



U.S. Department of Energy
Energy Efficiency and Renewable Energy

freedomcar & vehicle technologies program

DEER CHAIR'S OVERVIEW

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Office of FreedomCAR and Vehicle Technologies

US Department of Energy

Washington, D.C.

Diesel Engine Emission Reduction Conference

Newport, Rhode Island

August 24, 2003





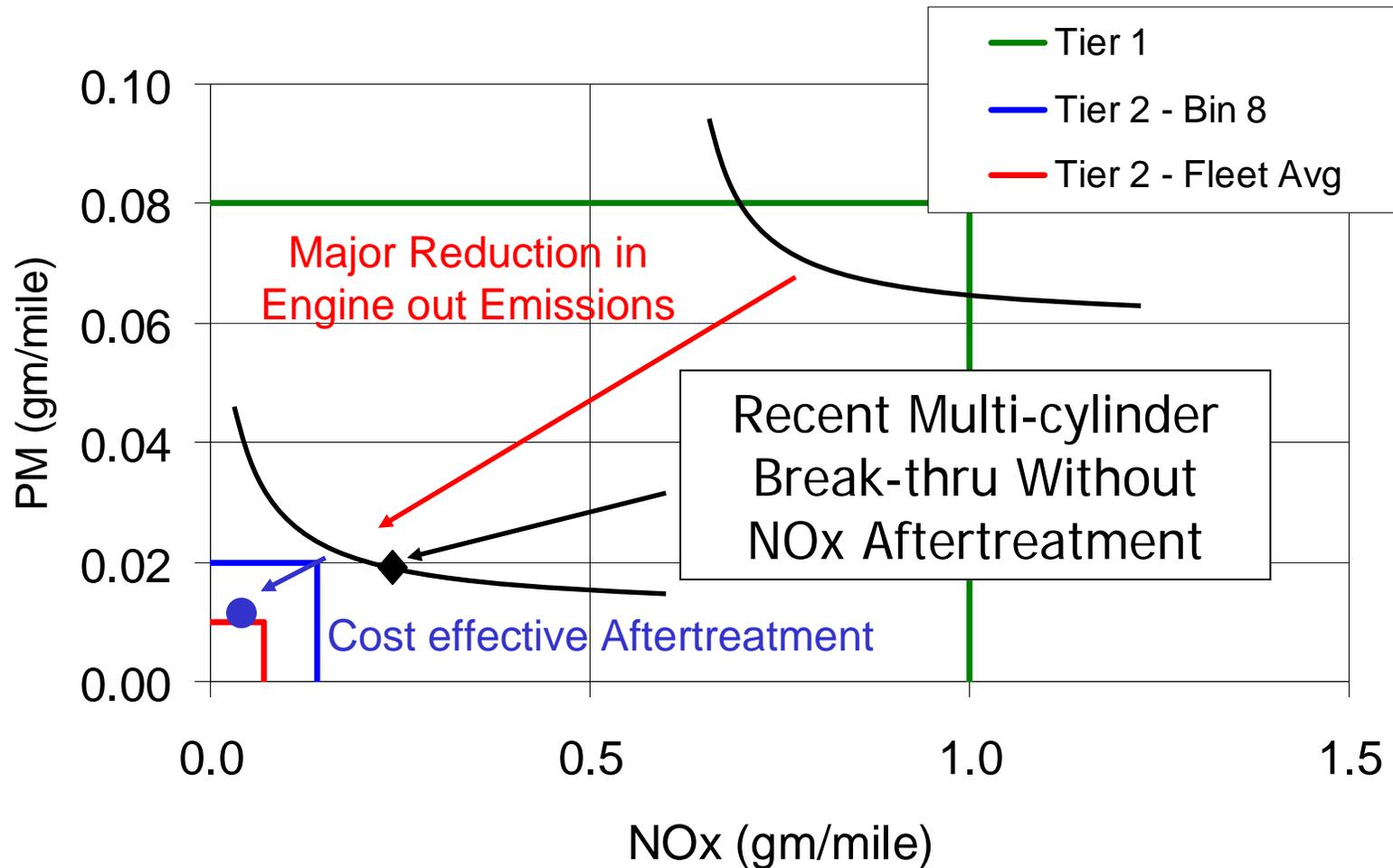
- Try to Cover Issues - Technology and Regulations which affects Diesel
- Invite Representatives from the Environmental Community
 - Organize their own session
 - Michael Block – NESCAUM
- Diesel Emissions
 - Fuels and Lubes
 - Combustion
 - HCCI-rapidly moving lab → commercial
 - Aftertreatment
 - Major advances



Caterpillar Approach to

Light Truck Standards

Tier 2



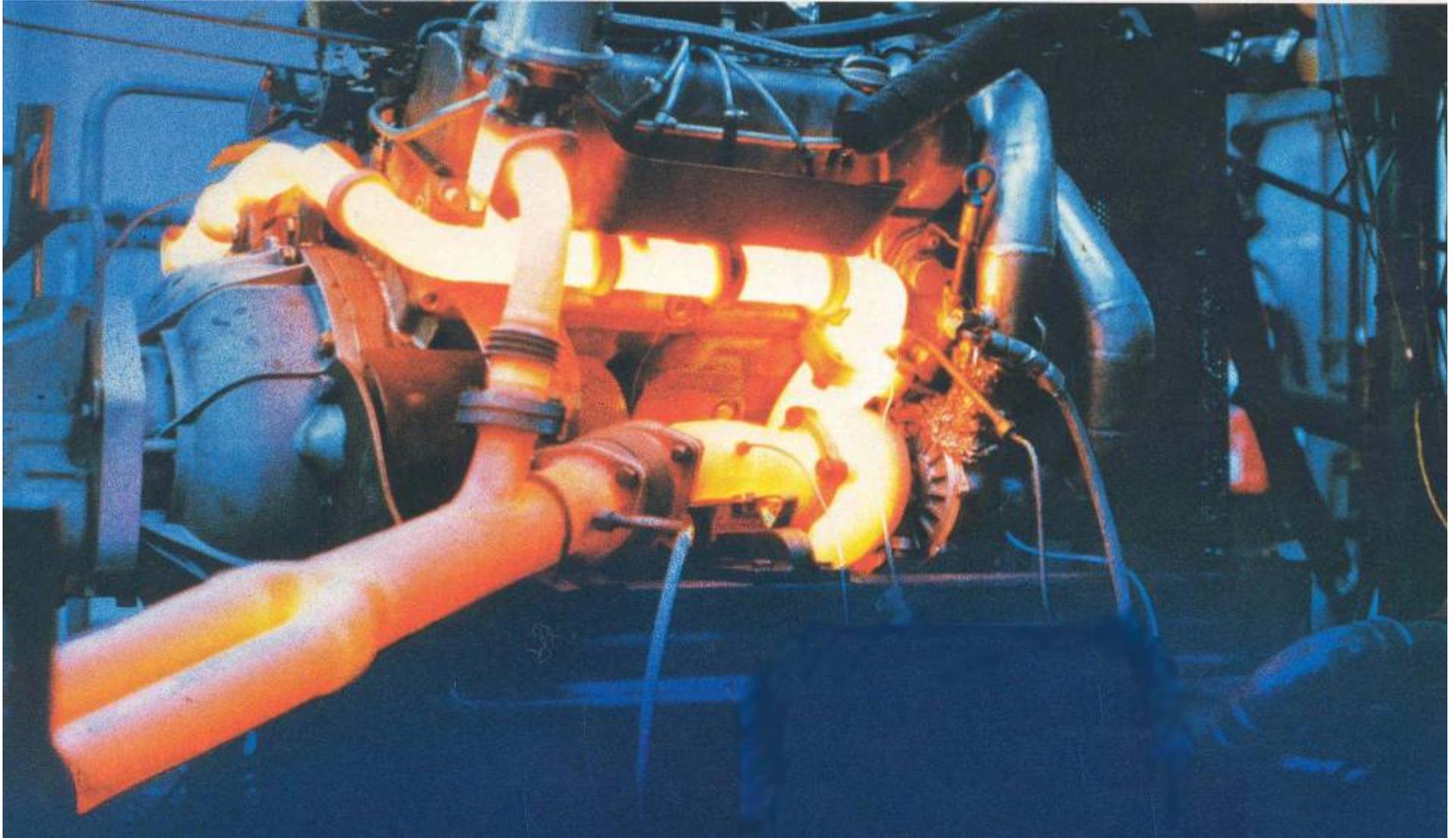


- Waste heat utilization
 - Thermoelectrics
 - Electric Turbocompound
- Ride and Drive
 - Presentations by key directors of diesel engine development
 - 20 diesel passenger cars & light trucks
 - Some US market shortly



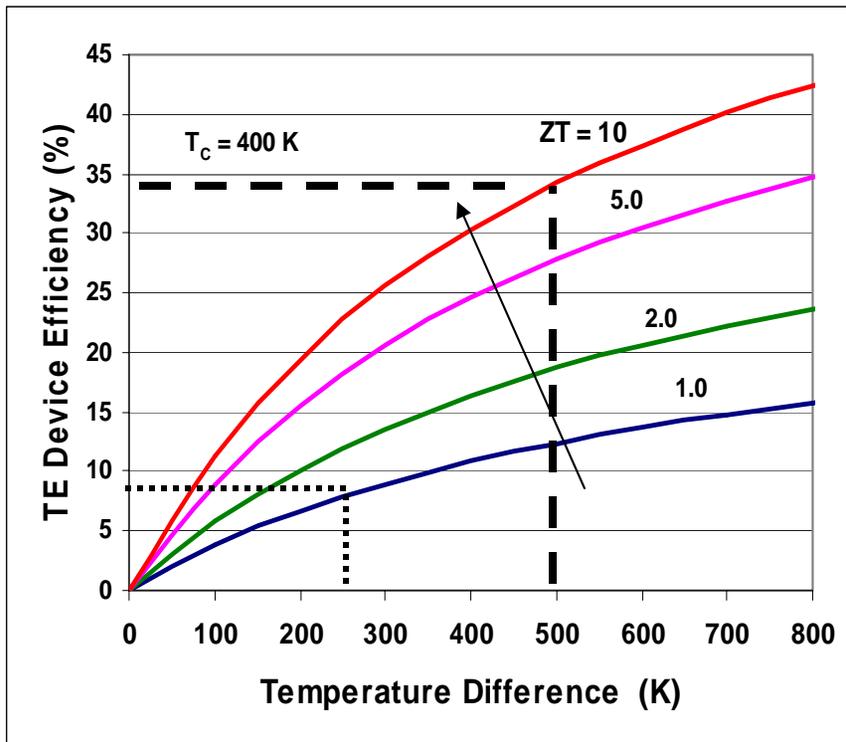
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Waste Heat Energy





Thermoelectric (TE) Energy Conversion



For a given ΔT , higher the ZT, higher the heat-to-electric conversion efficiency

If ZT of 10 can be achieved, a theoretical conversion efficiency of ~35% is possible for ΔT of ~500C



- Health Effects and Air Quality
 - Diesel vs. CNG buses
 - US and European tests
 - Diesel and Gasoline PM
 - Toxicity
- Suggestions for Environmentalists
 - PM trap retrofit and OEM
 - Oxidation Catalyst for CNG
 - Diesel Chips
 - Defeat emissions



Particulate (PM) Traps in European Diesel Cars

- Following Cars will have PM Traps by 12/03

<u>Manufacturer</u>	<u>Models</u>
Audi	A4,A6,A8
BMW	5 Series
Ford	Focus
Mercedes	Class C,E
Opel	Astra, Vectra
Toyota	Avensis
VW	Passat, Golf
Renault	Laguna, Vel Satis

These models will be presented at the Frankfurt Auto Show Sept. '03



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Sports Car vs. Truck





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Paul Revere Rides Again!

The Diesels are coming, the Diesels are coming!

