

Roadmap to sustainable mobility

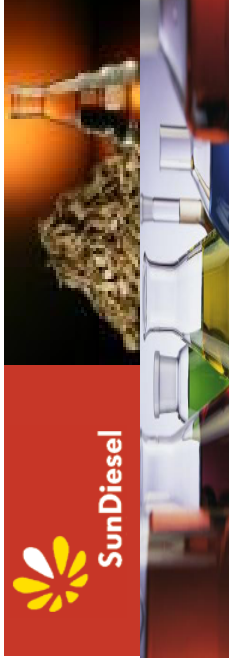
today

future

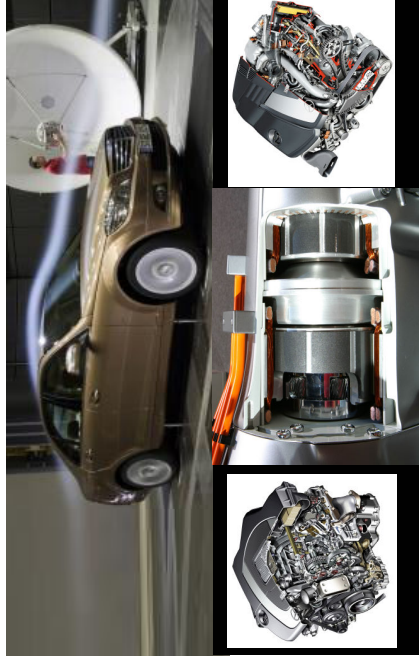
Fuel Cell technology



Improved & alternative fuels



Efficient cars
with efficient *powertrains*
with or without *hybrid modules*



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Daimler Diesel BLUETEC Technology

the future of Diesel is blue

... as clean as gasoline

E 320 BLUETEC



GL 320 BLUETEC

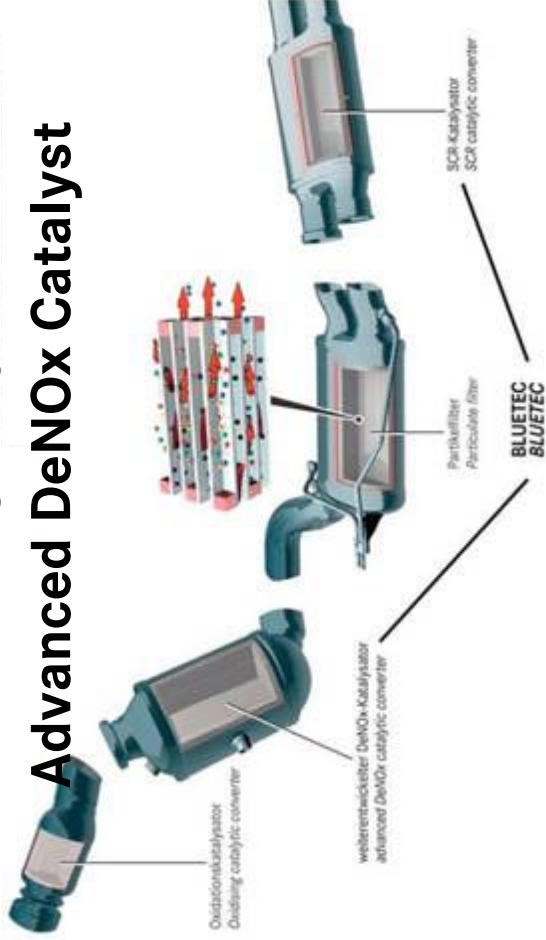


Actros/Axor BLUETEC



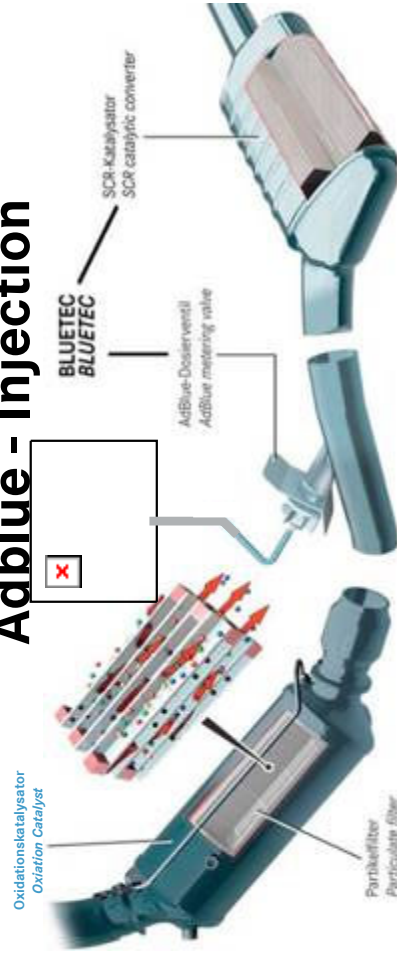
BLUETEC I

Advanced DeNOx Catalyst



BLUETEC II

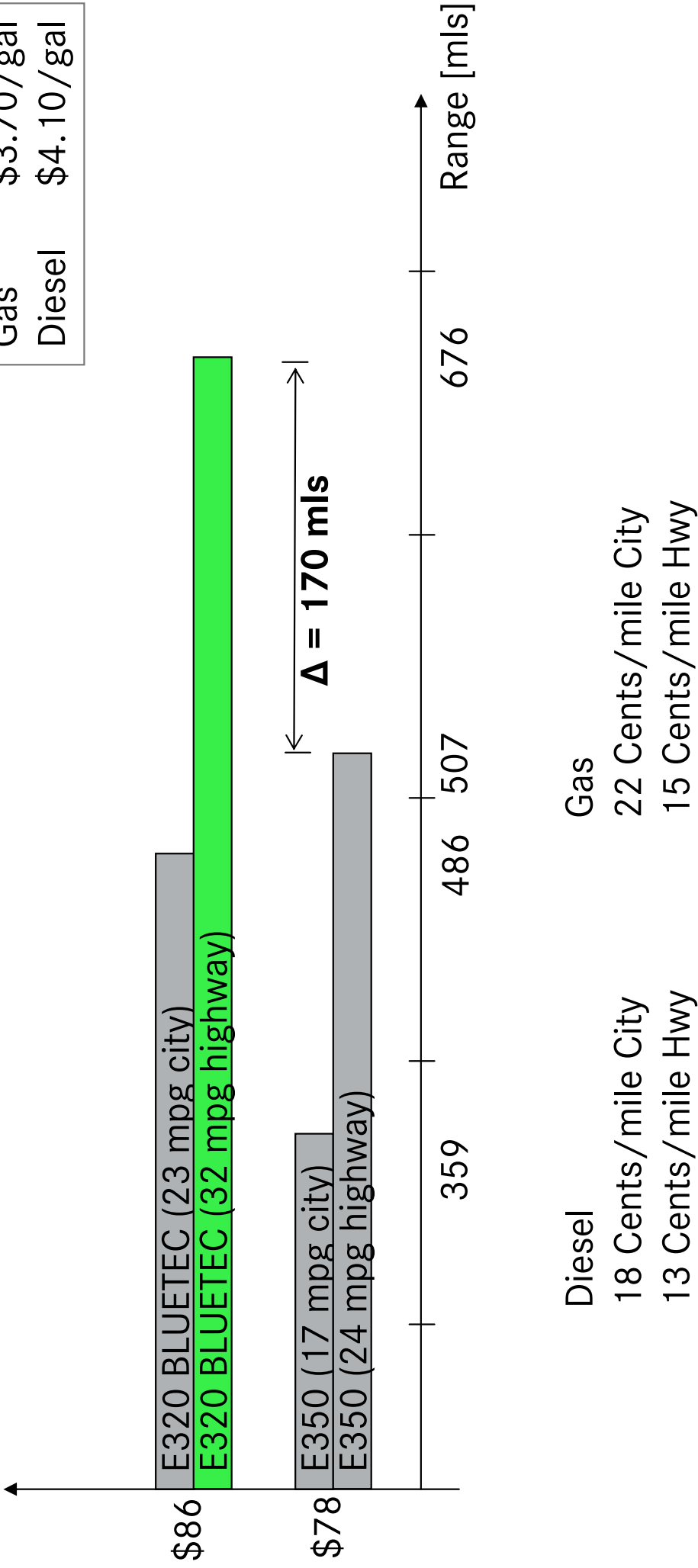
Adblue - Injection



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Benefits of Bluetec Diesel

Price	
Gas	\$3.70/gal
Diesel	\$4.10/gal



Diesel	Gas
18 Cents/mile City	22 Cents/mile City
13 Cents/mile Hwy	15 Cents/mile Hwy

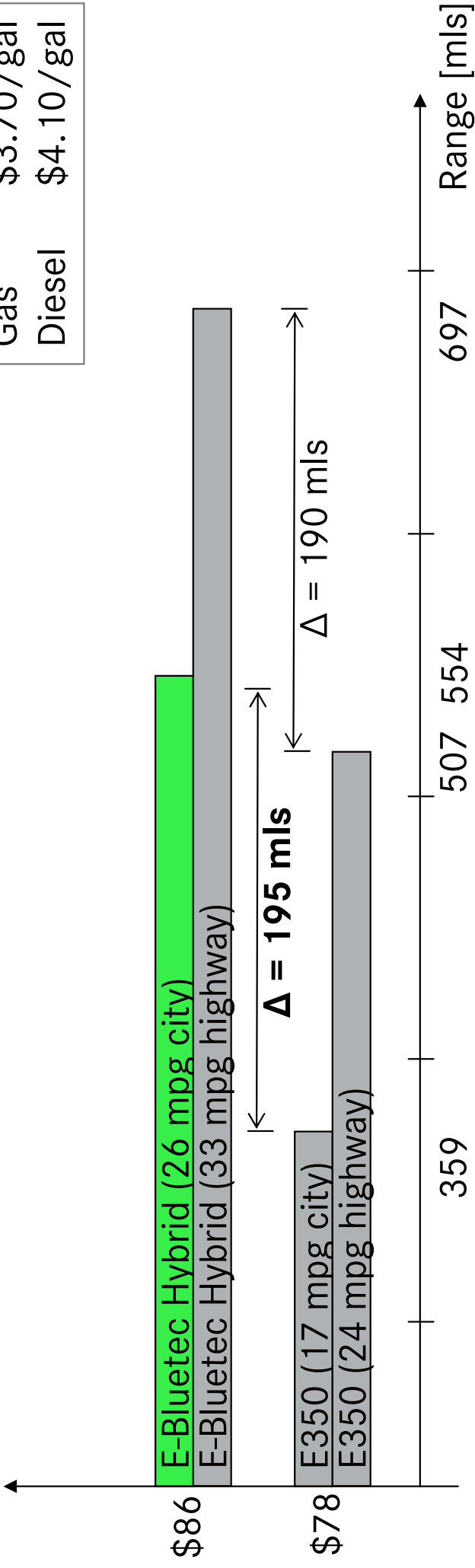
Benefit of Diesel:
Highway rage and city fuel saved to approximately \$600/year * (\$2,600 Diesel or \$3,200 Gas)

*) assumption: 15,000 miles in city/year

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Benefits of Bluetec-Hybrid

Price	
Gas	\$3.70/gal
Diesel	\$4.10/gal



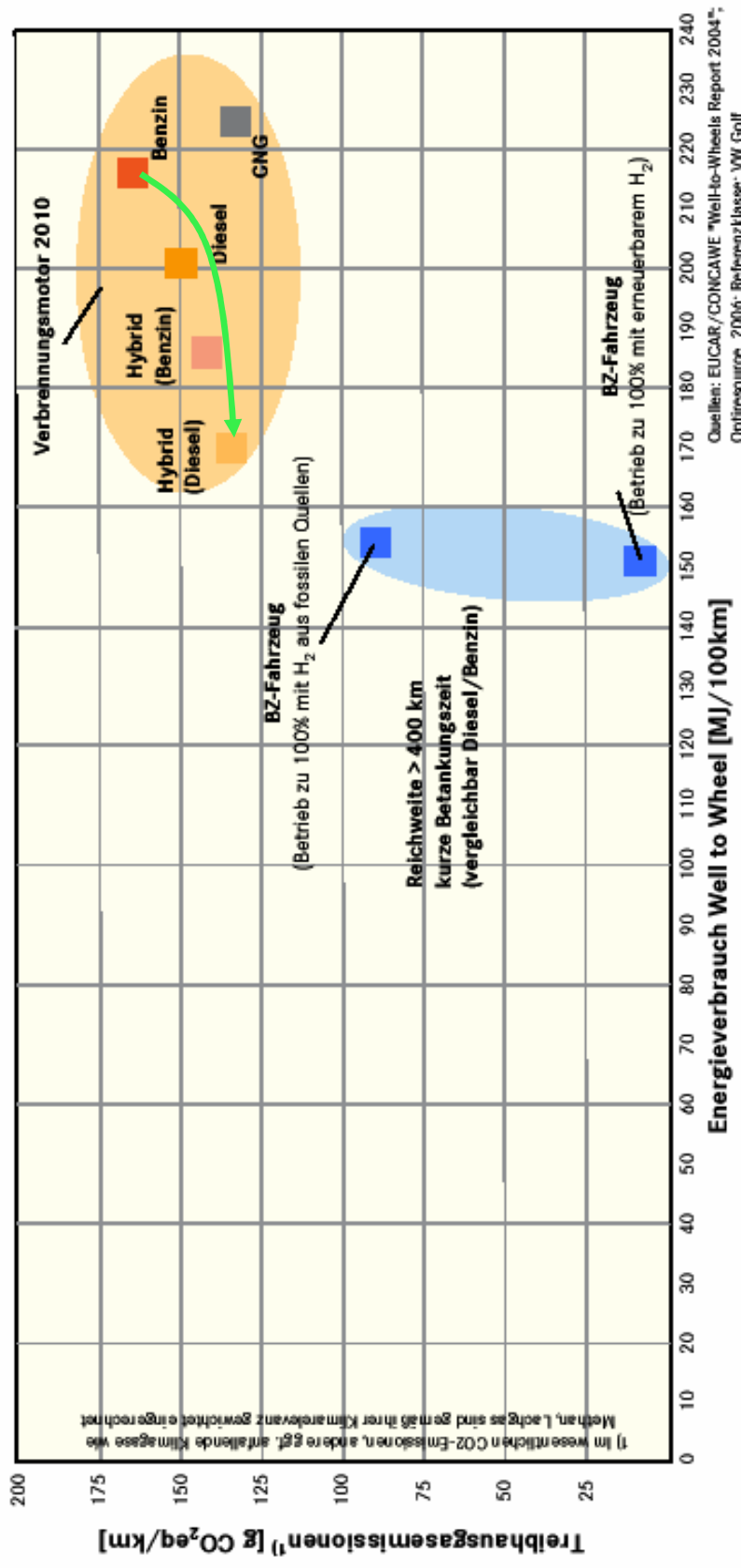
Diesel w/ Hybrid	Gas
16 Cents/mile City	22 Cents/mile City
12 Cents/mile Hwy	15 Cents/mile Hwy

Benefit of Bluetec-Hybrid:

City fuel economy and highway range maximized by applying Hybrid technology to Bluetec Diesel. Total fuel saved adds to \$900/year*

*) assumption: 15,000 miles in city/year

Reduction of CO₂ Emissions Maximized with Diesel Hybrid



NOx Level at BIN5 Level Maintained

Technical Challenges and Opportunities

- 1) Challenge: Engine Start Comfort
 - Customer acceptance of engine start comfort questionable
 - Limited cold crank capability
- 2) Challenge: Networking and Controls System Effort for BlueTEC and Hybrid ...
 - Controllability of BlueTEC system requires complex networking system (multiple CAN bus systems) and needs to be merged with already complex Hybrid controls network system.
- 3) Challenge: Maintain NOx Emissions While Reducing CO₂ Emissions
 - Engine start/Stop strategy may conflict with NOx emissions
- 4) Opportunity: New Torque Characteristics of Diesel + HEV

Summary

Environmental Benefit

- 1) Bluetec Hybrid offers both advantages of the Hybrid and Diesel technology
- 2) Bluetec Hybrid reduces CO₂ emissions in cities
- 3) Bluetec Hybrid offers engine-off vehicle operation *
- 4) Bluetec Hybrid maintains NOx emission level of Bluetec base technology

Customer Benefit

- 5) Bluetec base allows break-even after 1-2 years (depending on driving pattern)
- 6) Bluetec Hybrid achieves range of 700 miles at highway cruising speeds
- 7) Bluetec Hybrid enables silent vehicle operation in neighborhoods
- 8) Bluetec Hybrid ready for plug-in technology *

*) depending on Hybrid concept