



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

Bringing you a prosperous future where energy  
is clean, abundant, reliable, and affordable.

## FreedomCAR & Vehicle Technologies Program

# The Pathway to Transportation Energy Security

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Director, Office of FreedomCAR and Vehicle Technologies  
Energy Efficiency and Renewable Energy  
U.S. Department of Energy

Presented at the  
*2004 Diesel Engine Emissions Reduction  
(DEER) Conference*  
San Diego, CA  
August 29 – September 2, 2004

### ***FCVT Program Mission***

*To develop more energy efficient and environmentally friendly highway  
transportation technologies that enable America to use less petroleum.*

*--EERE Strategic Plan, October 2002--*



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## Recent Gasoline Prices





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# Recent Increases in Gasoline Prices





## The New York Times nytimes.com

August 26, 2004

### Stocks Decline Despite Slide in Oil Prices By THE ASSOCIATED PRESS

NEW YORK

Stocks with blue chip investors' prices off about a ju Brokerage semicondu tech stocks In morni Jones indu 5.91, or 0.1 The br mixed. Th index was percent, Standard & up 0.73, 1,105.69.

## FINANCIAL TIMES WEDNESDAY AUGUST 25, 2004

GLOBAL FORECAST

### High oil prices, weak markets and slow growth: has the world economy peaked?

Asia GDP growth: 7.1% (est. 2004), 7.2% (est. 2005)  
 Growth forecasts: 7.1% (est. 2004), 7.2% (est. 2005)  
 Oil price: \$42.50 (est. 2004), \$42.50 (est. 2005)  
 US fiscal balance: \$100.00 (est. 2004), \$100.00 (est. 2005)  
 US employment: 135.00 (est. 2004), 135.00 (est. 2005)  
 Current account balances: \$100.00 (est. 2004), \$100.00 (est. 2005)

## The Washington Post August 25, 2004

### Oil Prices Fall, but Market Shrugs

Bloomberg News

U.S. stocks were little changed as reduced profit estimates for Cisco Systems and Broadcom and a lower capital-spending forecast for chipmakers limited an advance sparked by a third day of falling oil prices.

"Because there is such little activity, if you do get a pre-ponderance of negative analyst views, the market is going to pick up on that and follow suit," said Jay Suskind, head of equity trading at Ryan Beck & Co. in Livingston, N.J.

The Standard & Poor's 500-stock index rose 0.51, to 1096.19. The Nasdaq composite index, which gets 38 percent of its value from computer-related stocks, fell 1.81, or 0.1 percent, to 1836.89 after rising as much as 0.6 percent.

Caterpillar, Honeywell International and

in the Dow Jones industrial average as the shares benefited from the drop in oil prices. The average rose 25.58, or 0.3 percent, to 10,098.63.

The benchmarks reached their highs for the day right after the oil market opened at 10 a.m. in New York. Crude futures had their first three-day drop in six weeks.

Cisco, the world's biggest maker of computer-networking equipment, fell 21 cents, to \$18.97. Broadcom, a maker of microchips for computer networks and electronics, sank \$2.14, or 6.9 percent, to \$28.96, the steepest drop in the S&P 500.

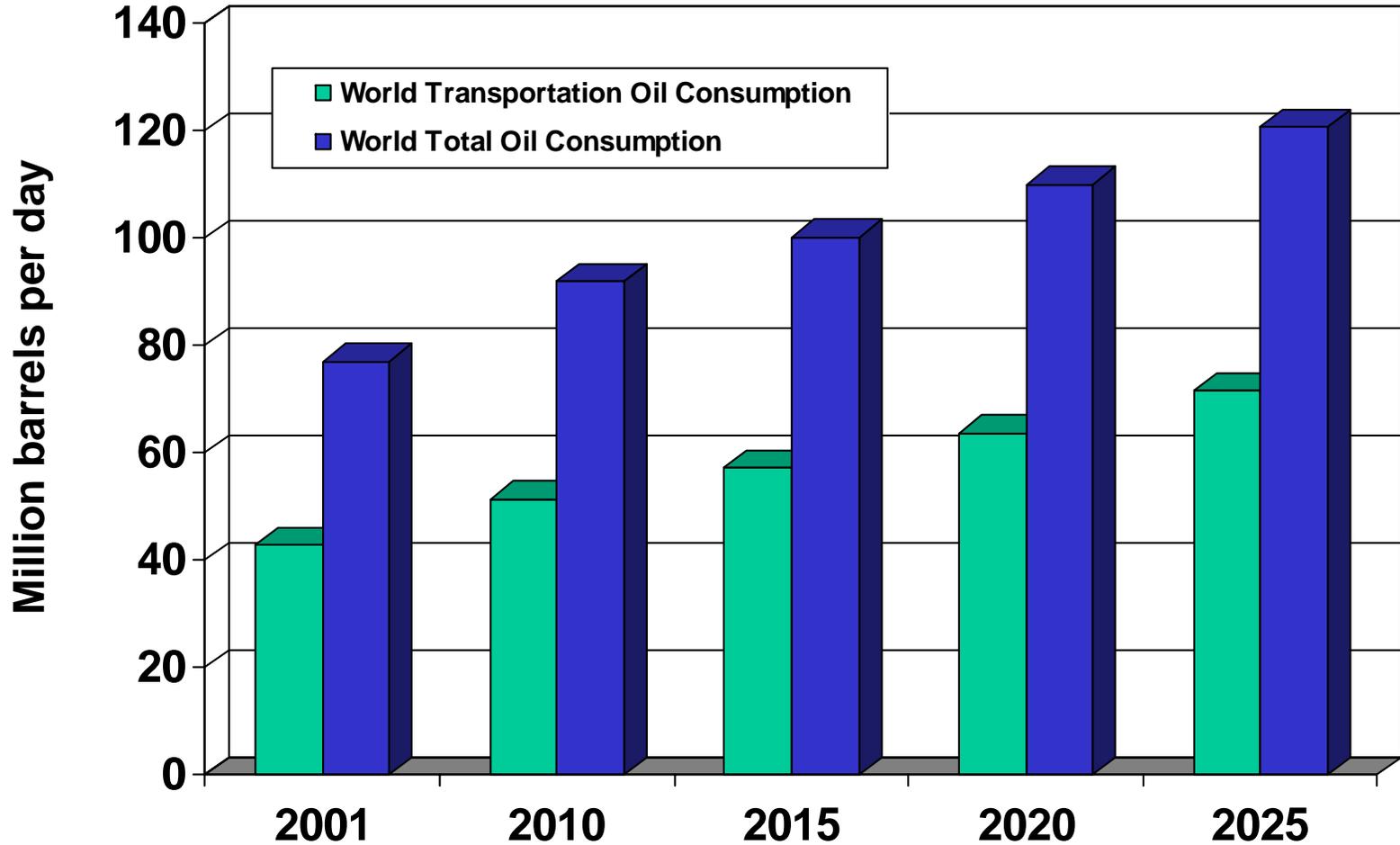
Chip-equipment makers such as Applied Materials fell after Piper Jaffray analyst C. William Lu said capital spending in the industry will fall 5 percent or remain flat in 2005. He previously had

anticipated growth as high as 10 percent. Applied Materials dropped 29 cents, to \$15.93. Novellus Systems fell 64 cents, to \$24.85.

Caterpillar, the world's largest maker of earthmoving equipment, rose \$1.10, to \$73.15, for the biggest gain in the Dow. Honeywell, the world's No. 1 maker of cockpit electronics, gained 37 cents, to \$35.69, and United Technologies, the maker of Pratt & Whitney jet engines, rose 75 cents, to \$93.65.

H.J. Heinz Co. climbed \$1.03, to \$37.63. The world's biggest ketchup maker said sales in North America rose for the first time in four quarters, increasing 5.7 percent to \$2 billion.

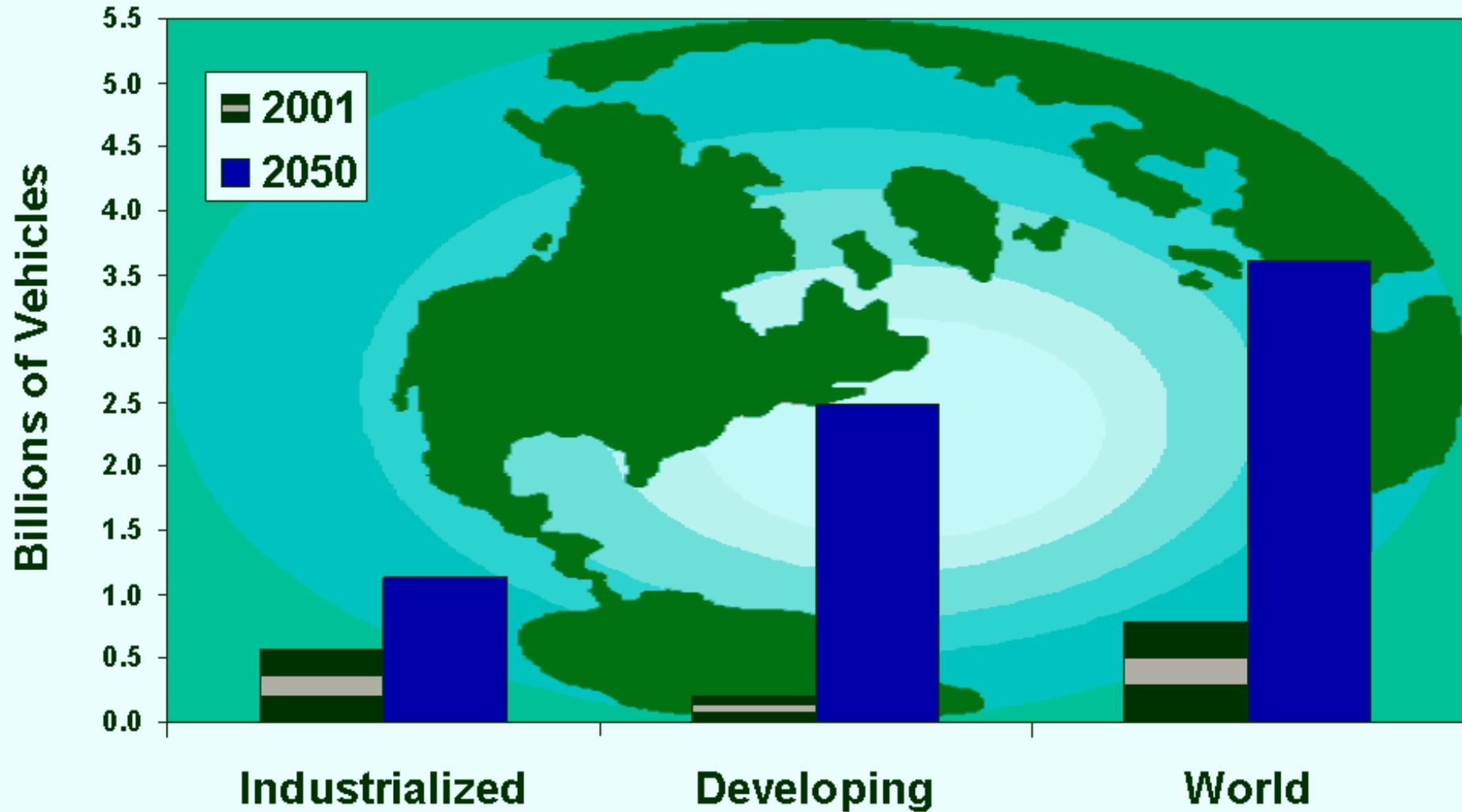
The decline in crude prices boosted transportation stocks and hurt shares of oil and gas companies.



Source: EIA International Energy Outlook 2003, 2004 (DOE/EIA-0484 (2003), DOE/EIA-0484 (2004))



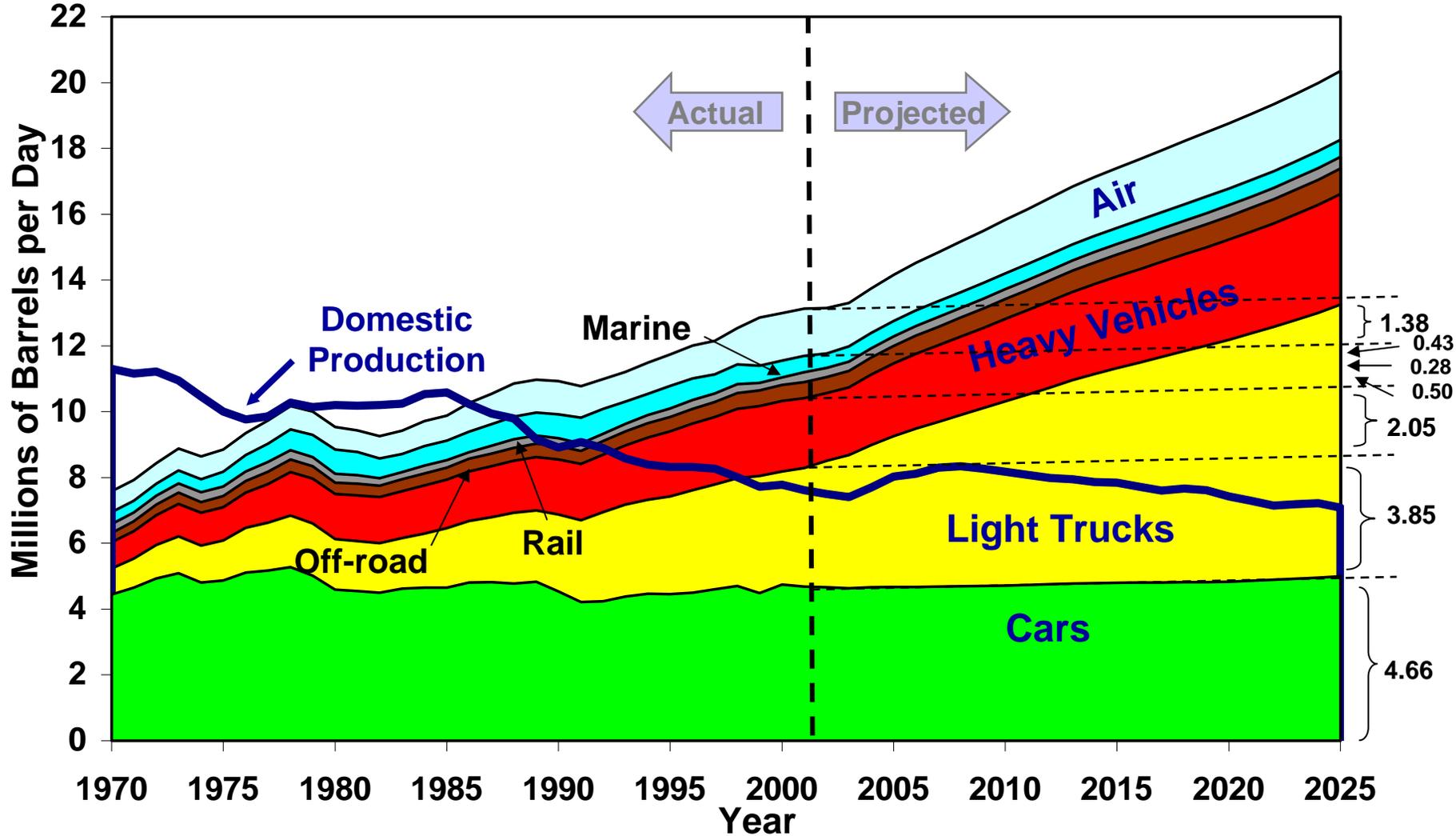
# Even More Vehicles





**U.S. Transportation Oil Use**

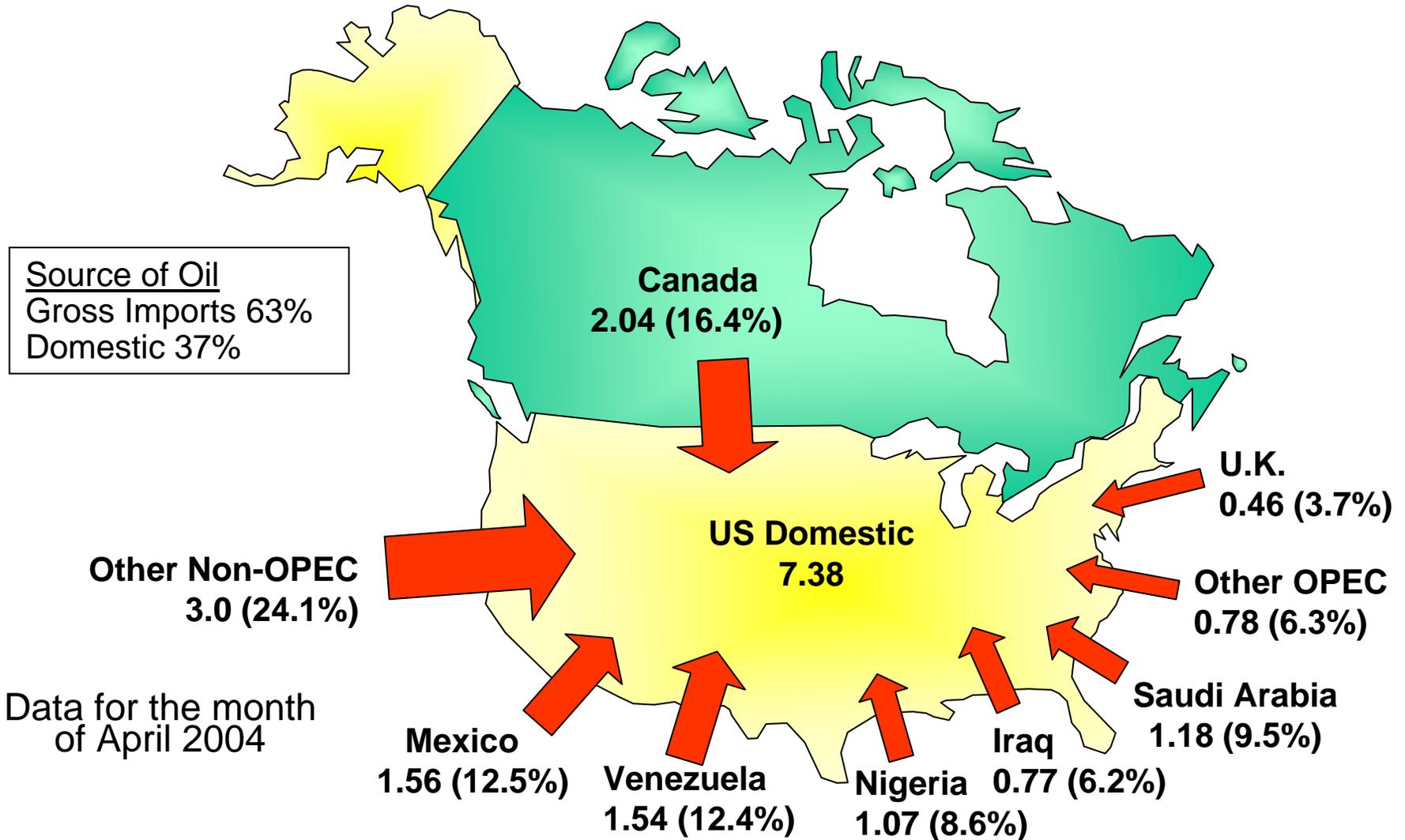
2002 Total = 13.15 mbpd



Sources: Transportation Energy Data Book: Edition 23, October 2003.  
EIA Annual Energy Outlook 2003, January 2004



(Millions of barrels per day)



Data for the month of April 2004

Source: EIA Petroleum Supply Monthly, Crude Oil and Petroleum Product Imports, June 2004.



***A prosperous future where energy is clean,  
abundant, reliable, and affordable.***

Specifically, an energy future where: ... ***Our cars  
and trucks*** will be more efficient and will be powered by a variety of clean domestic fuels and technologies that free us from dependence on foreign supplies of energy.

## **EERE'S # 1 Priority**

**Dramatically reduce or even end dependence on foreign oil**



**FreedomCAR and Fuel Partnership** FCVT pursues five 2010 technological goals in advanced combustion engines, electric propulsion systems, energy storage, hydrogen-fueled ICEs, and materials technologies.



**21<sup>st</sup> Century Truck Partnership** FCVT pursues dramatically improved fuel economy with near-zero emissions through advanced combustion engines and heavy hybrid drives that can use renewable fuels.



ExxonMobil



ChevronTexaco



ConocoPhillips

DAIMLERCHRYSLER

- Vision: the achievement of vehicles and fuels that lead to a clean and sustainable energy future
- Principles:
  - Freedom from petroleum dependence and pollutant emissions
  - Freedom to make personal mobility choices and to obtain fuel affordably and conveniently



## Research, Development and Demonstration in Five Key Technology Areas



DOE/EERE  
 FreedomCAR and  
 Vehicle Technologies



DOD/Army  
 TACOM NAC  
 Military Vehicle  
 R&D



DOT / RSPA  
 Intelligent Vehicle and  
 Highway Safety R&D



EPA  
 Vehicle Emissions  
 Regulations

- ❑ Engine Systems
- ❑ Heavy-Duty Hybrid
- ❑ Parasitic Losses
- ❑ Idle Reduction
- ❑ Safety





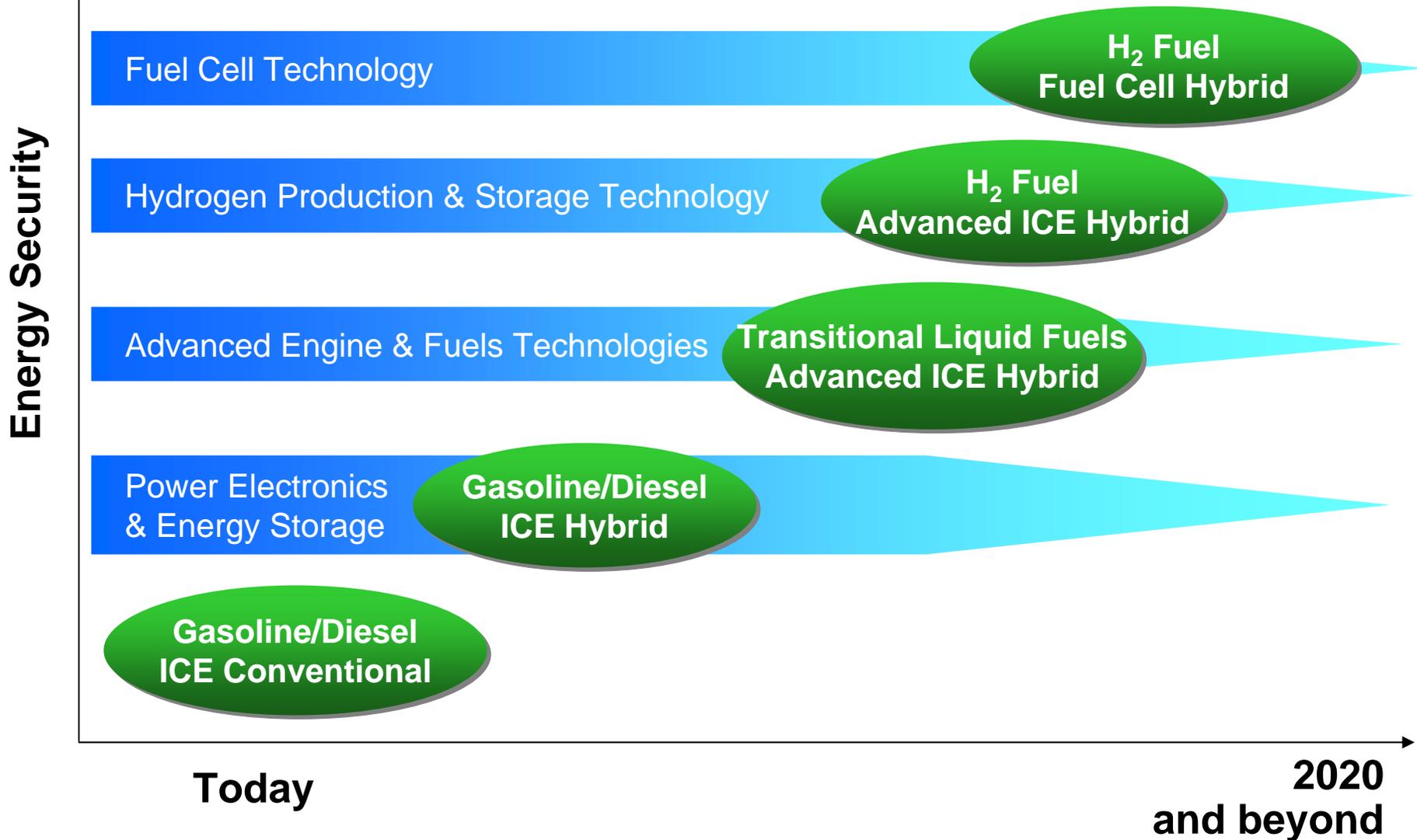
Program Focus: Enable America to use less petroleum through research and development of technologies to improve the energy efficiency of cars and trucks.

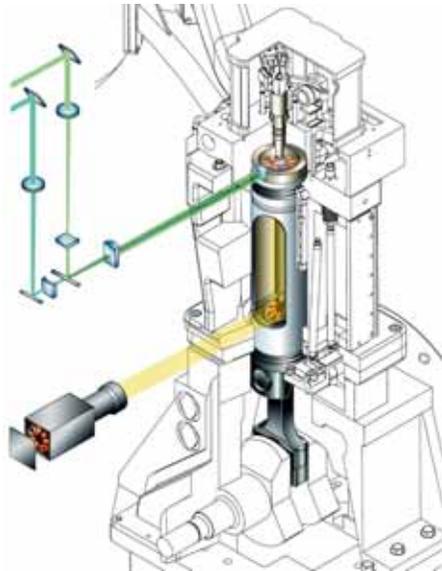
## FCVT Budget *(in \$000)*

Major Line Items	FY 2002 Appropriation	FY 2003 Appropriation	FY 2004 Request	FY 2004 Appropriation	FY 2005 Request
Vehicle Systems	14,328	13,485	14,514	14,335	13,883
Innovative Concepts	600	1,590	500	494	500
Hybrid and Electric Propulsion	48,651	41,996	49,563	45,002	51,821
Advanced Combustion Engine	48,521	55,267	37,085	54,405	35,936
Materials Technology	39,847	36,093	39,640	39,744	39,799
Fuels Technology	19,587	19,164	6,800	16,494	6,800
Technology Introduction	3,500	4,570	5,900	4,939	6,014
Tech/Program Mgmt. Support	2,285	2,006	2,121	2,095	1,903
Biennial Review of FreedomCAR	0	0	1,500	494	0
<b>Total</b>	<b>\$177,319</b>	<b>\$174,171</b>	<b>\$ 157,623</b>	<b>\$ 178,002</b>	<b>\$156,656</b>



□ **Research Will Make Technology Available**



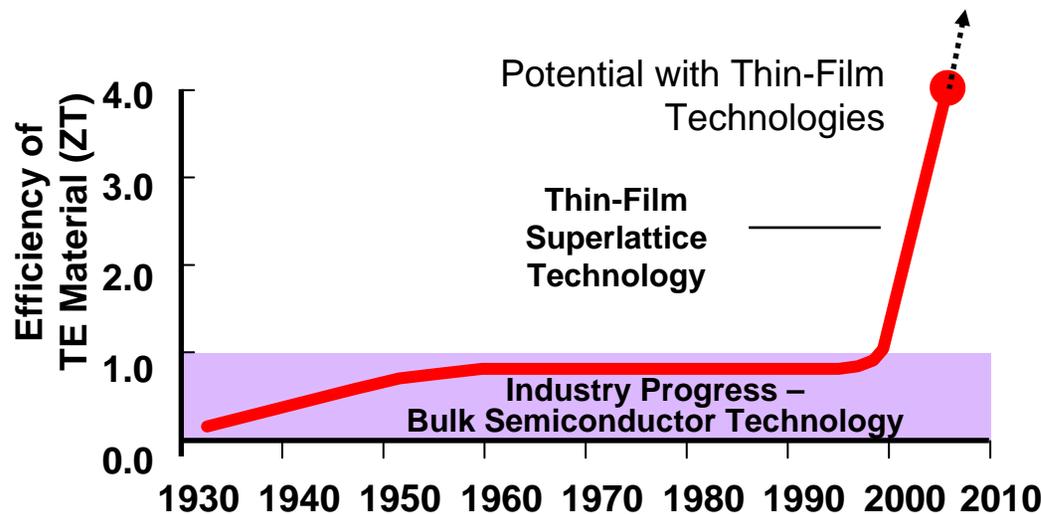


□ Advanced Combustion Regimes

□ Fuels/Fuel Blends



□ Waste Heat Recovery

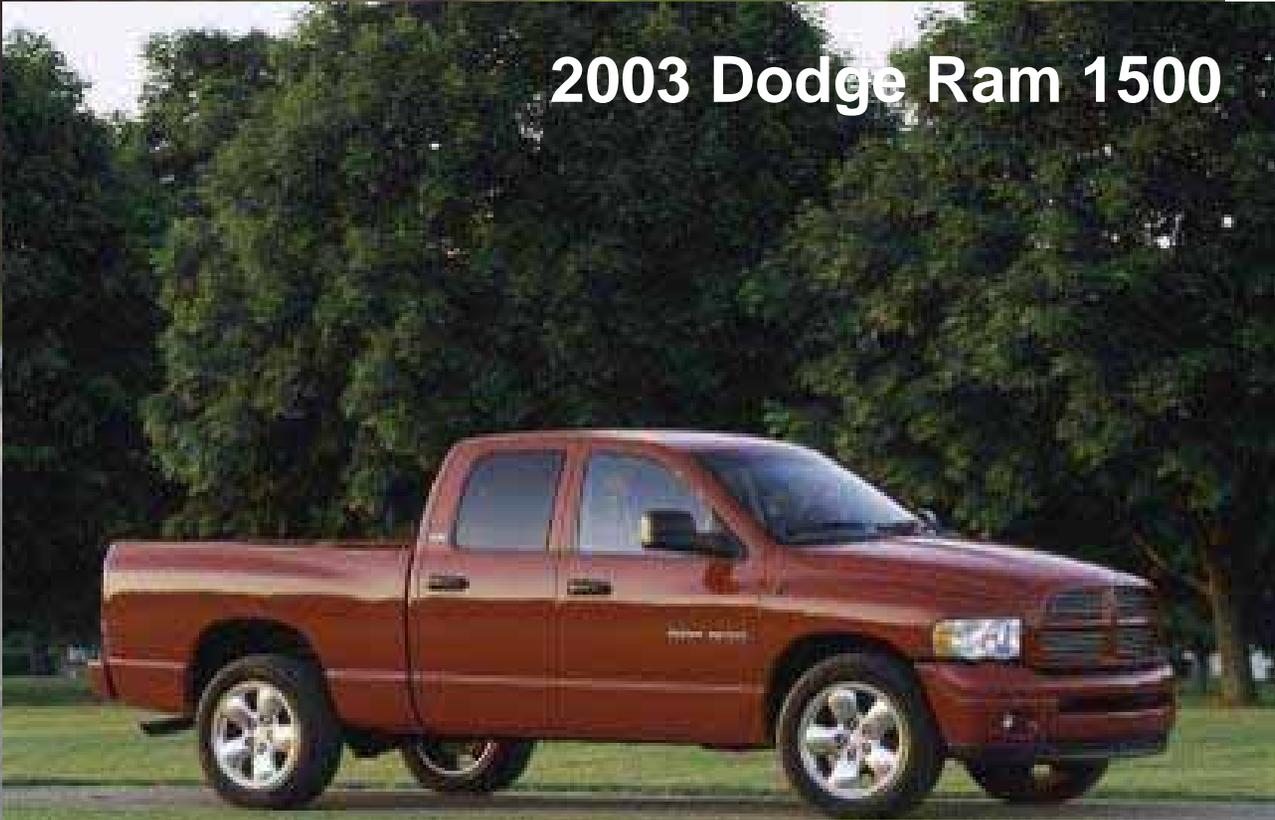




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# Ride & Drive



**2003 Dodge Ram 1500**

**Featuring the DOE/Cummins Clean Diesel Engine**



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# Thank You to Our 2004 Corporate Sponsors

