

# *Fuel Economy:*

**It Matters and You Can Do  
Something About It**

**National Clean Cities  
Conference**

**May 4, 2004**

**Jeff Alson**

**U. S. Environmental Protection Agency**



# Outline

Fuel economy matters

U. S. trends

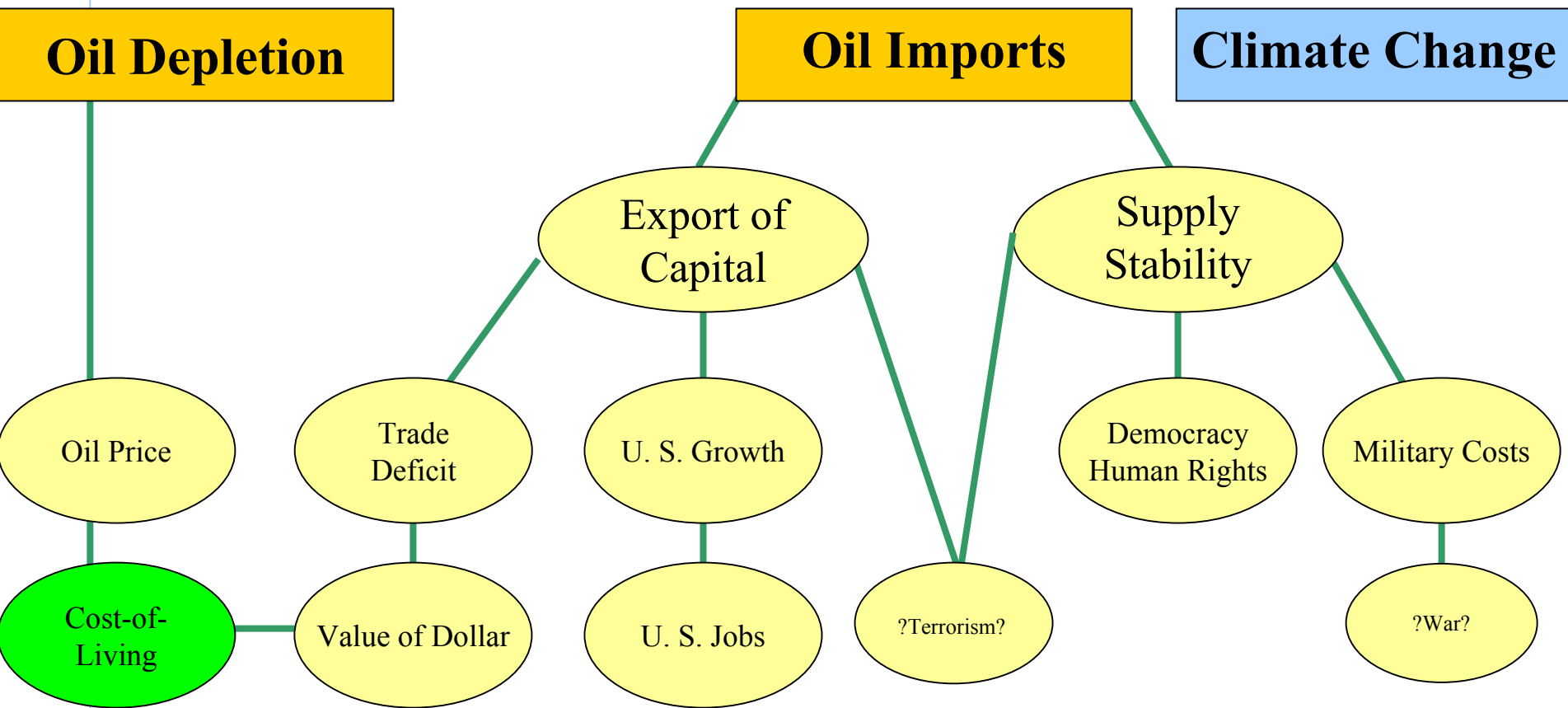
What you can do today

Future technology pathways

Outlook for future



# Why Fuel Economy Matters



# Annual Benefits of 1 mpg

Save 6 billion gallons of gasoline (400,000 BPD)

Save \$10 billion in consumer expenditures

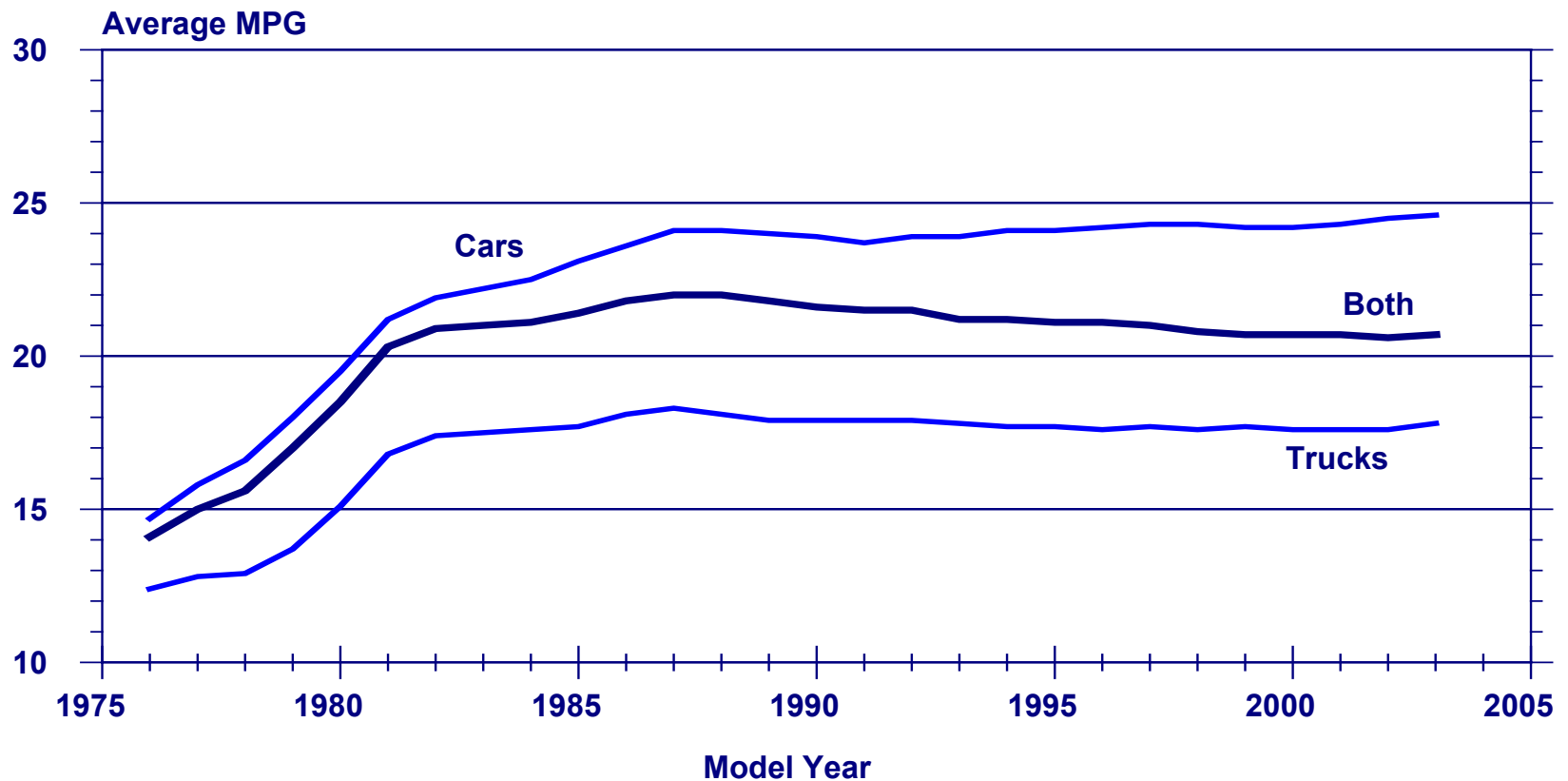
Reduce trade deficit by up to \$4 billion

Reduce carbon dioxide emissions by 70 MMT



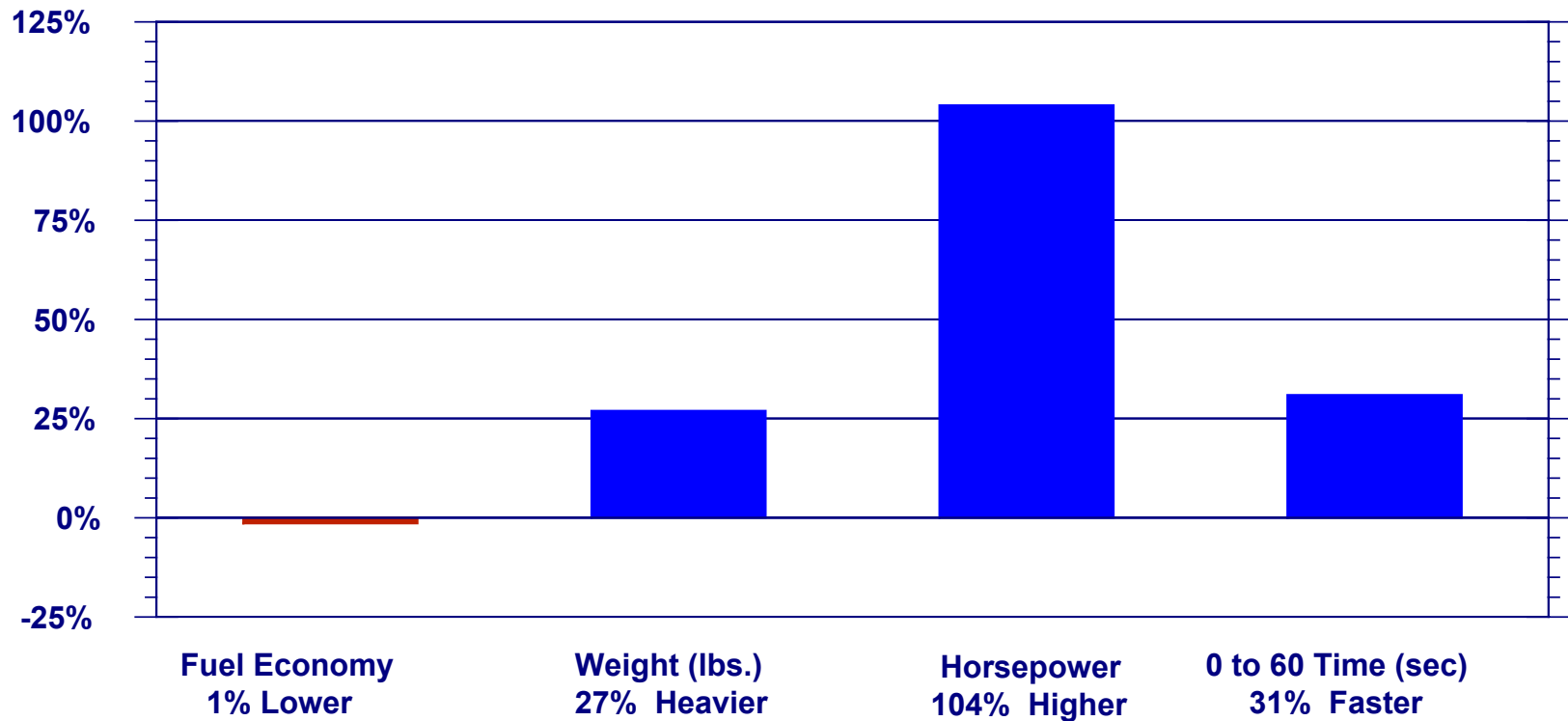
# New Personal Vehicle Fuel Economy, 1975-2004

(real world values, 3-year moving average)



# New Technology Used for Size/Power

(% change in new personal vehicles, 1981-2004)



# How to Increase Fuel Economy Now

## Existing Fleet

- smooth accelerations/braking
- lower maximum highway speeds
- minimize A/C and idle
- maintenance, esp. tire pressure

## Next Purchases

- highest mpg engine option
- highest mpg transmission option
- 2WD instead of 4WD
- compare mpg labels



# Pathways for 25-50% Improvement

## Advanced Gasoline

- most likely pathway for mainstream

## Diesel Engines

- issues: emissions, cost, acceptance

## Electric Hybrids

- issues: cost, cost, cost

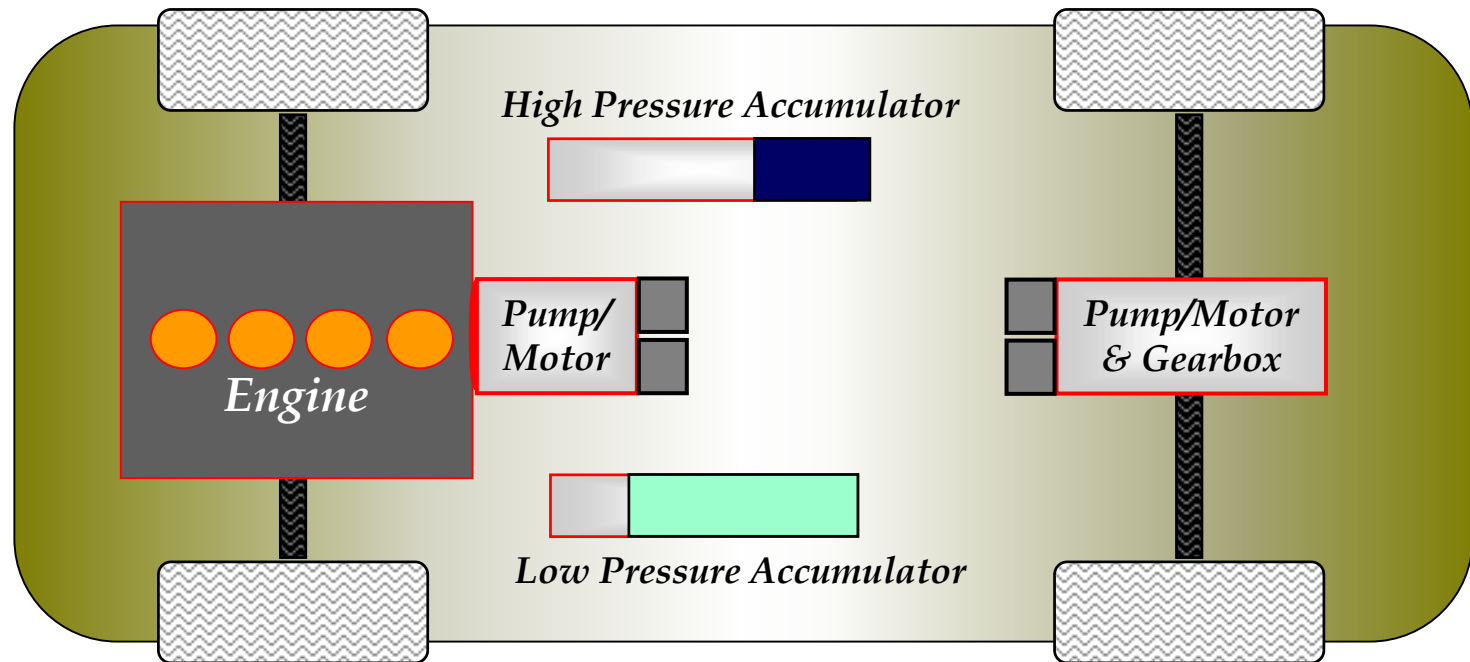
## Hydraulic Hybrids

- may join the competition





# Full (Series) Hydraulic Hybrid



# Hydraulic Hybrid Ford Expedition

<b>Engine</b>	<b>4.6-l gasoline</b>	<b>3.8-l diesel</b>
<b>Weight</b>	<b>+400 lbs.</b>	<b>+360 lbs.</b>
<b>FE</b>	<b>+35%</b>	<b>+85%</b>
<b>Cost</b>	<b>+\$600</b>	<b>+\$2200</b>
<b>Payback</b>	<b>1-2 years</b>	<b>2-3 years</b>



# Comparison of Hybrids

## Electric

First-to-Market, initial vehicles well received

Higher specific energy

- longer zero emissions

Quieter

Supports vehicle electrification

## Hydraulic

Higher power density

- greater braking energy recovery
- greater power boost
- facilitates full series design

Likely lower cost components



# Why Fuel Economy May Increase

Consumers can improve fuel economy by 5-10% today

There are multiple technology pathways that could offer 25-50% improvement in the next decade

New technologies are coming into market “niches” and costs will likely come down over time



# Why Fuel Economy May Not Increase

Most consumers don't think about fuel economy when they purchase or drive

None of the technology pathways are certain to move to mainstream

Market won't address externalities

No consensus on public policy

