



Hybrids

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Public Policy

Fuel Economy

Infrastructure

CAFE

Regulatory

Codes
&
Standards



Fuel Availability

Highway Systems

Global Warming

Emissions



Consumer acceptance is driven by many factors:

Product attributes

**Refueling
infrastructure**

**Road compatibility
& safety**

Insurance

Pricing

Incentives

**State registration &
DMV requirements**

Parts and Warranty

Service

Marketing

**Customer
Satisfaction**

Communications



Hybrid research indicates

Consumers are fond of the better fuel economy and improved environmental benefits

Not all consumers are willing to make sacrifices to drive a “green” vehicle

Concerns are evident regarding:

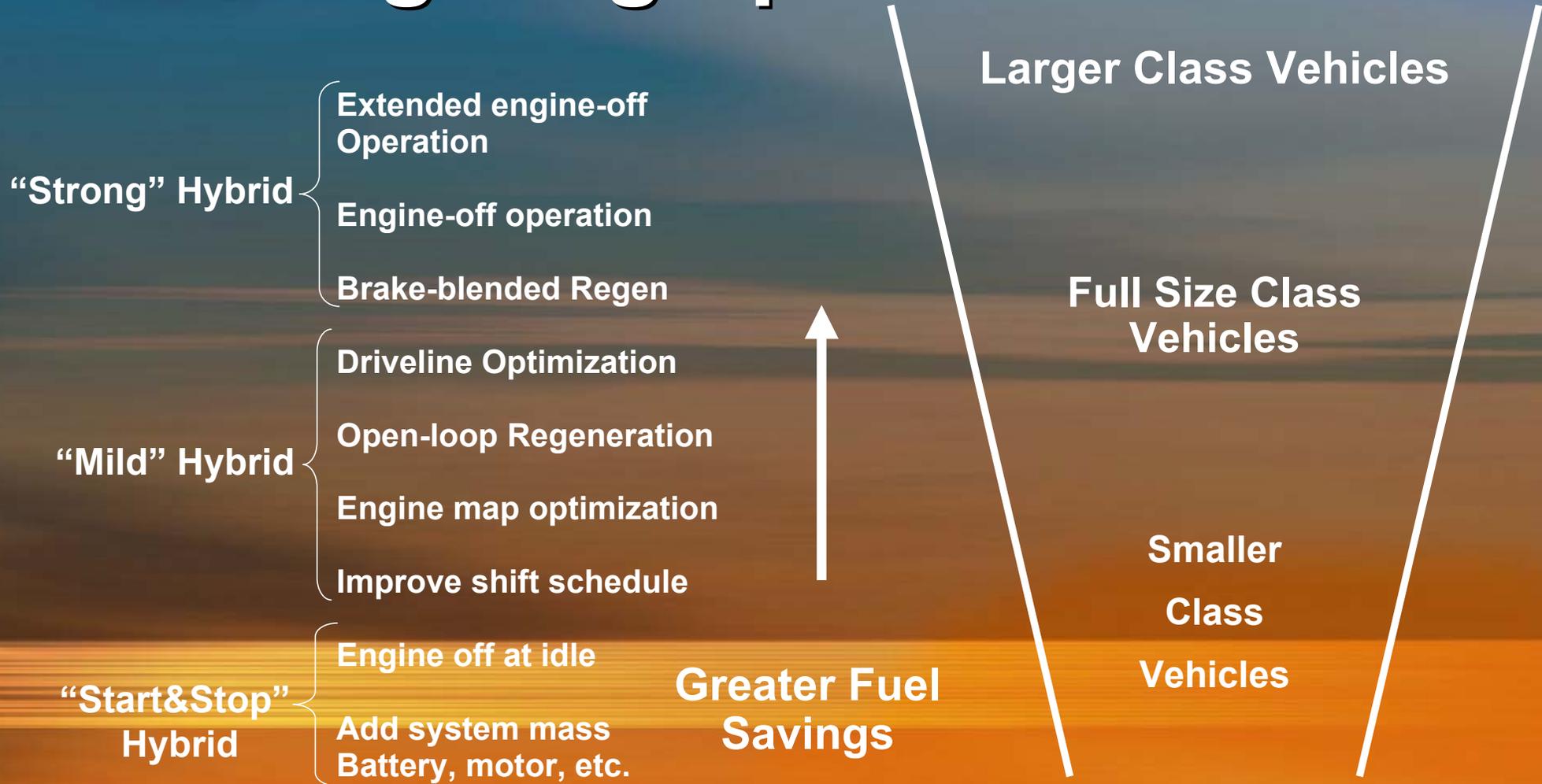
Performance / engine power

Maintenance and battery replacement costs

Misconceptions that hybrids need to be “plugged in”



GM hybrid systems address the need to avoid “giving up” features:





GM's Strong Hybrid Bus

Some recent success in 2003.....

235 Hybrid Systems were sold to King County Metro Transit / Sound Transit in October, 2003.



This is the largest single hybrid transit bus order and will save 750,000 gallons of diesel fuel annually or the potential fuel savings equal to over 8,000 small hybrid cars.



Significant results:



Benefits

- Up to 60 percent fuel economy and with faster acceleration
- Reduces emissions by more than 90 percent
- Quiet and clean operation with “tunnel mode”
- Extended brake, engine oil and transmission oil life

HYBRID TRUCK

GM Hybrid Truck

First production hybrid full-size truck:

Highest city fuel economy of any full-size truck

First hybrid with 120-volt “built-in generator”

Extended cab pickups (2wd & 4wd)

Sales Objectives:

Fleet sales now with retail sales added in fall of 2004





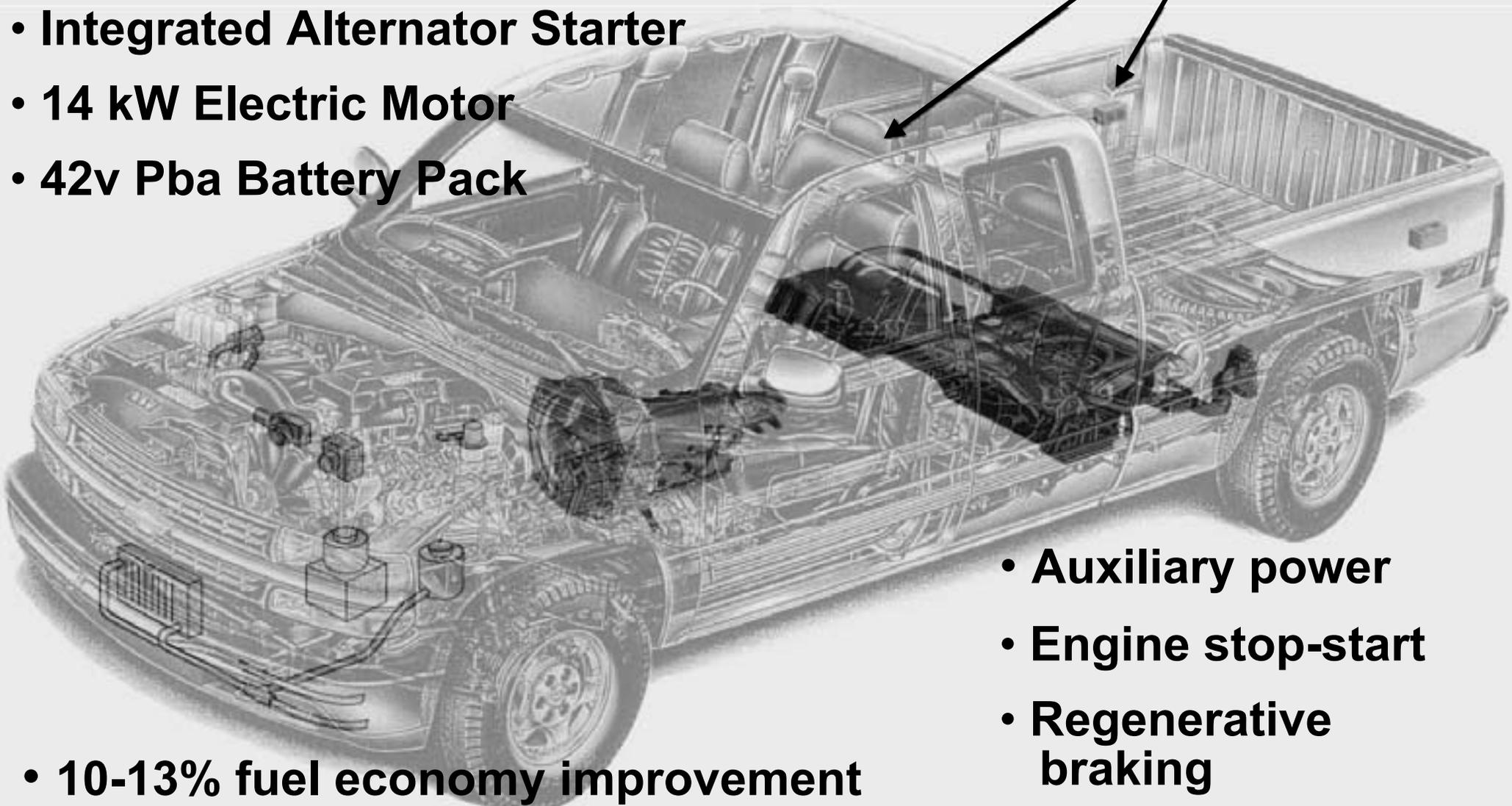
Chevy Silverado Hybrid

- 5.3 L Vortec V-8
- Integrated Alternator Starter
- 14 kW Electric Motor
- 42v Pba Battery Pack
- 10-13% fuel economy improvement

120V Power Outlets in the cab and the bed



- Auxiliary power
- Engine stop-start
- Regenerative braking





Belt Alternator Starter (BAS)



2006 Saturn VUE

- Low-cost Mild Hybrid system
 - Engine off at idle
 - Deceleration fuel cutoff
 - Regenerative braking



2007 Chevy Malibu

- 2.4L Ecotec engine
- 7kW motor replaces alternator
- Single 36v PbA Battery

Approximately a 12-15% fuel economy improvement



Advanced Hybrid System

AHS II

- Strong hybrid based on Hybrid bus system
- Targeted 25-35% fuel economy improvement



2007 Tahoe/Yukon



GM's Hybrid Plan

- **CY2003 Allison Hybrid Drive**
- **CY2004 Chevy Silverado & GMC Sierra Hybrids**
- **CY2006 Saturn Vue Hybrid**
- **CY2007 Chevy Malibu Hybrid**
- **CY2007 Advanced Hybrid on Full Size SUVs**

