



Reducing Petroleum Consumption and GHG Emissions with Clean Diesel Technology

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Diesel Technology Forum

Objective:

Increase awareness about clean diesel technology

Membership:

Includes energy companies, engine & vehicle manufacturers and emissions treatment companies

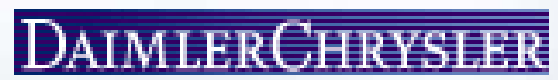
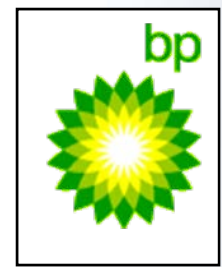
Methods:

Educational materials & outreach events

DTF Members: Leaders in Promoting Clean Diesel Technology



Johnson Matthey



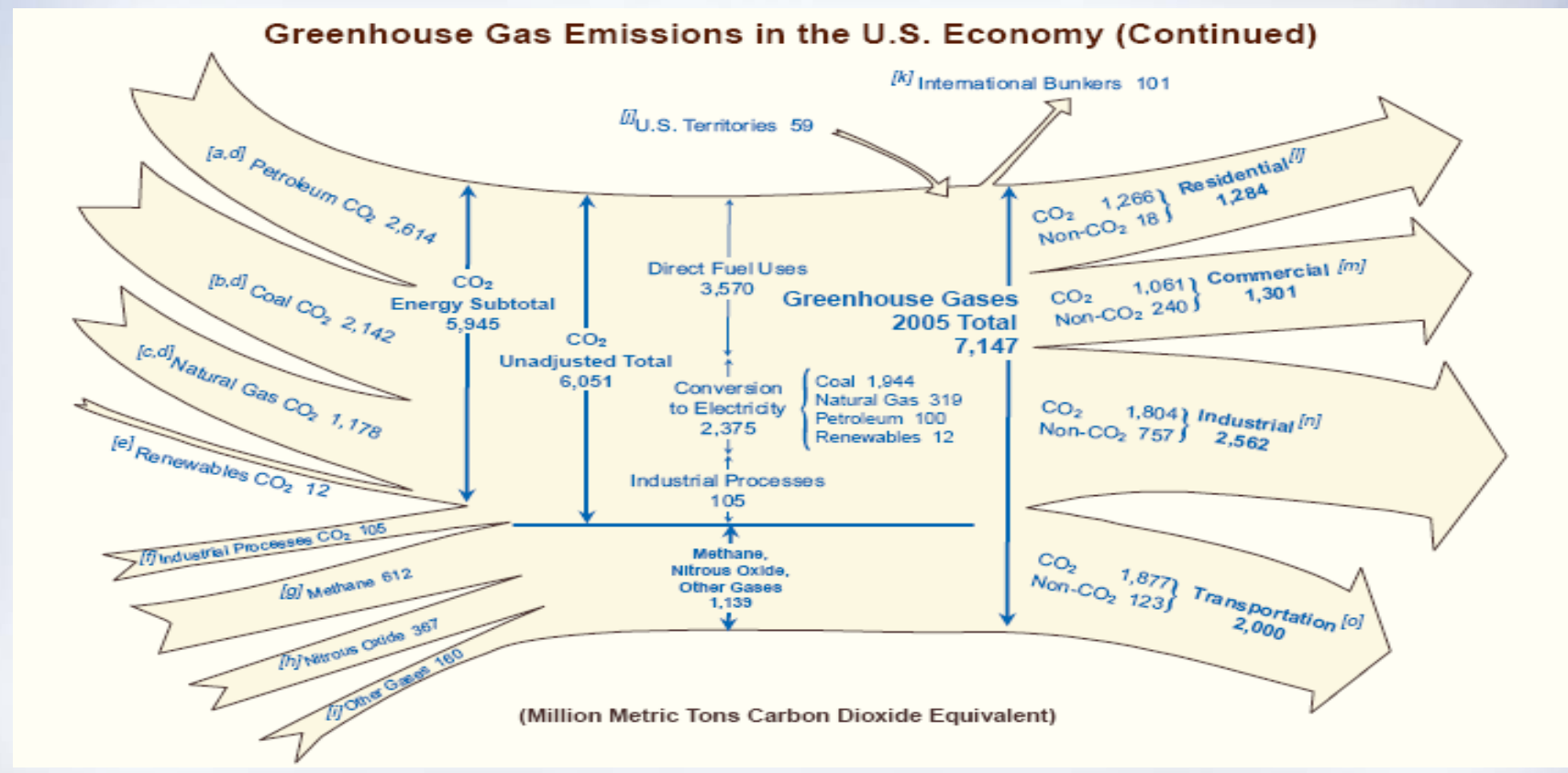
Transportation Fuel Statistics

- U.S. Petroleum Consumption – 20,680,000 barrels/day
- U.S. Crude Oil Imports – 10,031,000 barrels/day
- U.S. Motor Gasoline Consumption – 9,286,000 barrels/day
(390 million gallons/day)
- Share of U.S. Oil Consumption for Transportation – 70%
- Diesel Fuel
 - 18% of total refined petroleum products
 - 82% of distillate fuel consumed in U.S.
 - 75% consumed in on-highway motor vehicles

Source: www.eia.doe.gov

Transportation Related CO₂ Emissions

According to the EIA, the transportation sector is responsible for approximately one-third of domestic GHG emissions.



Reducing Transportation Related Petroleum Consumption & GHG Emissions

- Adopt more efficient technologies
- Reduce the number of vehicle miles traveled
- Use lower carbon fuels

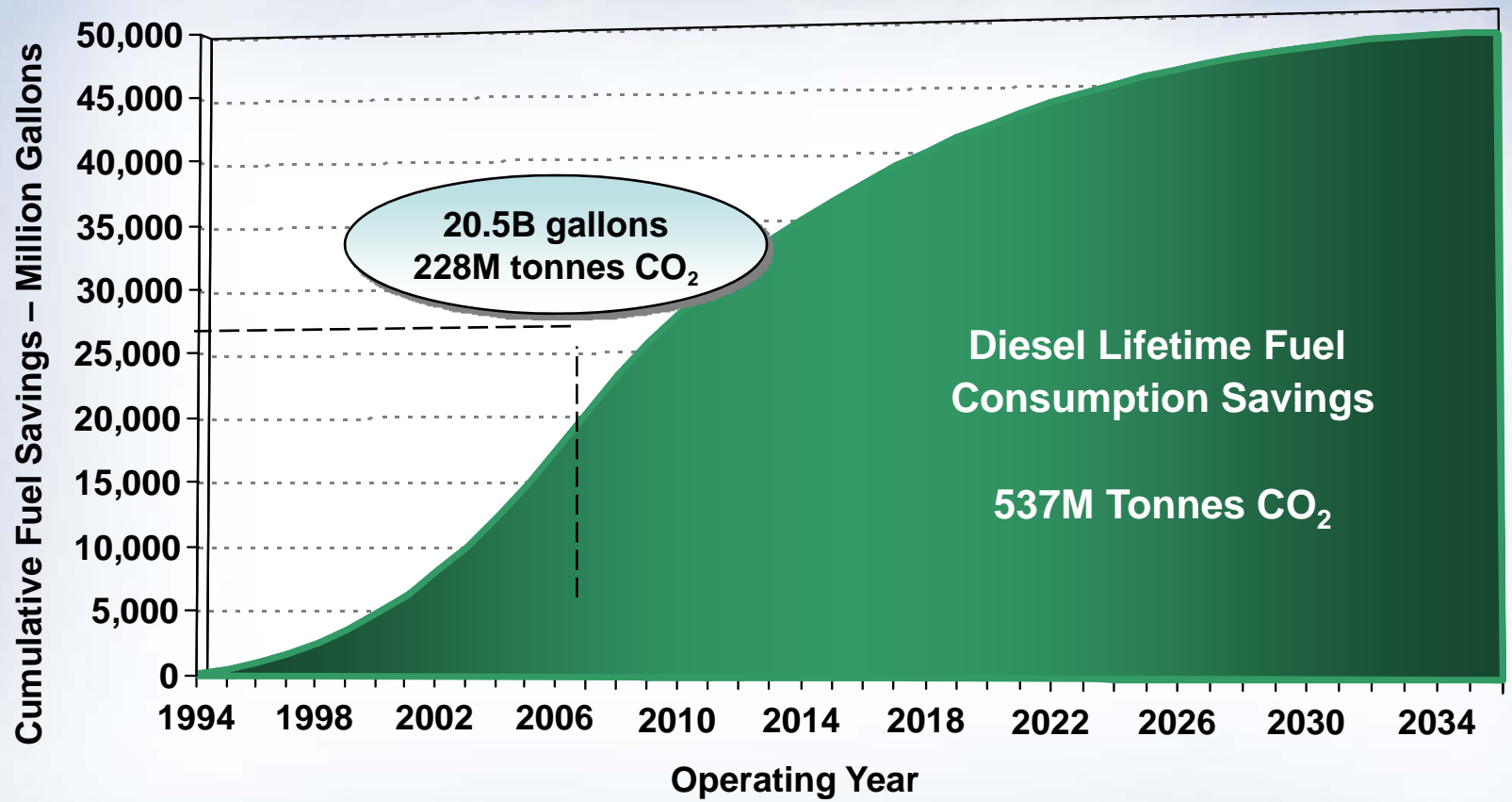
More Efficient Technology – Clean Diesel

- Most fuel-efficient of internal-combustion engines
- Diesel vehicles are 20-40% more fuel efficient than gasoline counterparts – thereby emitting approximately 20% fewer CO₂ emissions



HD pickup diesels produced from 1994-2007 will save the US 48 billion gallons of fuel

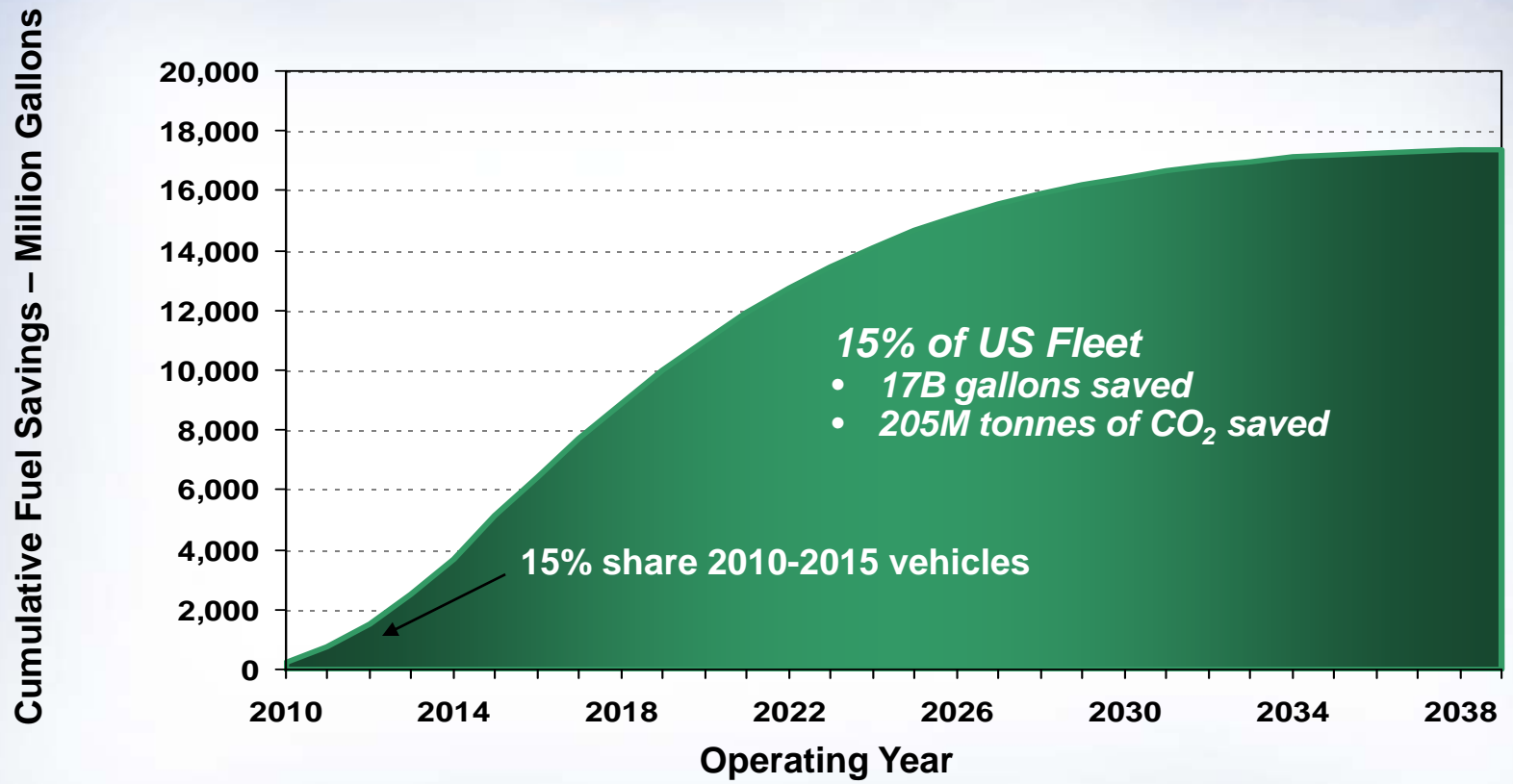
HD Pickup Truck Diesel Fuel and CO2 Savings



Based on 1994-2007 HDPU vehicle sales. Assumes diesels did not exist and were replaced by optional gas engines. US EPA Mobile 6 VMT. Martec analysis of real world fuel economy for all engines in this segment. CO2 savings calculated on well-to-tank basis.

If just 15% of the US fleet went diesel, we'd save 17 billion gallons of petroleum fuel

US Light Duty Diesel Fuel and CO₂ Savings – 6 Model Years



Based on 2007 LD vehicle sales with confirmed diesel programs. Analysis assumes 2010-2015 vehicle sales over their entire useful life savings over the average 2007 vehicles with announced diesel options.

European Experience

Europe experienced a reduction in the average CO₂ emissions of new passenger cars by 12% from 1995 to 2004.

“The main reasons for the reductions since 1995 are fuel efficiency improvements, mainly in diesel-fueled vehicles, and a shift in fleet composition from petrol to diesel passenger cars.”

- European Environmental Agency

Vehicle Efficiencies/GHG Emissions Reductions in Heavy-Duty Diesel Vehicles

- Vehicle design changes – reducing weight, aerodynamic drag and rolling resistance in heavy-duty vehicles – EPA Smartway Program



- Idle reduction technologies – provide APU or genset to provide heat, cooling and electricity.

Vehicle Efficiencies/GHG Emissions Reductions in Heavy-Duty Diesel Vehicles

- Diesel-hybrid technologies: transit buses, school buses, work trucks – fuel savings & emissions reductions
 - P&D – 35-50% fuel economy improvement
 - Utility – 40-60% fuel consumption reduction



Reduce Number of Vehicle Miles Traveled Diesel Hybrid Transit Buses

- Use mass-transit – post 2007 vehicles have significantly reduced PM & NOx emissions. Virtually as clean as natural gas.
- Diesel-hybrid technologies: NREL study found diesel hybrid buses 22% more fuel efficient than conventional diesel and 43% more efficient than natural gas buses
- 30% of U.S. transit bus orders are for diesel hybrids
- Of the nation's 10 largest transit agencies, 77% of all transit bus orders in January 2008 were for diesel hybrids (67% for 20 largest agencies)



Using Lower Carbon Fuels – Biodiesel and Renewable Diesel Fuel

- Renewable Fuel Standard promotes biofuel use including 1st generation biodiesel & second generation renewable diesel fuel
- Using B20 biodiesel can reduce GHG emissions 15% depending on fuel raw materials
- Next generation renewable diesel can reduce GHG emissions between 40-60% over petroleum diesel
- As fuel production evolves from edible oils to non-food bio oils and next generation bio oils – GHG emission reduction levels will continue to grow.

For More Information

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