

Emission standards and Fuels Quality in Japan

March 17 t h 2009

Fuels and Lubricants Committee

Japan Automobile Manufactures Association

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Surroundings of Automobiles

Three major issues : Energy, CO₂ reduction, Air quality

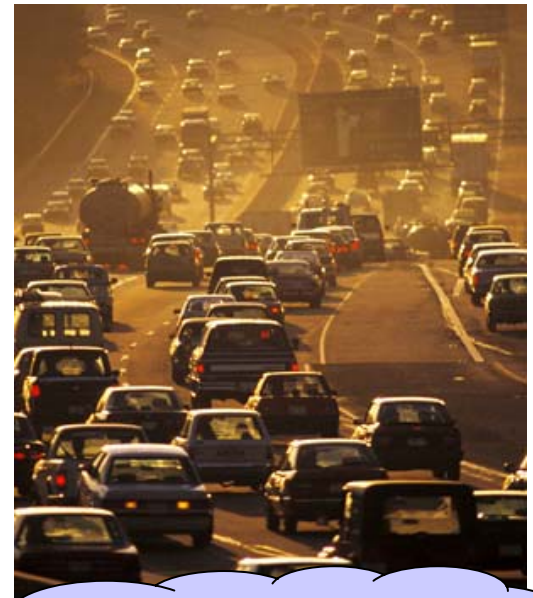
Global Warming



Energy
CO₂ reduction

CO₂

Urban Environment



Emissions

Energy



Automakers' Efforts to the Issues

Fuel Efficient Improvement Technology

Body:Vehicle weight reduction, Reduced aerodynamic resistance...

Engine improvements:Combustion, VVT, Reduction of friction loss...

Drive-train improvements:CVT, Increased number of gear...

New System:Hybrid vehicle, EV

Alternative Fuel Vehicle Technology

Bio-fuel, FTD, CNG, Fuel Cell Vehicle...

Emissions reduction Technology

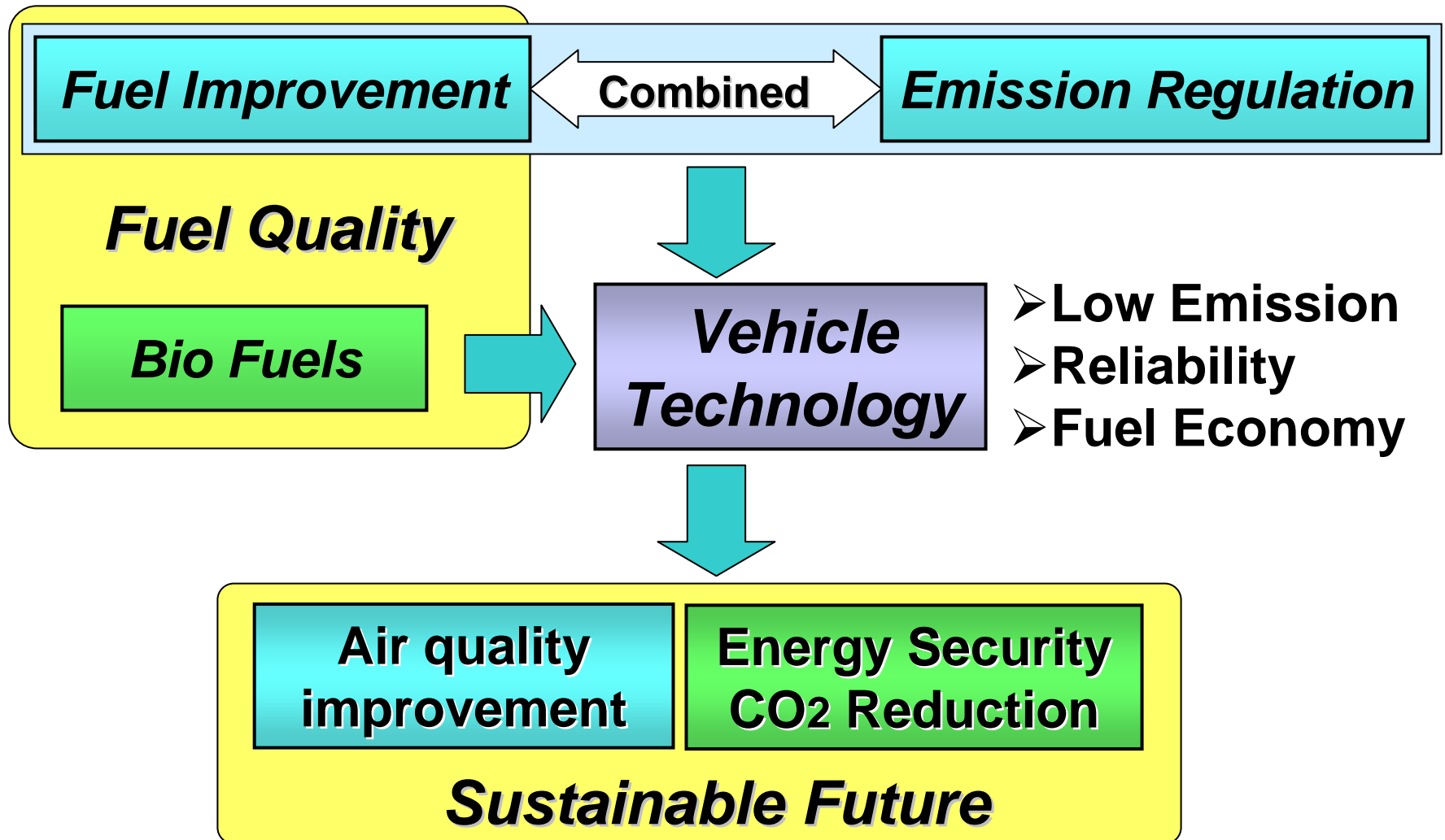
including improvement of fuel quality

Combustion, Fuel injection spray, Thermal management,

After-treatment system:Catalyst performance, DPF...



Relations between Fuel Improvement and Vehicle Technology



System of regulations for emissions and fuels

Report from Central Environmental Council

Air Pollution Control Law / Ministry of Environment

Ministerial announcement

<Emission>

Maximum permissible limits
on exhaust emission

<Fuel>

Maximum permissible limits
on the quality of fuel and
on the quantity of substances in fuel

**Road Vehicles act
(MLIT)**

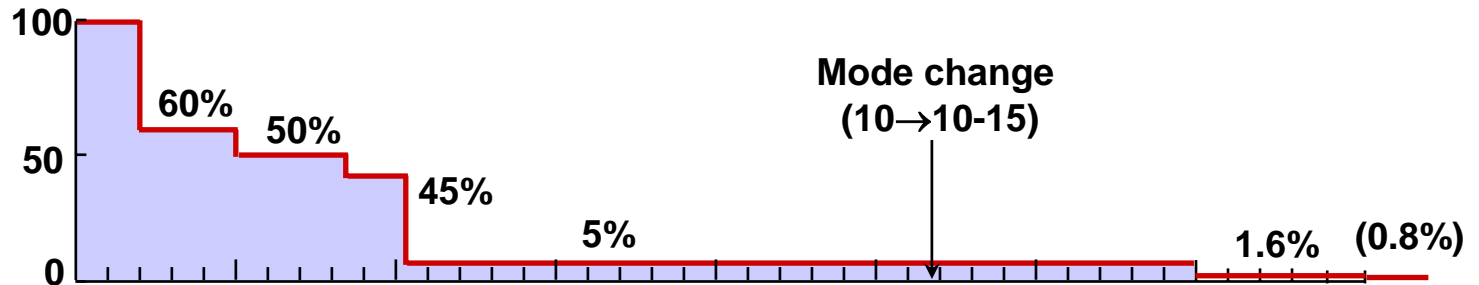
**Standard for Construction and
Device of Motor Vehicles
(Ordinance and Circular Notices)**

**Act on the Quality Control of
Gasoline and Other Fuels
(METI)**

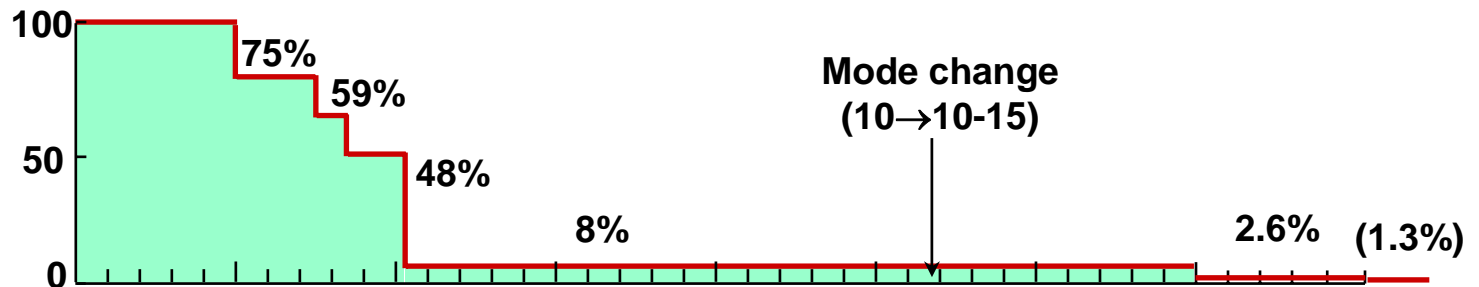
**Mandatory standard of gasoline
and diesel fuel
(Ministerial ordinance)**

Transition of Emission regulation in Japan

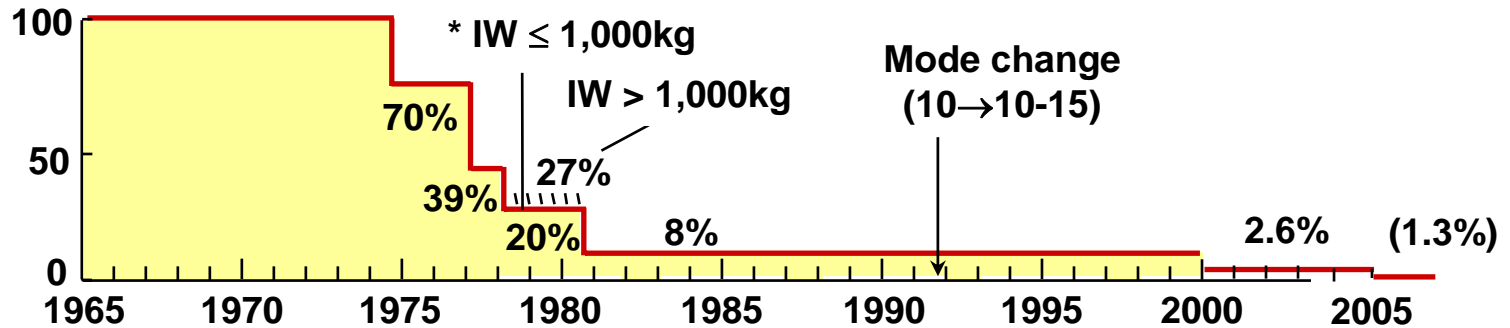
CO



HC

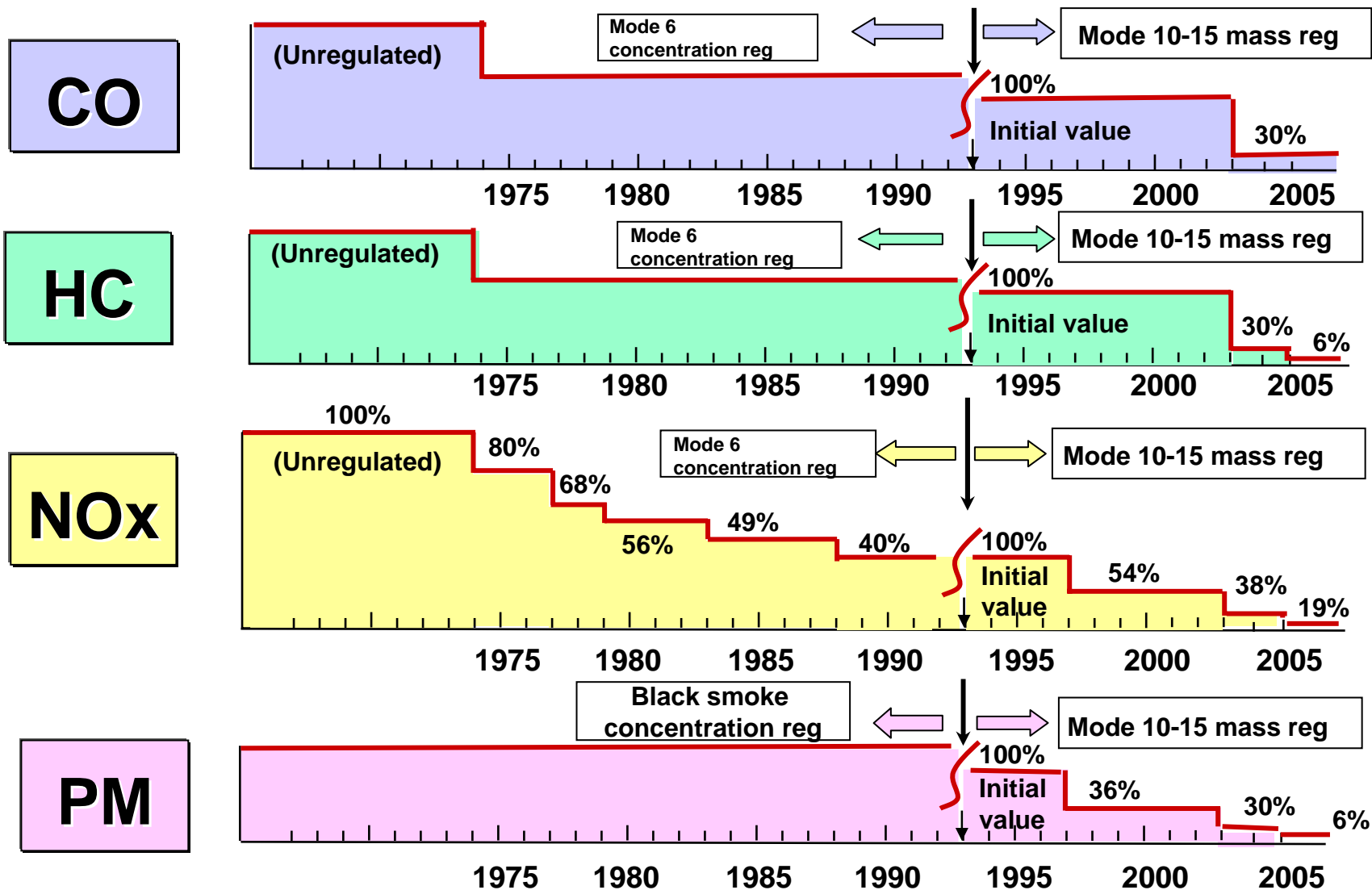


NOx



* 100% = Emission volume without regulations * IW = Equivalent inertia mass

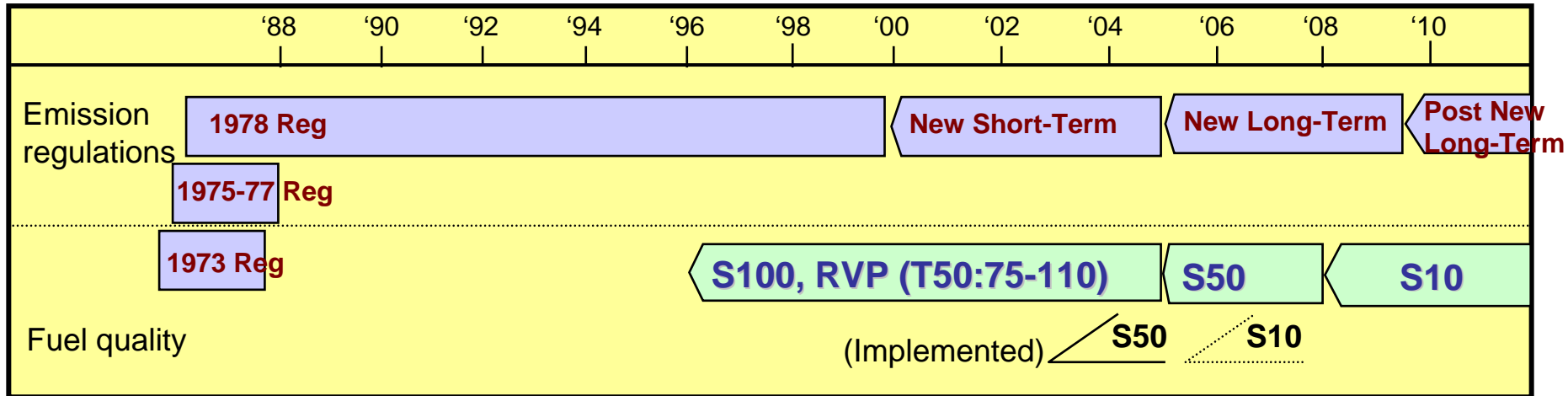
Transition of Emission regulation in Japan (Diesel Trucks)



* Direct-injection diesel trucks, medium-duty (over 1.7t, up to 2.5t)

Emission and Fuel Regulations in Japan

Gasoline



Diesel

