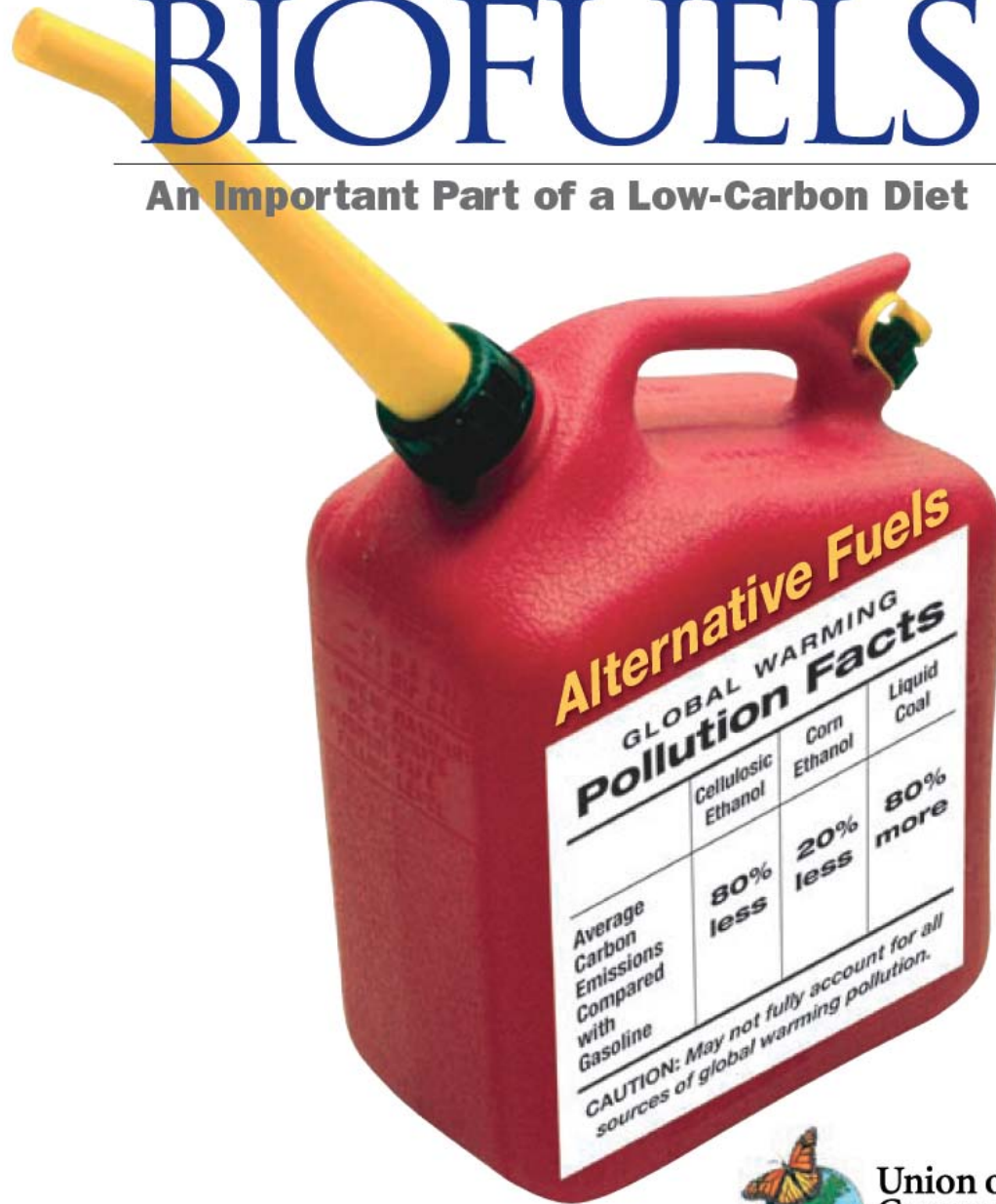


# BIOFUELS

An Important Part of a Low-Carbon Diet



Union of  
Concerned  
Scientists

Citizens and Scientists for Environmental Solutions

**Eli Hopson**

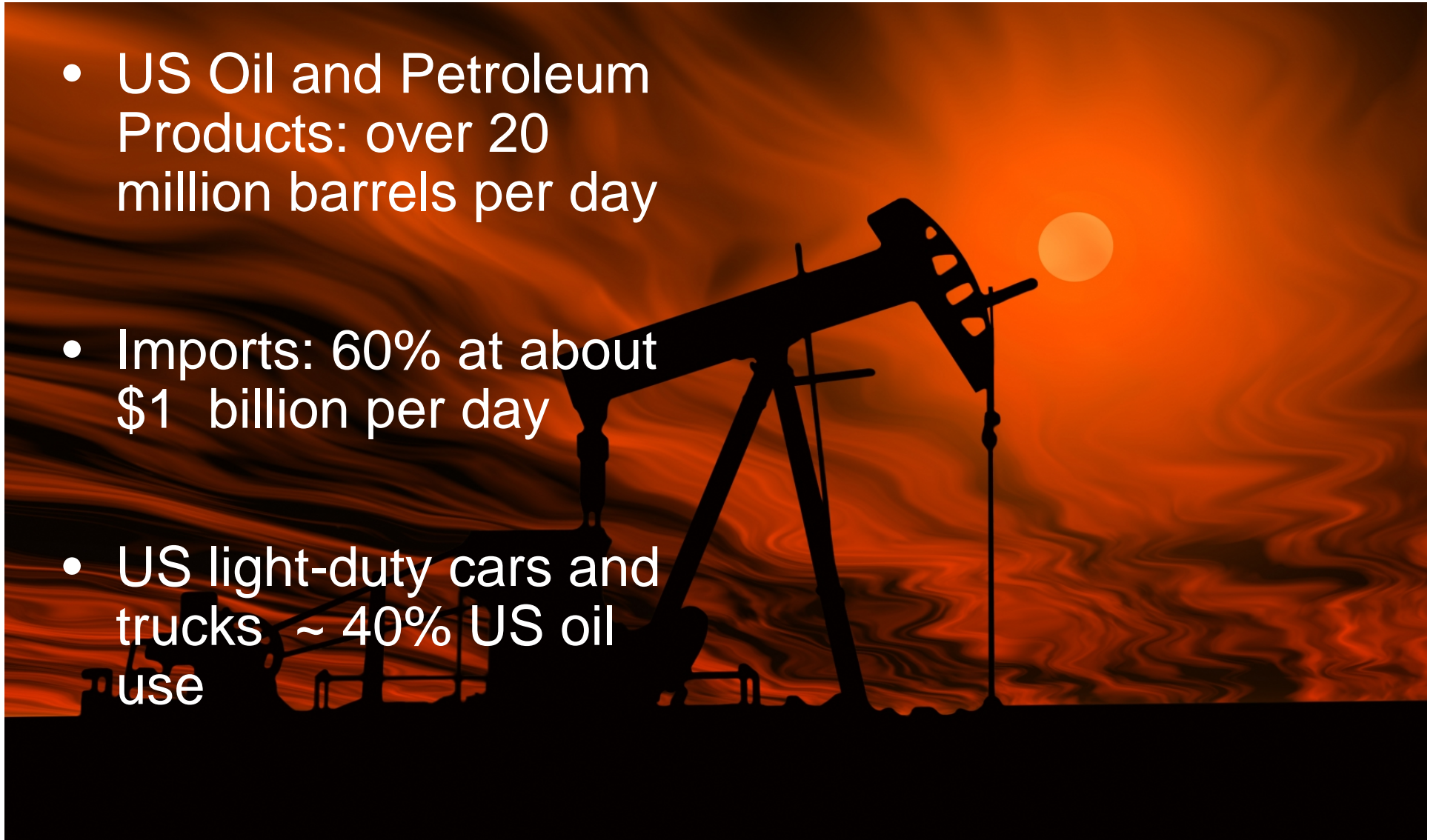
**Washington Rep for the Clean Vehicles Program**

**Union of Concerned Scientists**

**2007 Future Fuels Conference**

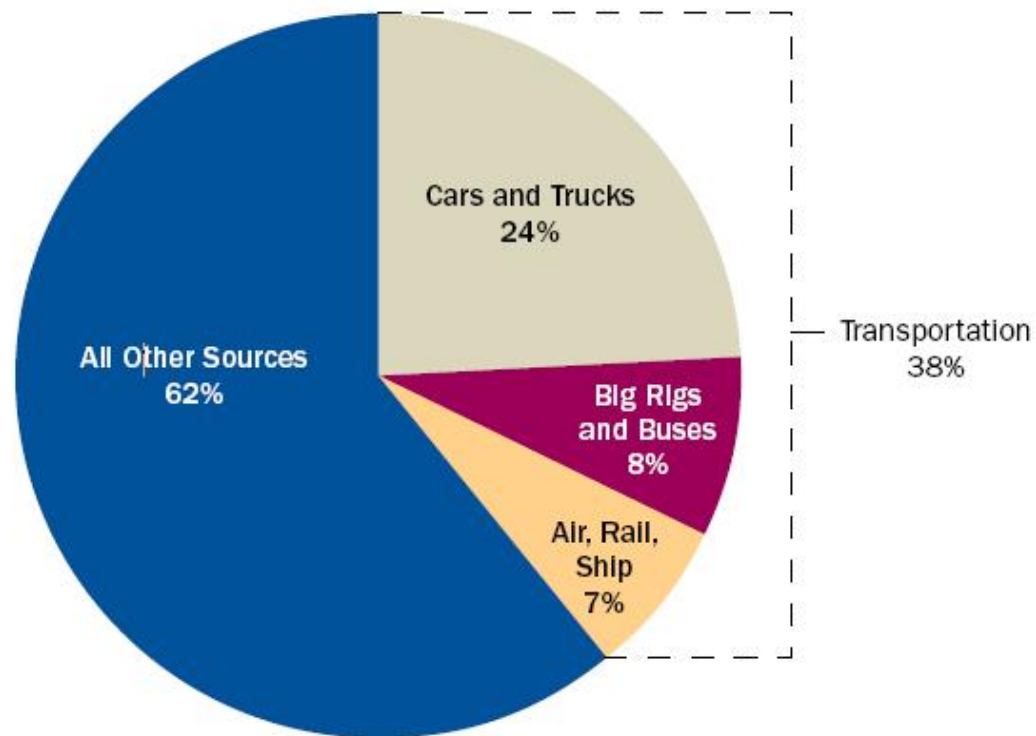
# The Problem: Our Oil Addiction

- US Oil and Petroleum Products: over 20 million barrels per day
- Imports: 60% at about \$1 billion per day
- US light-duty cars and trucks ~ 40% US oil use



# The Problem: Global Warming Pollution

FIGURE 1 **Transportation's Share of U.S. Heat-trapping Emissions (2005)**

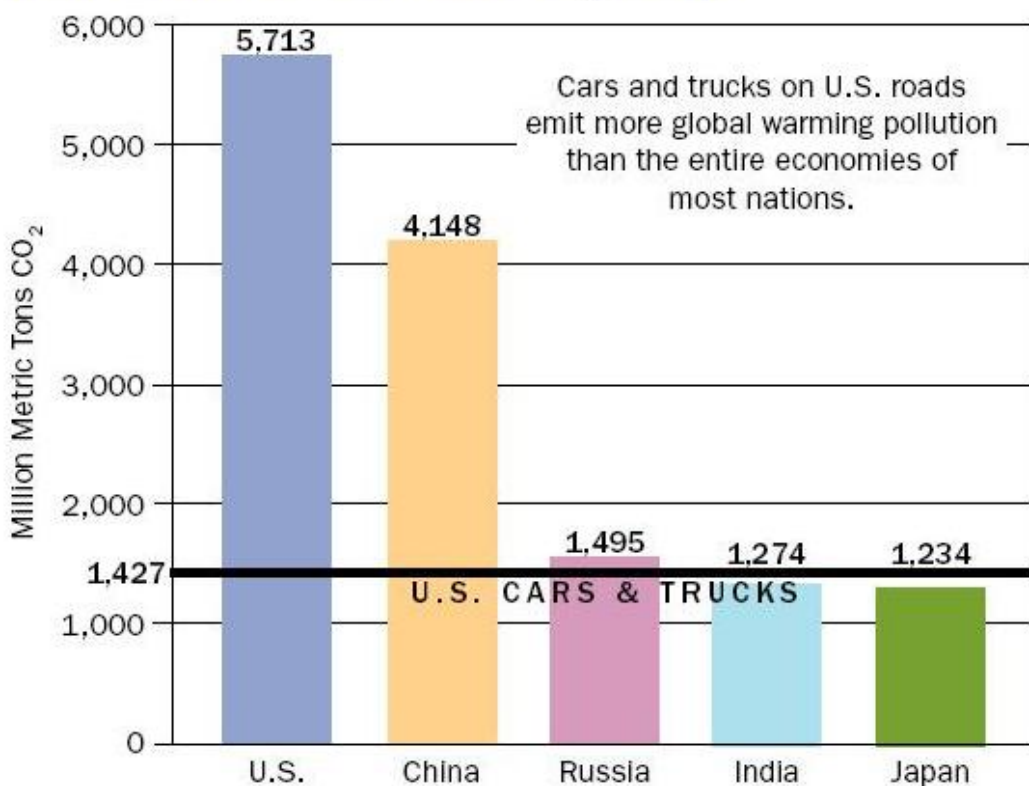


NOTE: Totals for sectoral emissions have been rounded.

SOURCE: Tailpipe emissions data from the U.S. Environmental Protection Agency (EPA 2007a). To estimate full fuel cycle emissions, we applied the emissions factor for gasoline (50% reformulated gasoline and 50% conventional) from Wang (2006). For sectoral emissions, this factor is a gross approximation, since each transportation fuel (e.g., diesel, jet fuel, locomotive fuel, marine fuel) will have a unique upstream carbon footprint.

# Global Warming Pollution

**FIGURE 2 Top Five Global Warming Polluters from Fossil Fuel Combustion (2004)**



NOTE: To estimate full fuel cycle emissions, we applied the emissions factor for gasoline (50% reformulated gasoline and 50% conventional) from Wang (2006).

SOURCES: Data for China, Russia, India, and Japan from Marland et al. (2007). Data for U.S. economy-wide emissions and car and truck tailpipe emissions from the EPA (2007a).

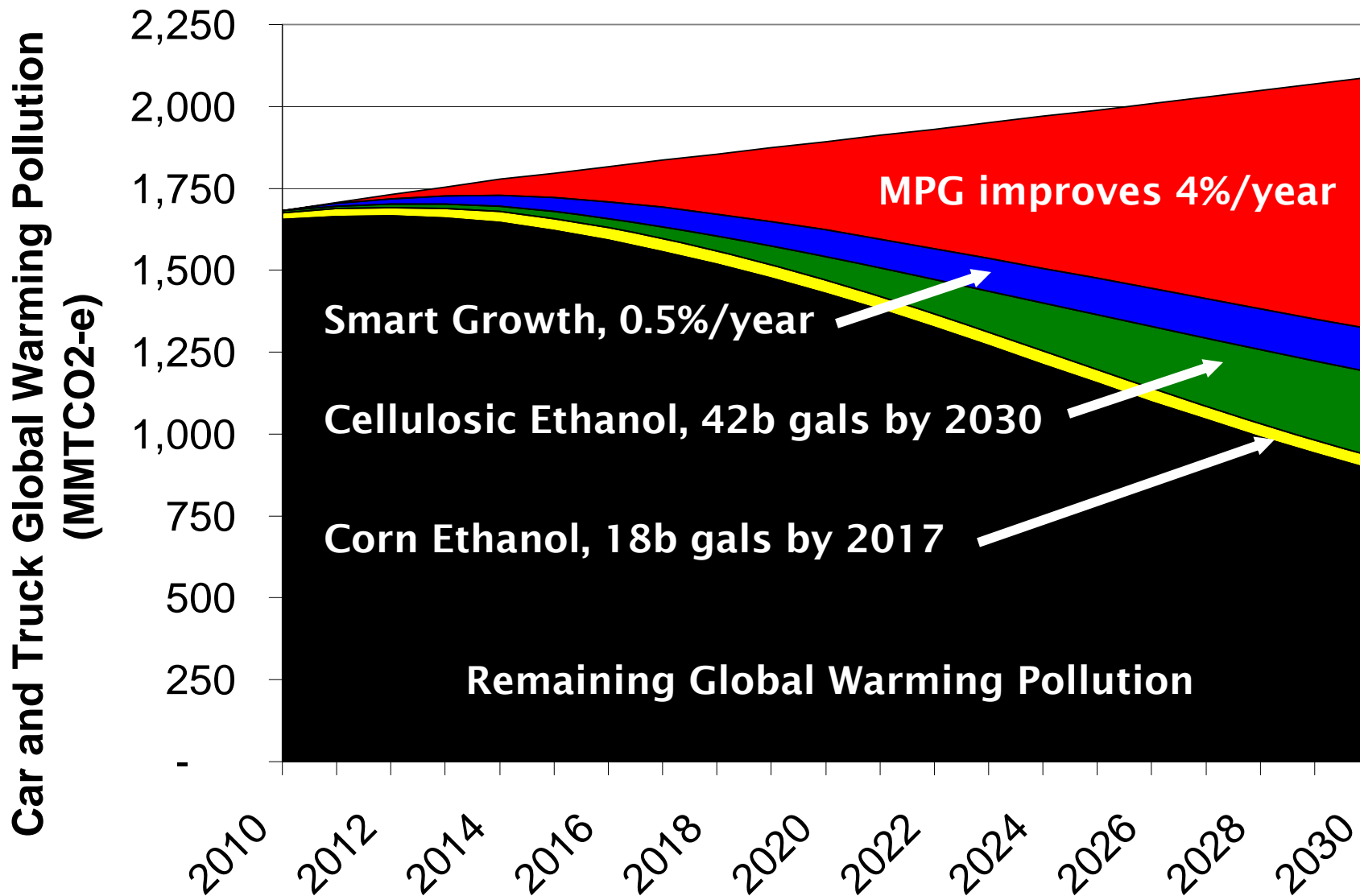


A photograph of a car completely covered in a thick layer of green grass, parked on a dirt path. The background shows lush green trees and foliage. The text is overlaid on the image in white, bold font.

# **The Solution: Greening Transportation**

- 1) Vehicle Standards**
- 2) Reducing Miles Traveled**
- 3) Cleaner Fuels**

# It takes all kinds of policies to meet our goals





## 20 year trend

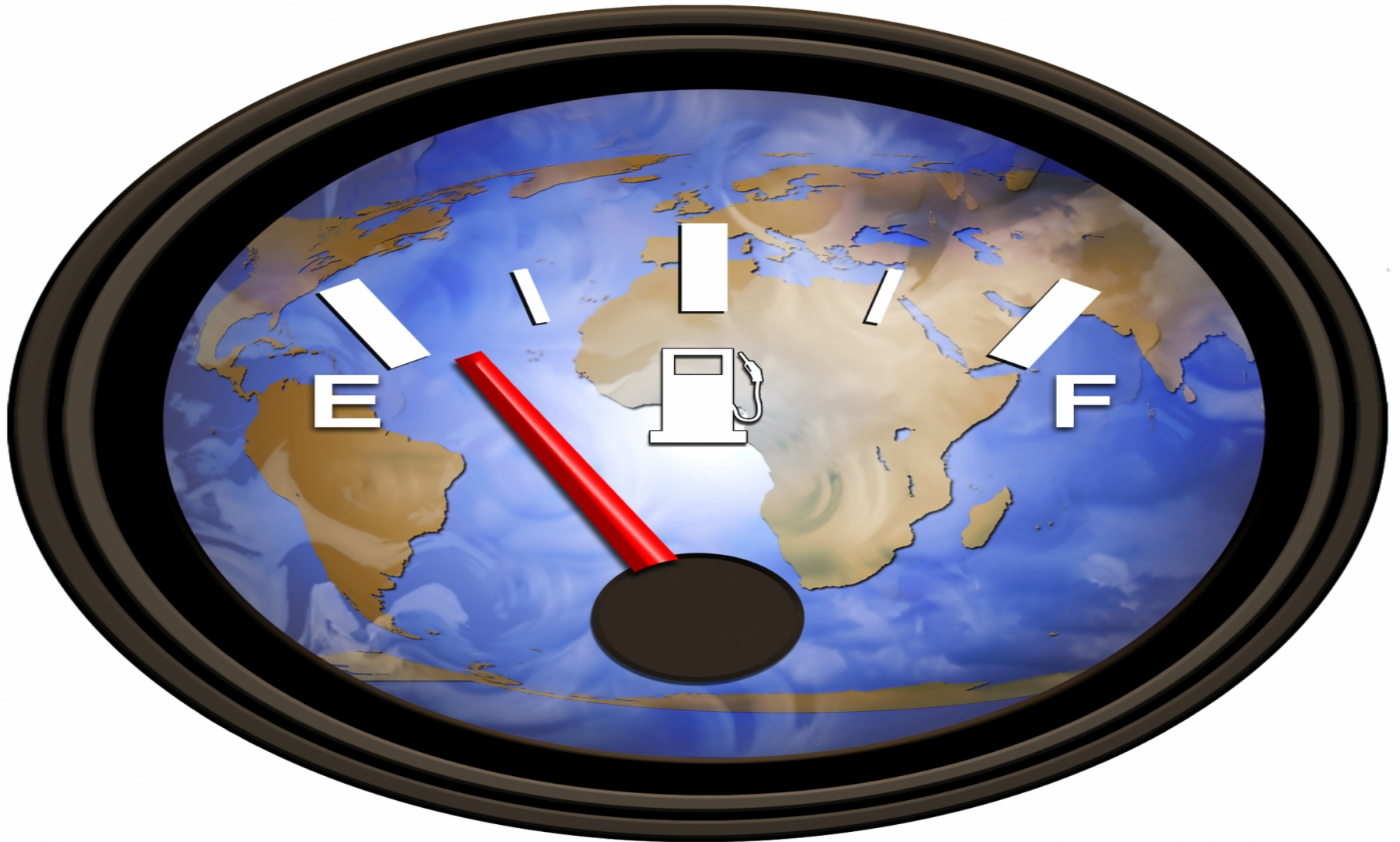
80% more power  
25% more weight

**Fuel economy  
stagnant – but  
that's going to  
change.**

A yellow Hummer SUV is shown driving through a shallow, rocky stream in a wooded area. The water is turbulent and brownish, splashing around the vehicle's tires. The background consists of dense trees with green foliage. The text is overlaid on the image in white and black.



### 3) Cleaner Fuels



# Low Carbon Fuel Standard



**10%  
reduction**

in global  
warming  
pollution per  
gallon by 2020

# **Renewable Fuel Standard**

**3 tiers of global warming reduction required, volume ramps up to 36 billion gallons total by 2022.**

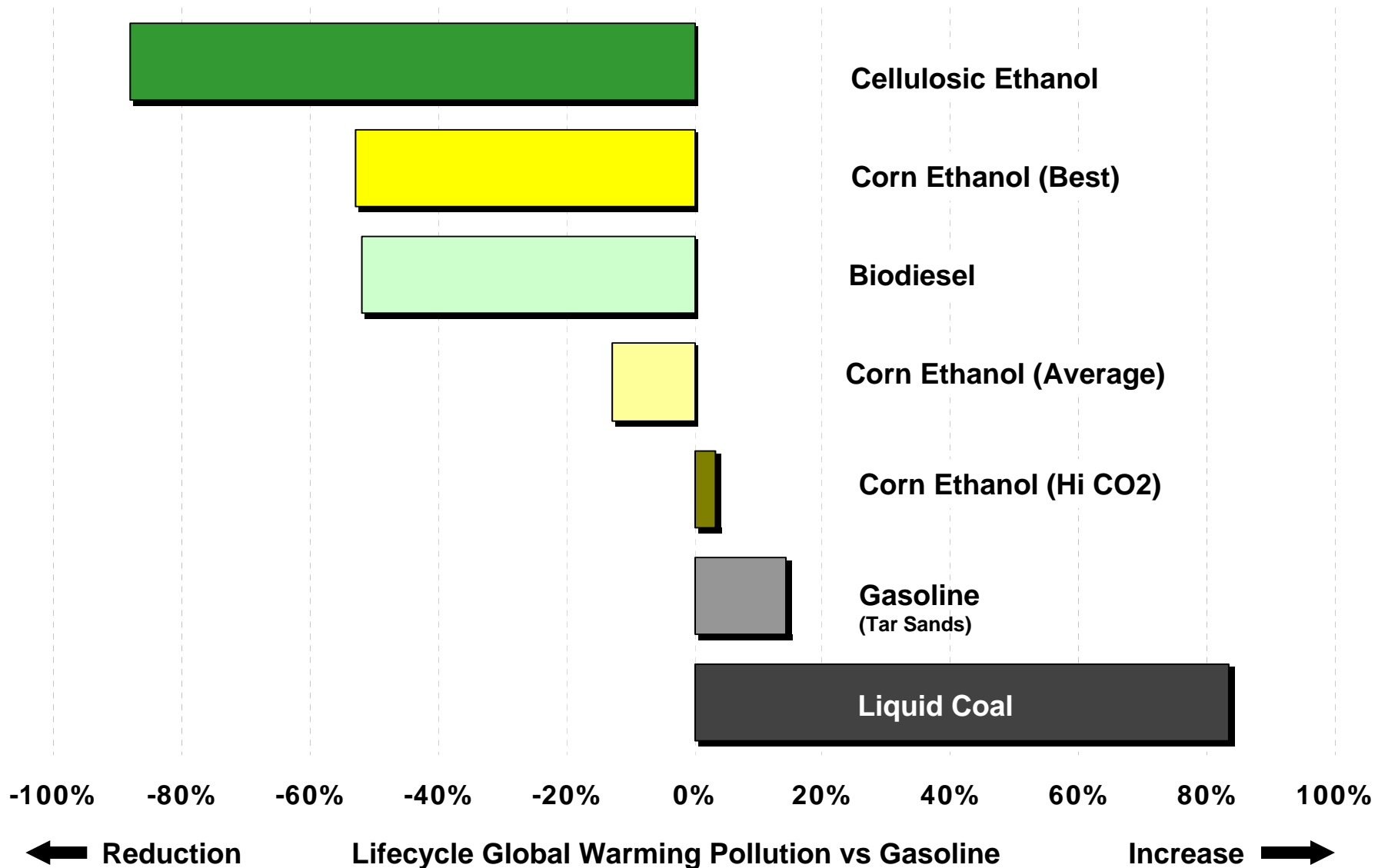
**20% reduction for conventional biofuels**

**50% for advanced biofuels**

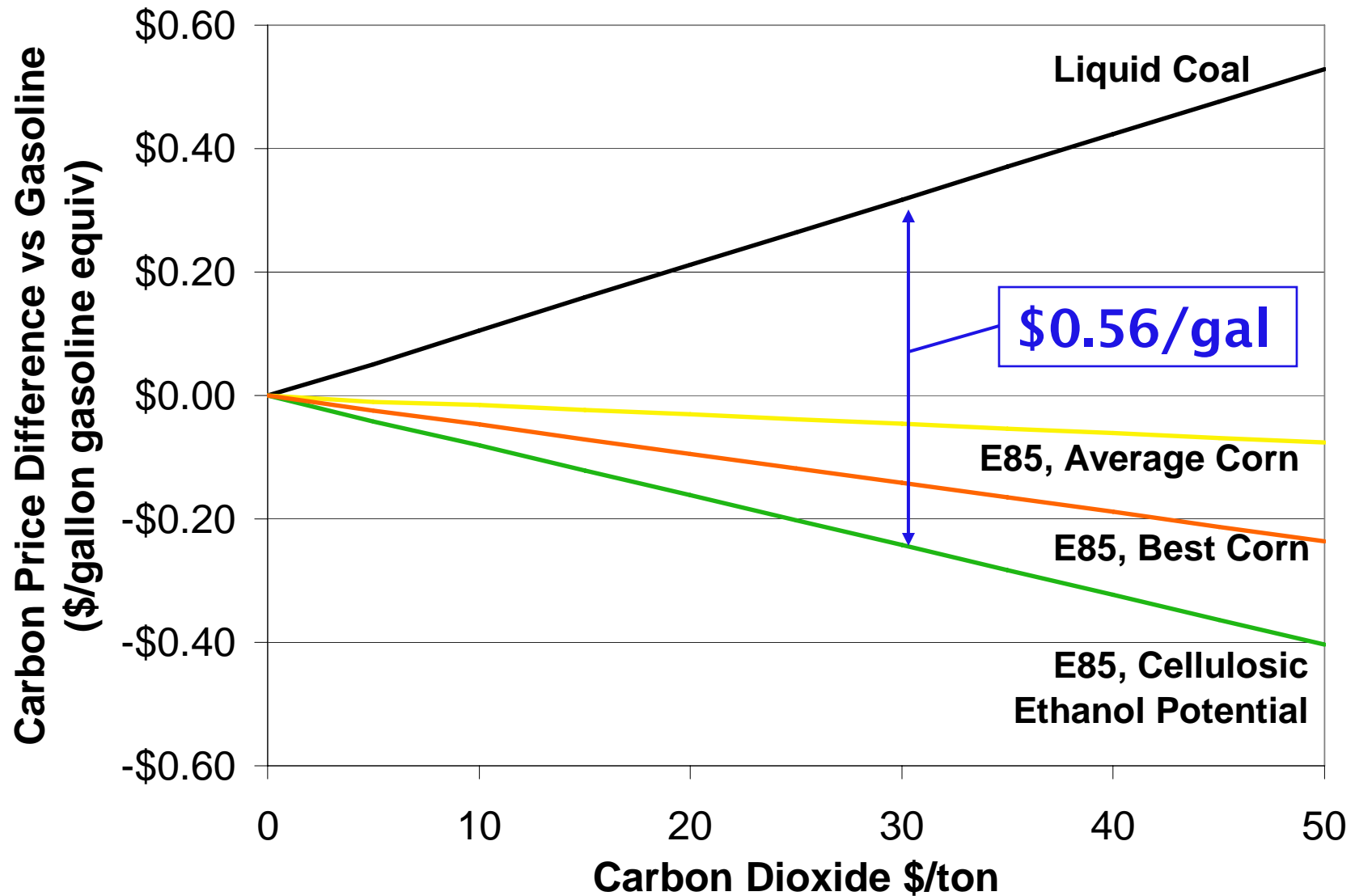
**60% cellulosic biofuels**



# Global Warming Pollution: Renewable and Alternative Fuels

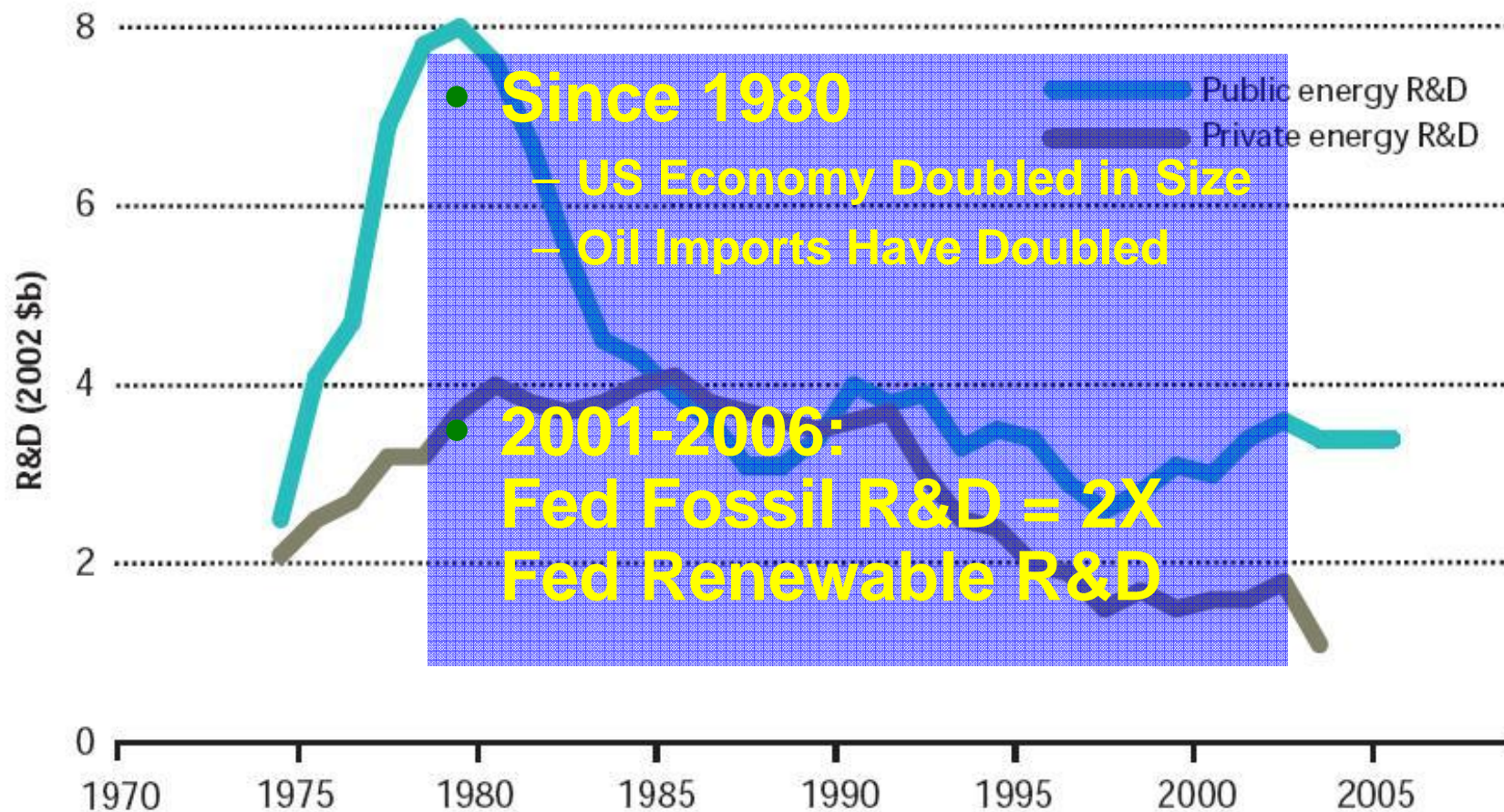


# A Competitive Market by Counting "Carbs"



# Put Your Money Where Your Mouth Is

Declining energy R&D investment by both public and private sectors



Source: Kammen and Nemet, 2005



# UCS Vanguard: Partnering with Complimentary Technologies

- Uses technology in today's cars
- 40% reduction in Emissions
- Consumer saves thousands of dollars!!

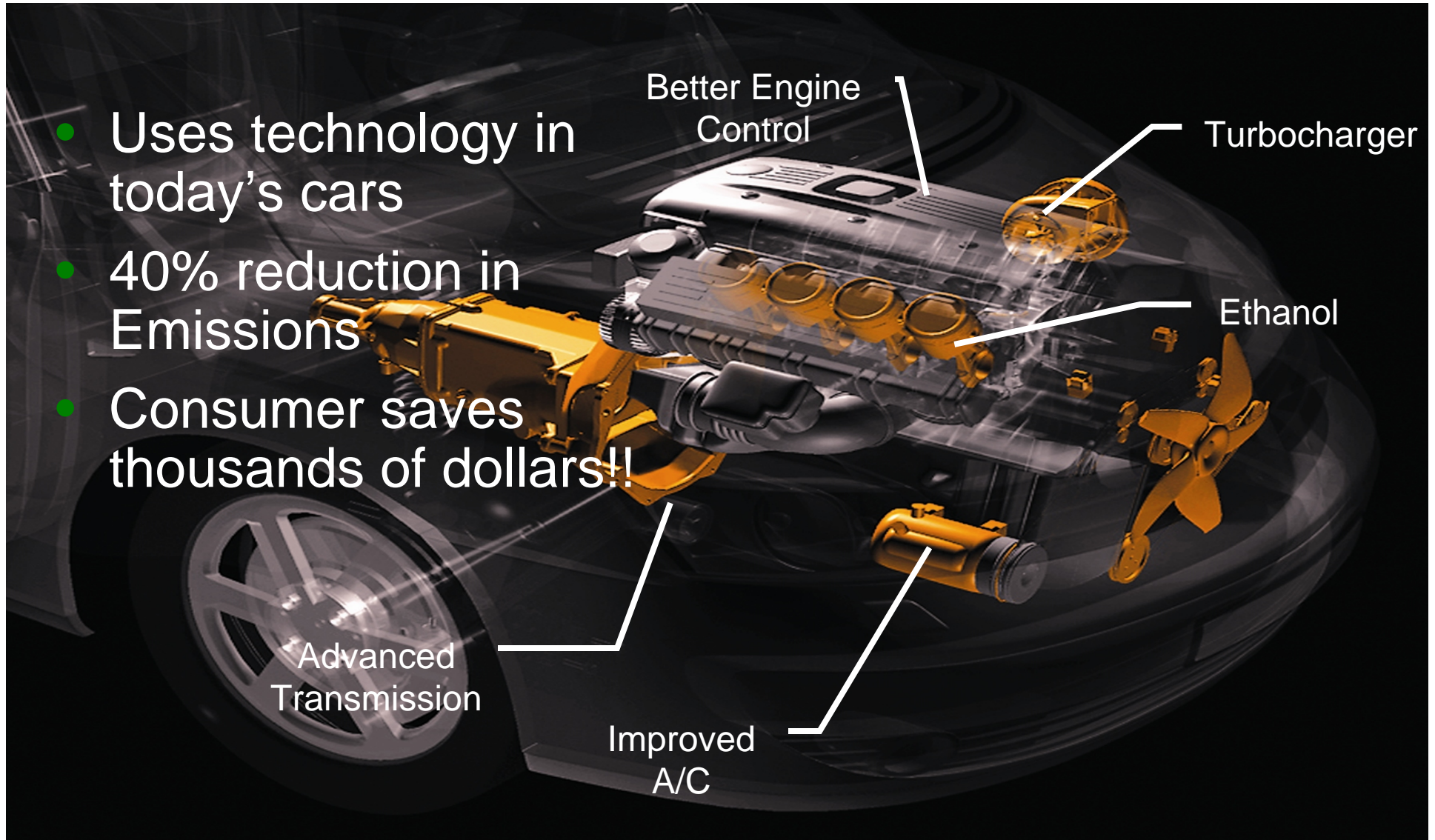
Better Engine Control

Turbocharger


Ethanol

Advanced Transmission

Improved A/C







# Challenges in Quantifying Global Warming Pollution from Biofuels





# Corn-ucopia

How much of the 2007 corn crop will be used for ethanol?

A: 5%

B: 10%

C: 25%

D: 50%

**Answer: more than 25%**



# **Grass is Greener: The Promise of Cellulosic biofuel**



## Moral of the Story

Silver bullets may be  
great for killing  
werewolves...



**...but they are  
not a sound  
basis for an  
energy  
policy.**

# UCS Bioenergy Principles

- 1. Minimize global warming pollution**
- 2. Combine bioenergy with efficiency, conservation, and smart growth**
- 3. Protect public health**
- 4. Promote ecologically sound bioenergy systems**
- 5. Ensure bioenergy developments expand economic opportunity**

## 4. Promote ecologically sound bioenergy

- *Protect air, water, and soil quality.*
- *Protect biodiversity and ecosystem services.*
- *Use biotechnology wisely*
- *Limit the risk of invasive species.*



# Use biotechnology wisely

- Risks and benefits should be assessed on a case-by-case basis
- Outdoor releases of genetically engineered crops deserve special scrutiny because traits can spread into the environment with little or no hope for recall.
- Any genetic modification to commodity crops that are also grown for food (corn, soy, wheat, etc.) should not
  - endanger the food system or
  - undermine the value of these crops as food or feed for domestic consumption or export.

# **Thank You**

**[http://www.ucsusa.org/assets/documents/clean\\_vehicles/ucs-biofuels-report.pdf](http://www.ucsusa.org/assets/documents/clean_vehicles/ucs-biofuels-report.pdf)**

**UCSUSA.ORG**