



2006 Diesel Engine Emissions Reduction Conference

Light Duty Diesels in North America A Huge Opportunity



Dr. Gerhard Schmidt – Vice President Ford Research and Advanced Engineering

Why Diesels?

Big Diesels at Work



Queen Elizabeth 2



Super Heavy Duty Trucks



Train Locomotives



Class 8



Why Diesels?

Ford North American Diesel Trucks



F 250/350 Series



E series RV



Commercial E-450



F-550



Why Diesels?

Ford European Diesel Light Duty Vehicles



Transit Connect



Range Rover Sport



Jaguar S-Type



C-Max

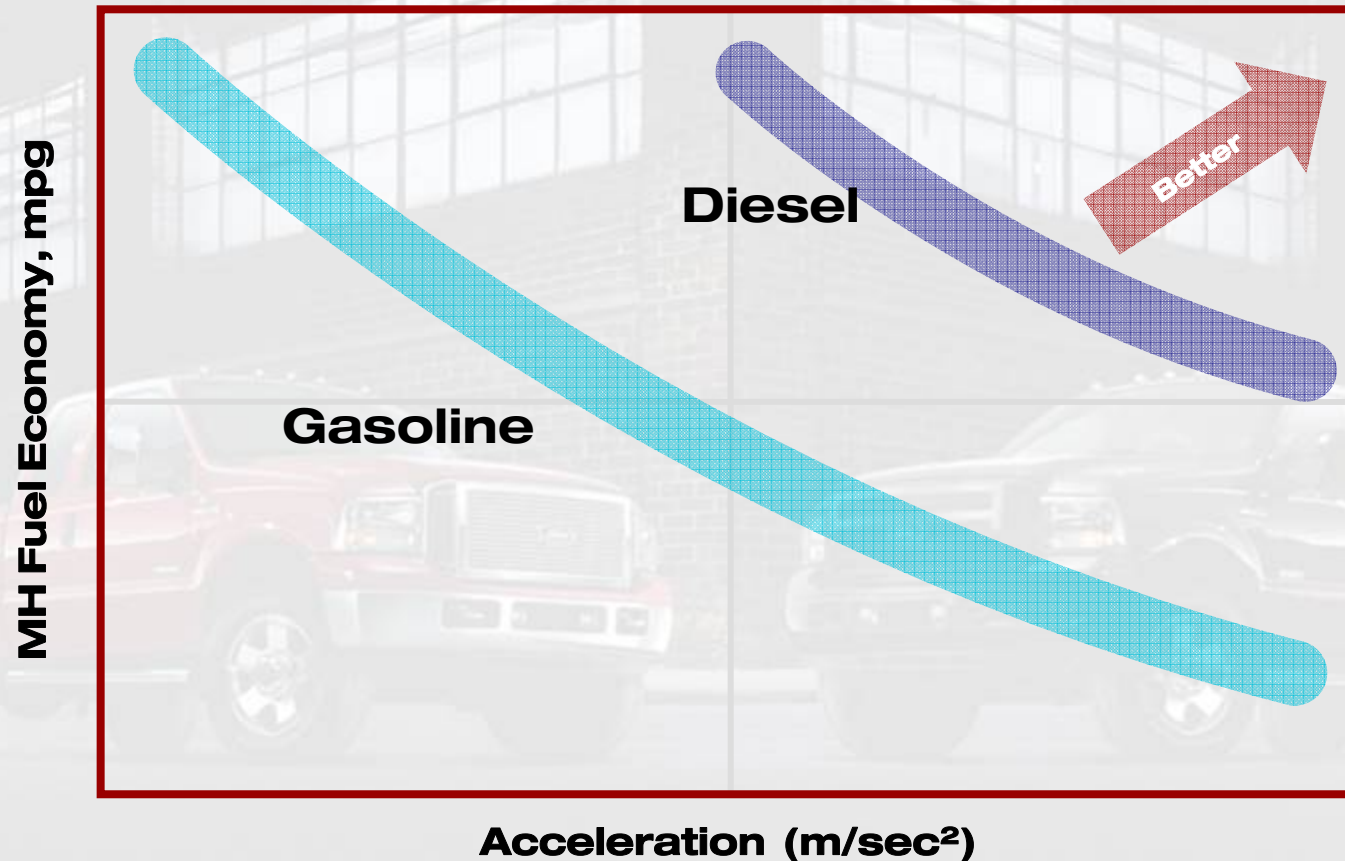


Fiesta



Can Light Duty Succeed in North America?

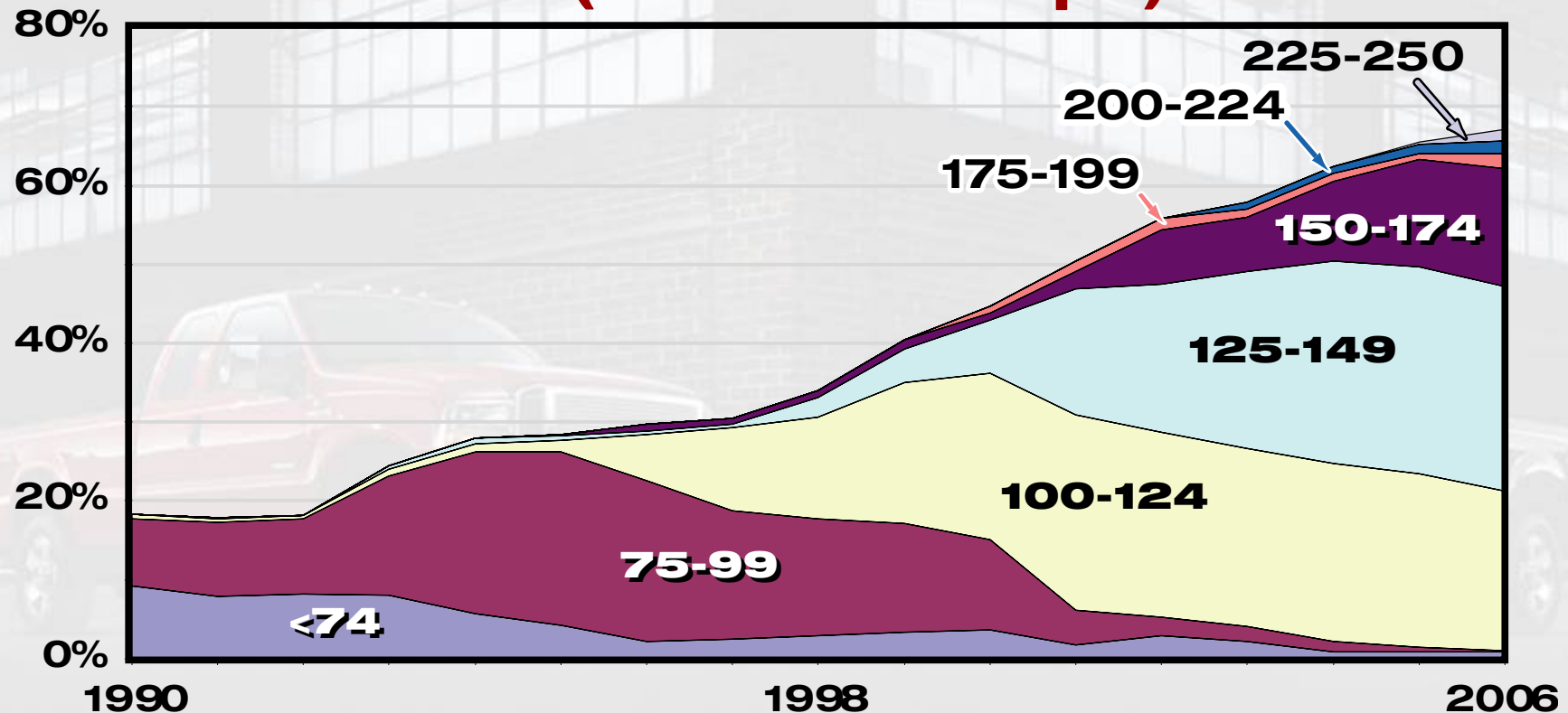
Diesel Driving Dynamics



Diesel can offer a balance of performance feel and fuel economy unmatched by other powertrain options.

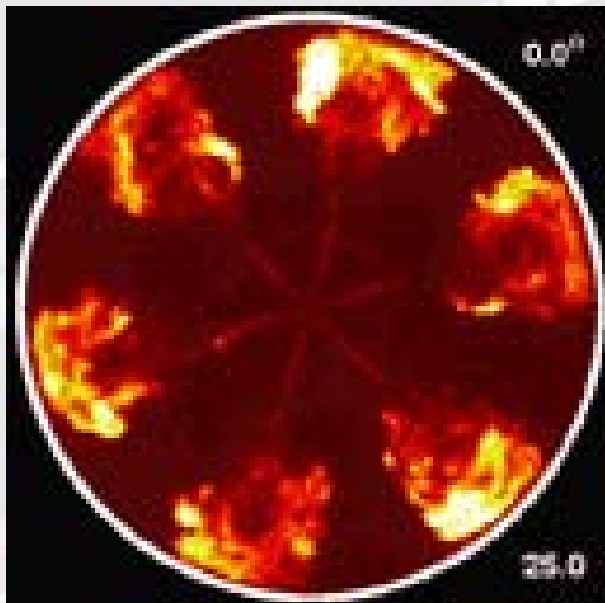
Can Light Duty Succeed in North America?

CD-Car Diesel HP Growth (Share in Europe)



High Performance solutions have moved more applications to Diesel in Europe.

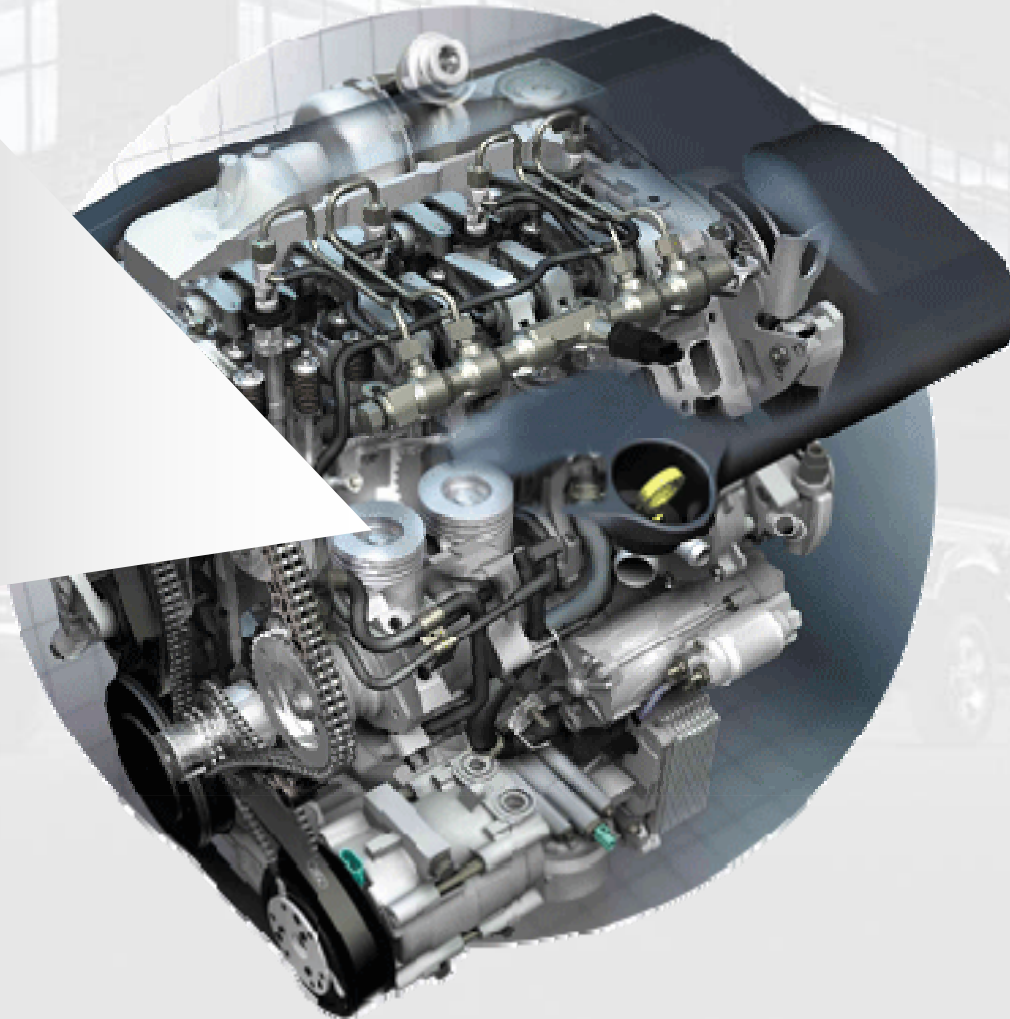
DOE has a Key Role



Courtesy of



**Sandia
National
Laboratories**



Urea SCR/DPF System for a Tier 2 LDT

with Urea Co-Fueling

Primary Contractor



Research and
Advanced Engineering

Subcontractors

ExxonMobil

Research and Engineering

FEV

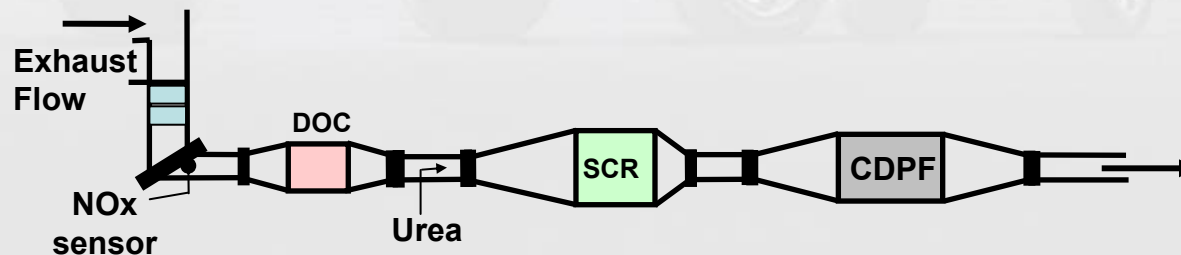
Catalyst Suppliers

BASF

The Chemical Company



Johnson Matthey



Urea Information and Supply

DOE is working with the Auto Alliance and EMA

DOE Urea Supply

Education

- DOE Clean Cities Web Site
- PBS spots on AutoWeek

Locating urea

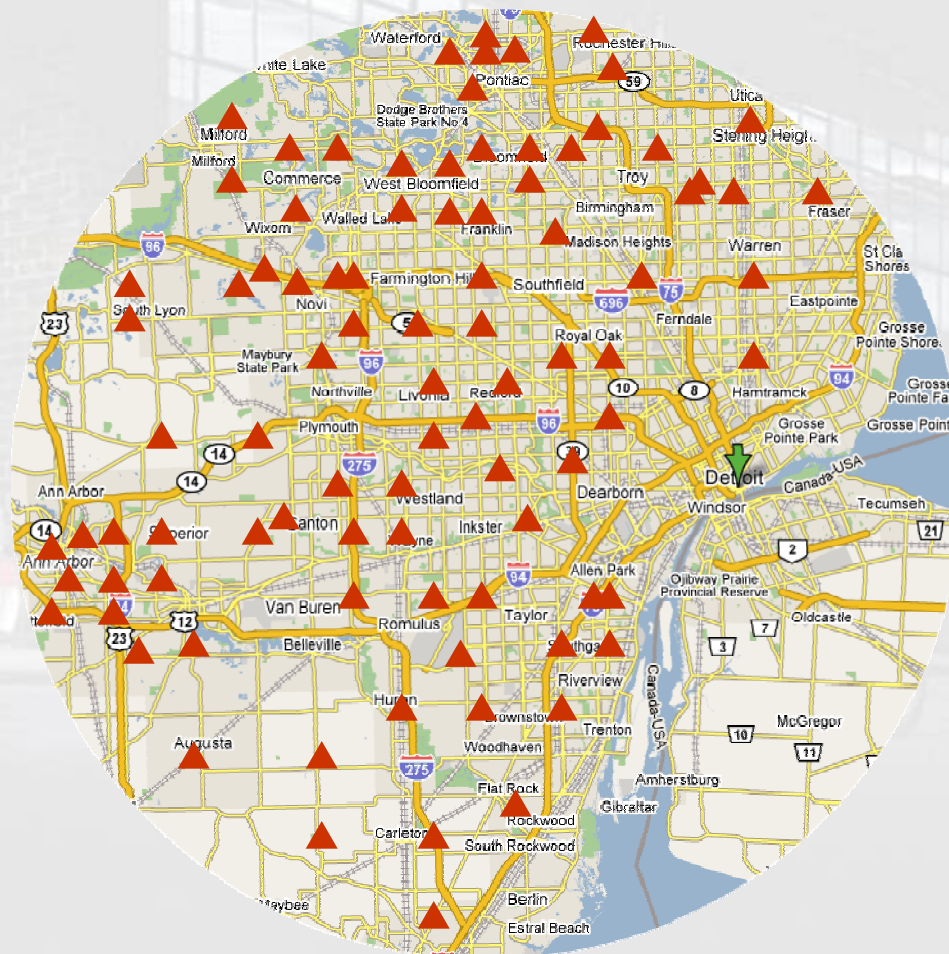
- Urea retail locator
- 1-800 location service

Stakeholder meetings

Sign Up
Today ▶

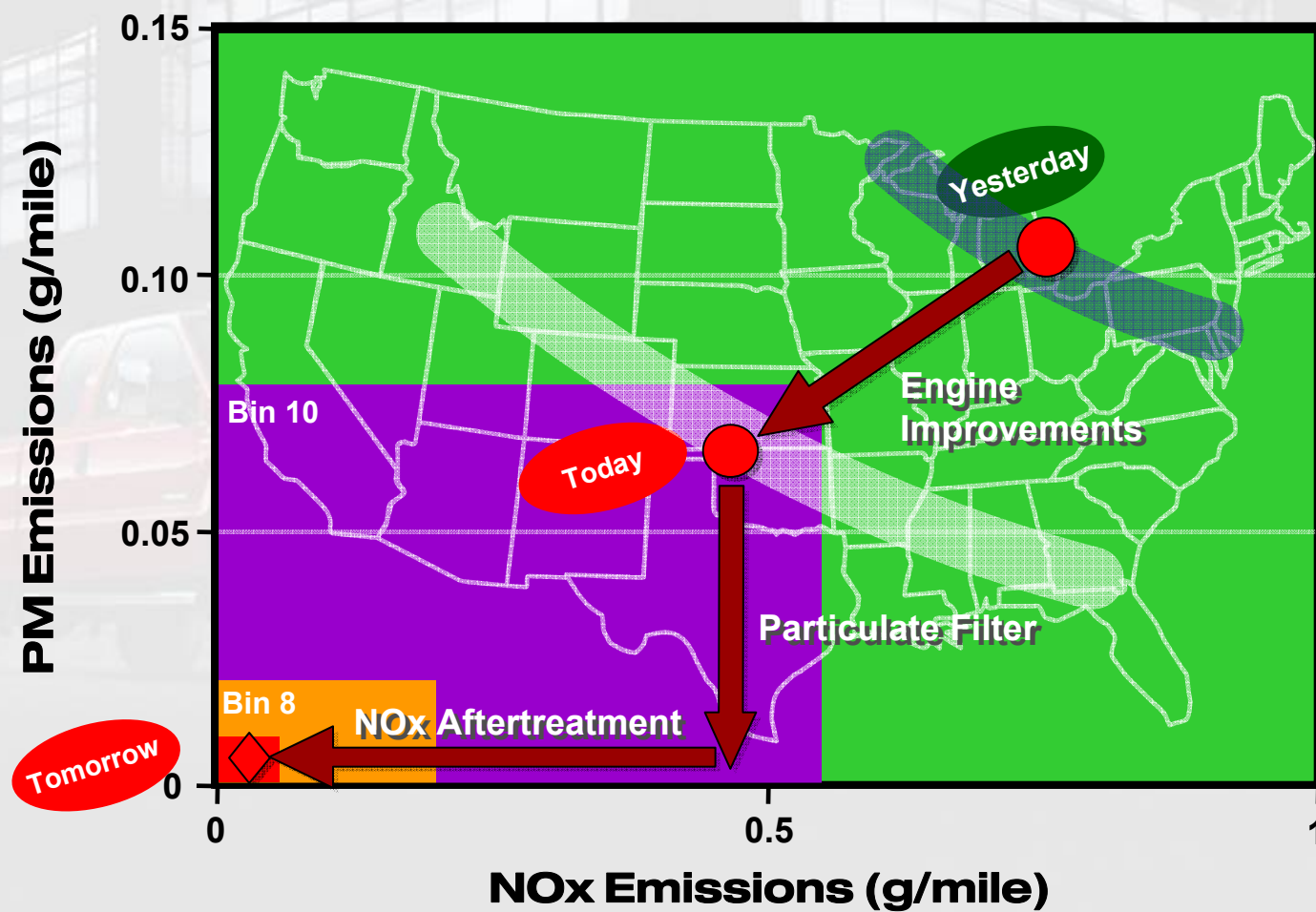
Clean Cities Now

Your **news** is now only a click away

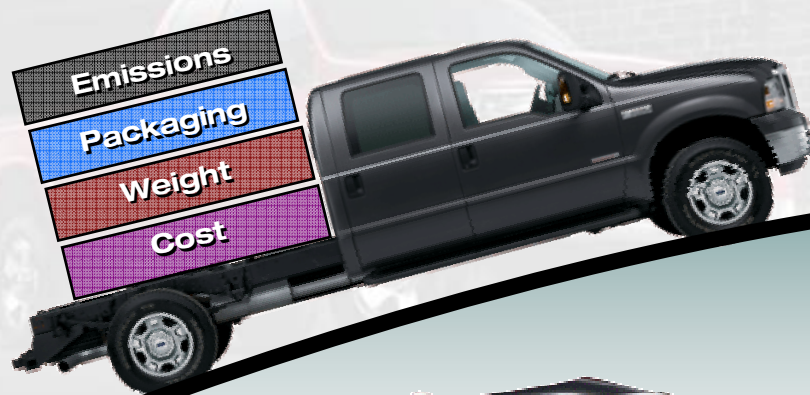


Challenges

U.S. Car



Consequences of the Emissions Task



Performance

Fuel Economy

NVH



Innovation Overcomes Challenges



Innovation Overcomes Challenges



Future for Diesel

Diesel Engine



- **Smoke**
- **Odor**
- **Noise**
- **Cold Start**

**Customer
Concerns**

**Surprise &
Delight**

- **Fuel Economy**
- **Range**
- **Performance feel**
- **Refinement**

Today

Future



Future for Diesel

Work



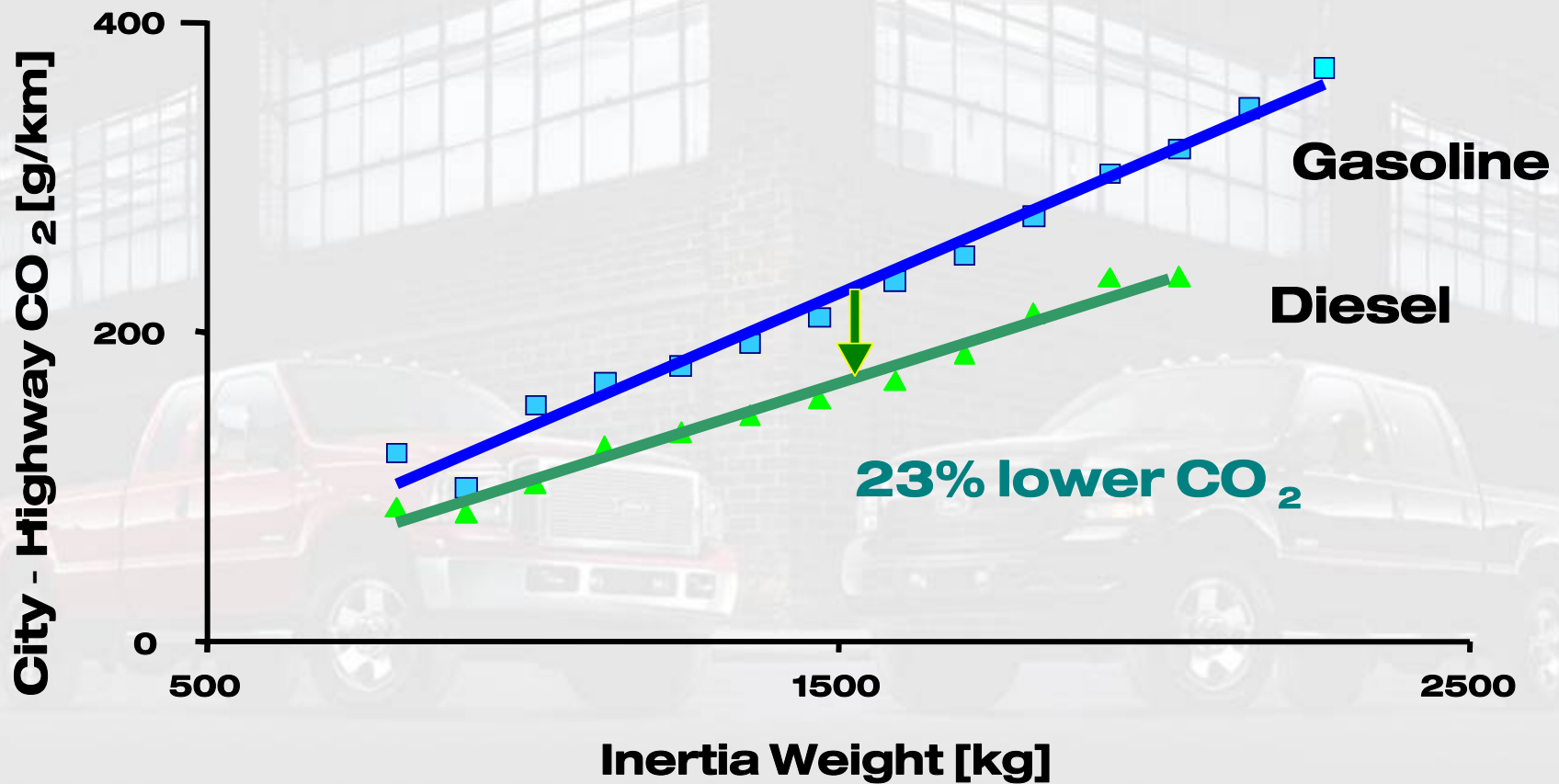
Commute



Fun



Diesel – A CO₂ Solution



**Modern diesels offer a 25-35% fuel economy benefit versus gasoline.
Modern diesels offer a 20-25% CO₂ benefit versus gasoline.**

Diesel Fuel Also Demands Innovation

Fossil Fuel Pathways

Petroleum

**Ultra Low
Sulfur Diesel**

Tar Sands

Oil Shale

Coal Liquids

Synthesis

Gas to Liquids



Diesel Fuel Also Demands Innovation

Biofuel Pathways

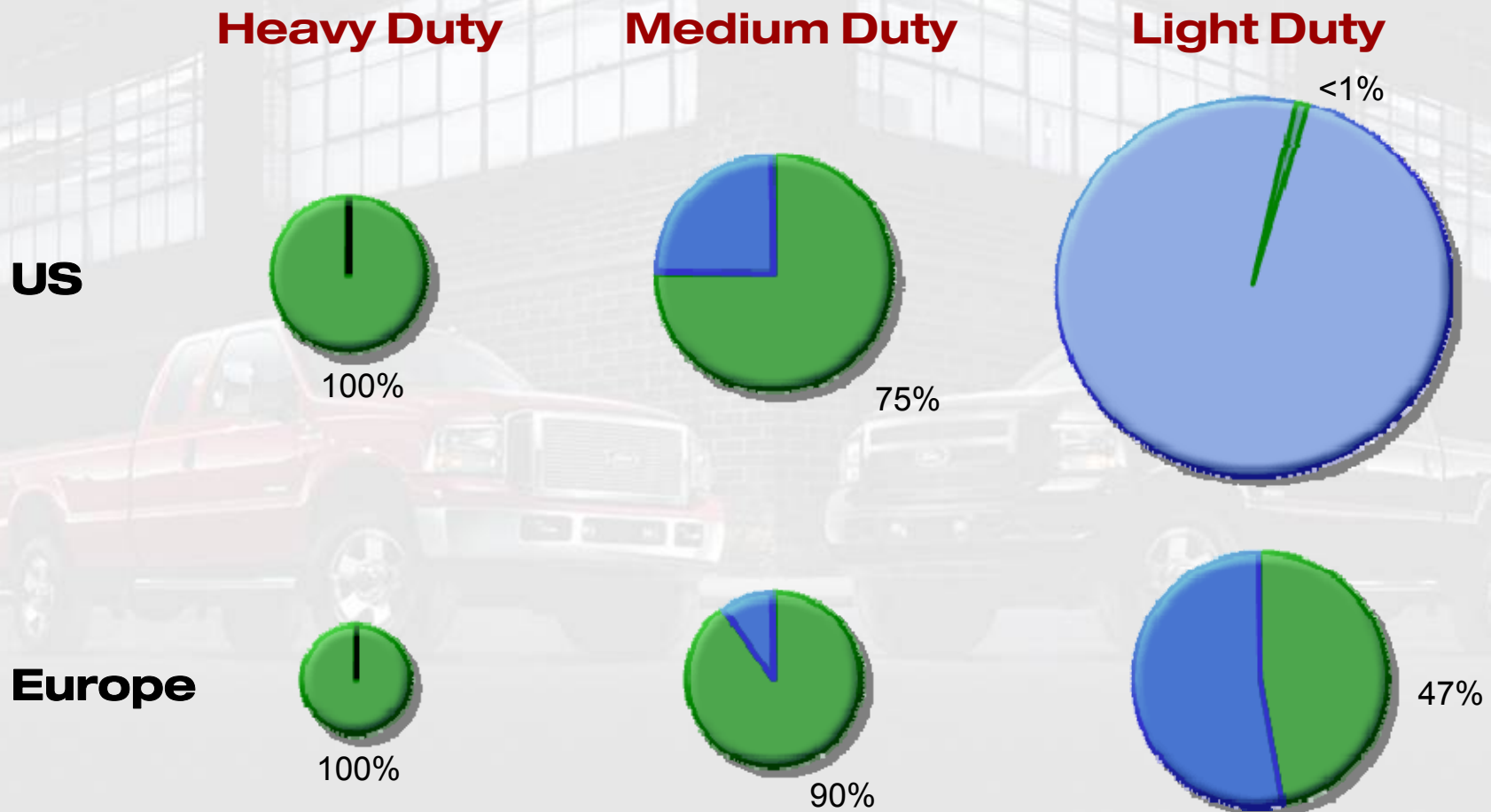
Bio Diesel

Bio Refinery

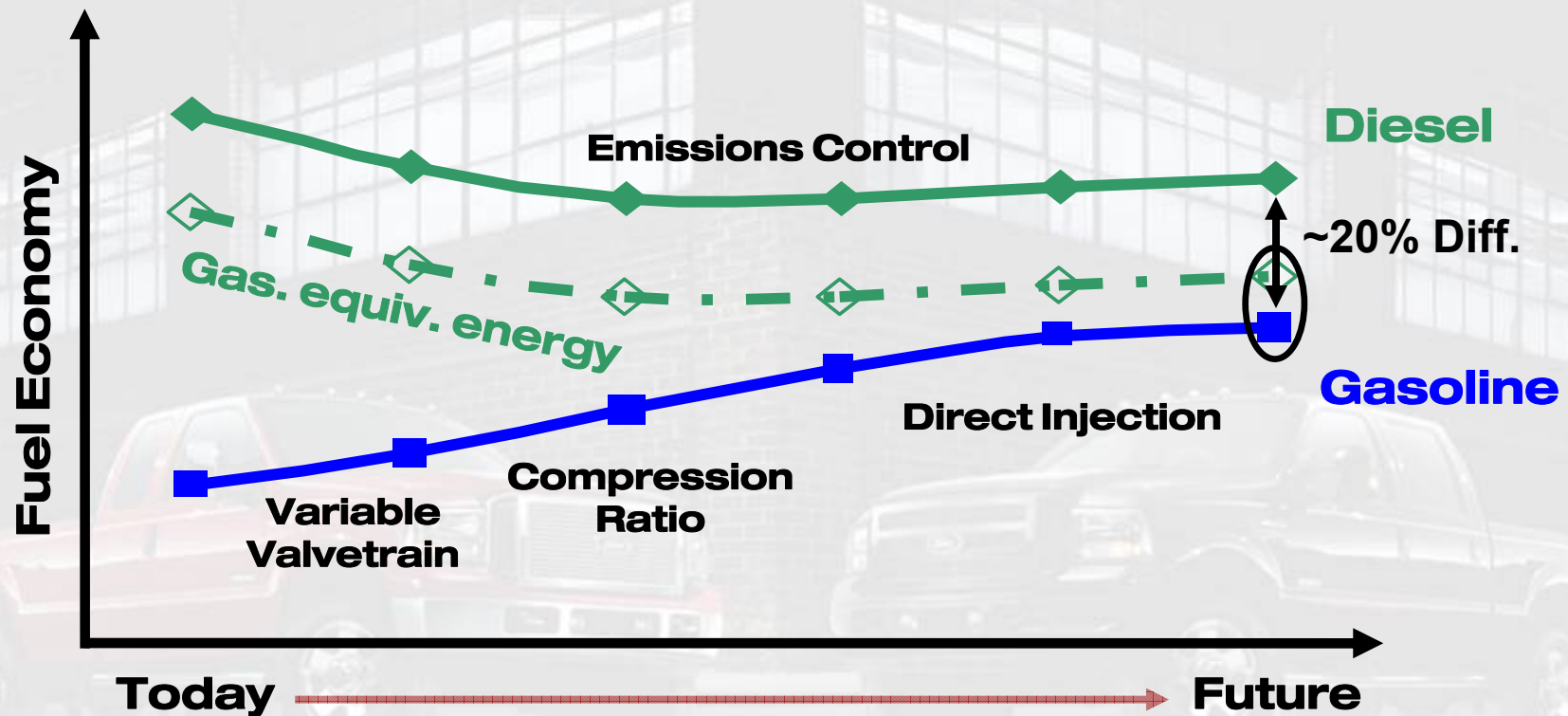
Biomass to Liquids



Light Duty Opportunity in North America



You Must Deliver the Attributes



Resolution of emissions challenges need to be achieved:

- without radical cost.
- without sacrificing fuel economy advantage.

Realizing the Opportunities

Deliver Attributes

Customer Value

Customer Delight



**Opportunities for
Light Duty
Diesel in
North America**

