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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


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


Cars and trucks on U.S. roads emit more global warming pollution than the entire economies of most nations.

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).
The Solution: Greening Transportation

1) Vehicle Standards
2) Reducing Miles Traveled
3) Cleaner Fuels
It takes all kinds of policies to meet our goals.

- MPG improves 4% per year
- Smart Growth, 0.5% per year
- Cellulosic Ethanol, 42 billion gallons by 2030
- Corn Ethanol, 18 billion gallons by 2017

Remaining Global Warming Pollution
20 year trend

80% more power
25% more weight

Fuel economy stagnant – but that’s going to change.
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

- Cellulosic Ethanol
- Corn Ethanol (Best)
- Biodiesel
- Corn Ethanol (Average)
- Corn Ethanol (Hi CO2)
- Gasoline (Tar Sands)
- Liquid Coal

Lifecyle Global Warming Pollution vs Gasoline

- Reduction
- Increase
A Competitive Market by Counting “Carbs”

The graph illustrates the carbon price difference vs gasoline ($/gallon gasoline equiv) for various sources compared to gasoline. The x-axis represents the carbon dioxide cost ($/ton), and the y-axis shows the difference in cost ($/gallon gasoline equiv).

- **Liquid Coal**
- **E85, Average Corn**
- **E85, Best Corn**
- **E85, Cellulosic Ethanol Potential**

Notably, at a carbon dioxide cost of $50/ton, the carbon price difference for Liquid Coal is approximately $0.56/gal.
Put Your Money Where Your Mouth Is

Since 1980
- US Economy Doubled in Size
- Oil Imports Have Doubled

2001-2006
Fed Fossil R&D = 2X Fed Renewable R&D

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!!
Challenges in Quantifying Global Warming Pollution from Biofuels
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


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