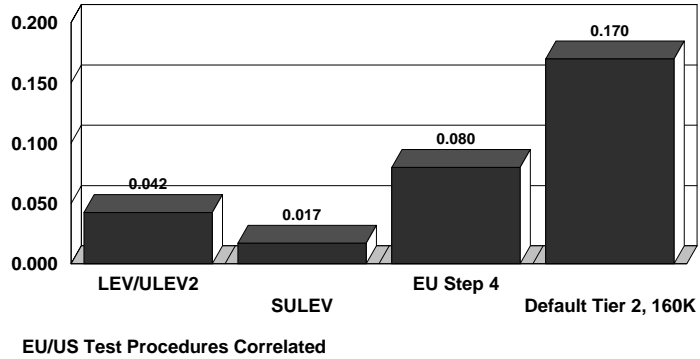
Diesel Car PM Standards For 2000

Grams/Kilometer
Applies For 80,000 Km



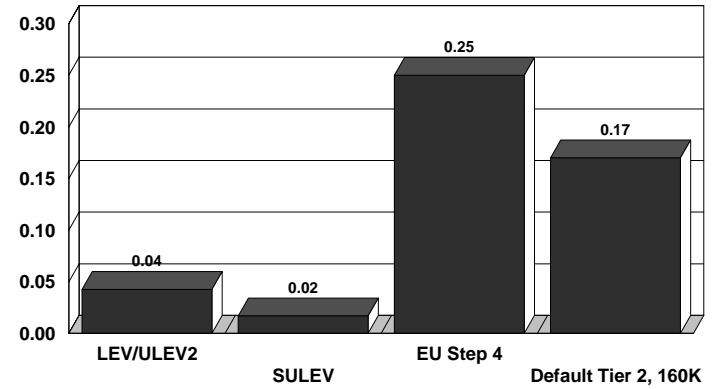
Gasoline Car NOx Standards Proposed For 2005

Grams/Kilometer
80,000 Km Only



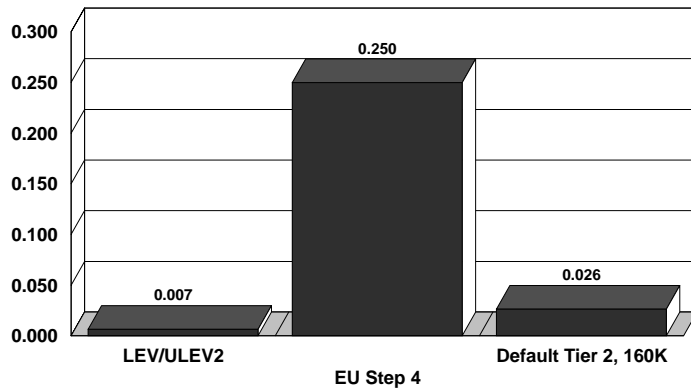
Diesel Car NOx Standards Proposed For 2005

Grams/Kilometer



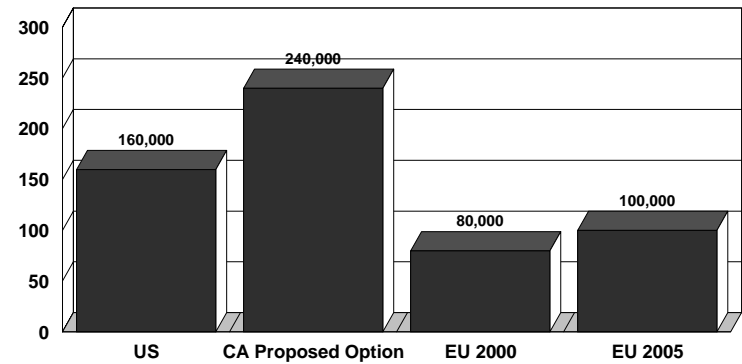
Diesel Car PM Standards For 2005

Grams/Kilometer

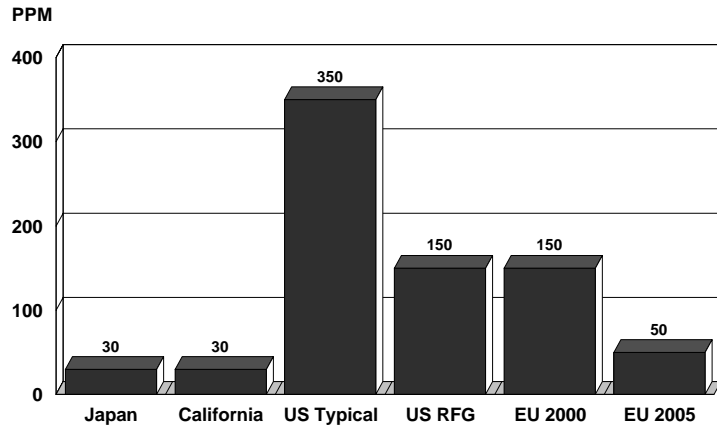


Useful Life Requirements

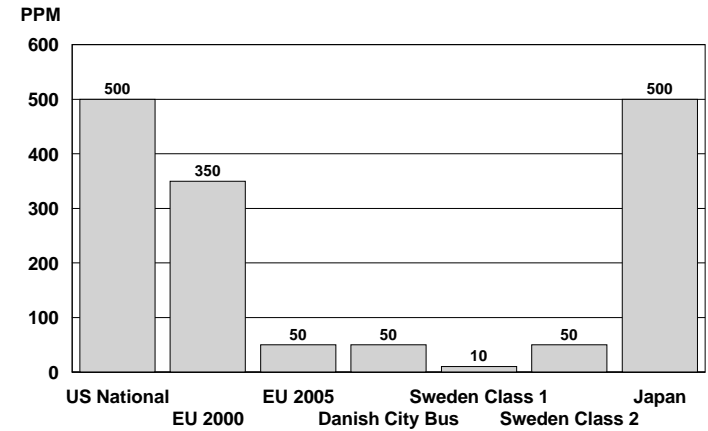
Kilometers
Thousands



Sulfur Levels in Gasoline



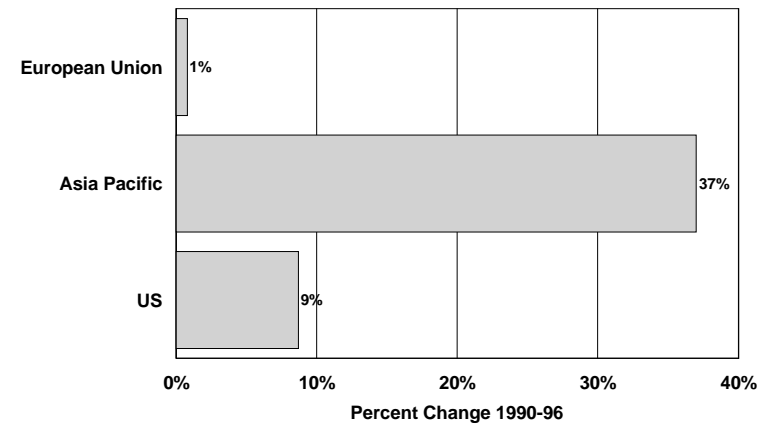
Diesel Fuel Sulfur Specifications



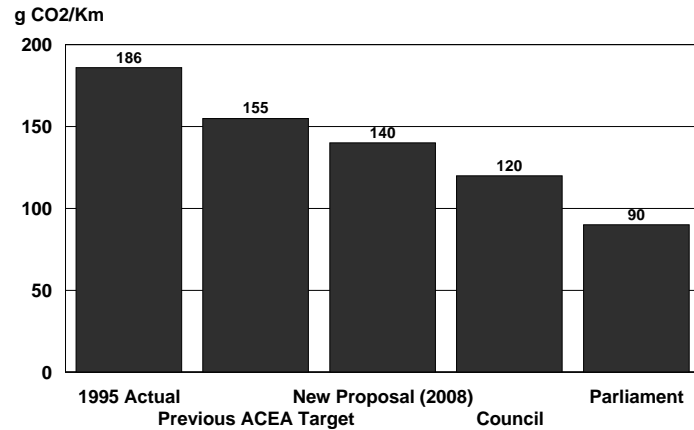
Challenges For Vehicles



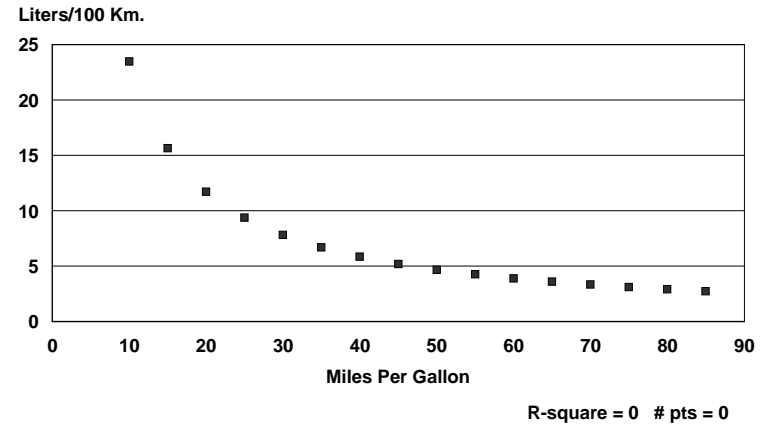
Global Carbon Dioxide Emissions



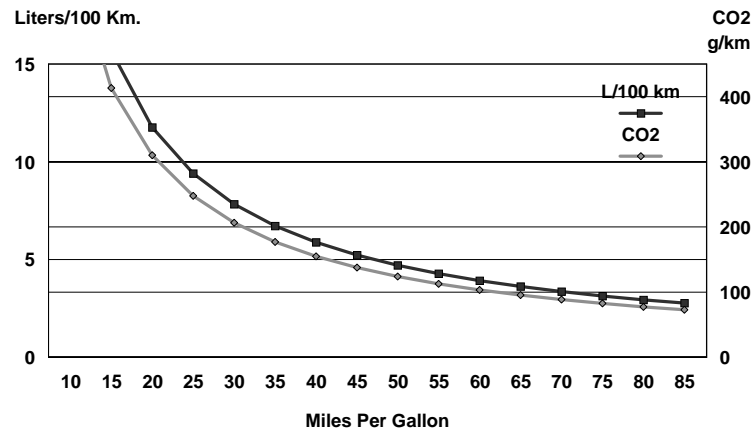
European Proposals to Lower CO2 Emissions



Fuel Consumption Conversion



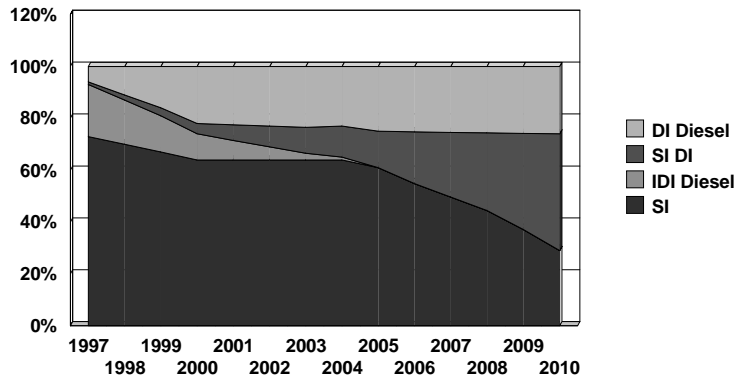
Fuel Consumption Conversion



European Approaches

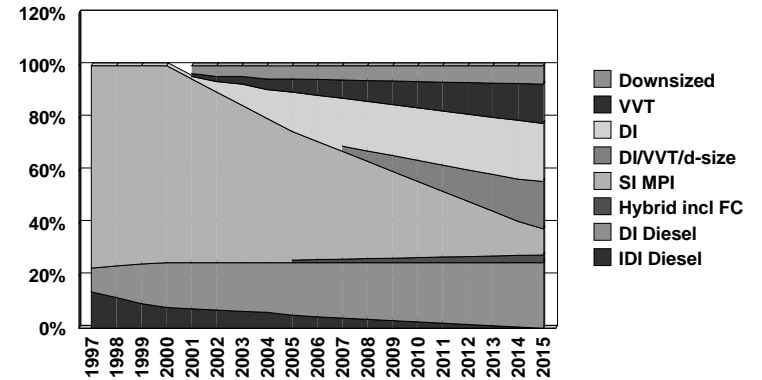
- Gasoline DI
 - ▶ Lean NOx Catalyst/Low Sulfur Fuel
- Turbo Direct Injection (TDI) Diesel
 - ▶ Lean NOx Catalyst/Low Sulfur Fuel
- Fuel Cell

Technology Market Share in Europe



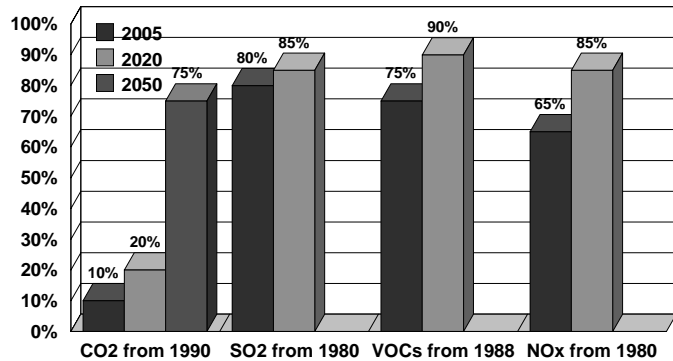
Source: AVL

Technology Market Share in Europe



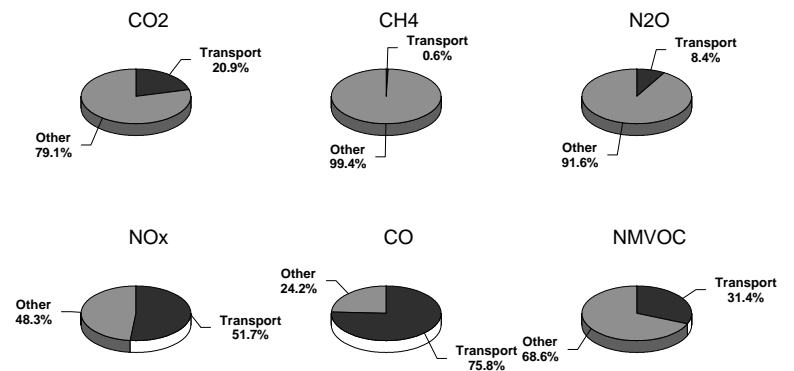
Source: FEV

Emissions Reduction Targets



"Toward an Environmentally Sustainable Transport System"
Swedish EST Project - 1996

UK Greenhouse Gases - 1995



US Greenhouse Gases - 1995

