

# Oil Independence? What can fuel economy get us?

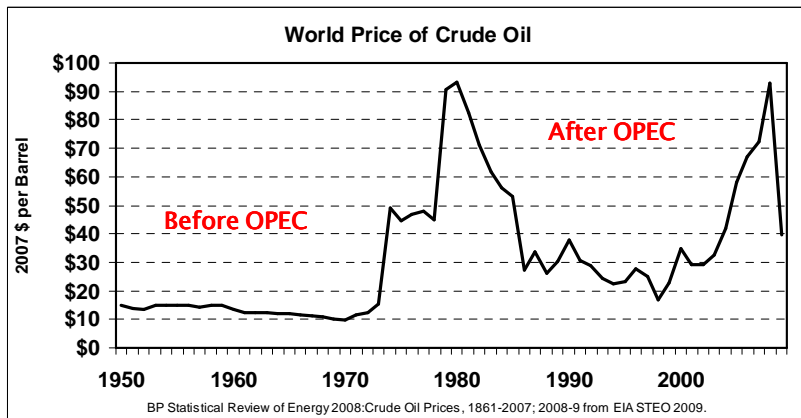
Dr. David L. Greene  
Corporate Fellow, Oak Ridge National Laboratory  
Senior Fellow, Howard H. Baker, Jr. Center for Public Policy

EESI Seminar: Oil Independence: Is It Possible?  
July 22, 2010

## Oil independence: Now what do we mean by that?

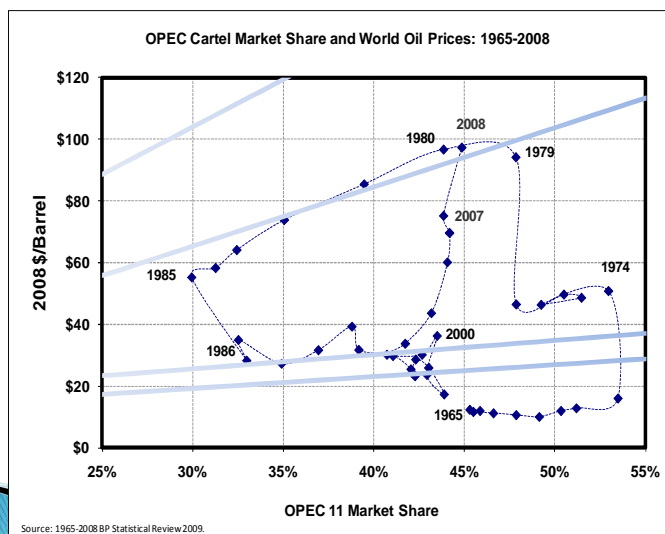
- ▶ Oil independence is NOT:
  - Use no oil
  - Import no oil
- ▶ Oil independence is:
  - Reduce the *economic* costs of oil dependence to an acceptable level, e.g., less than 1% of GDP with 95% probability.
  - Huh? It's a measurable goal.
    - Greene, D.L., "Measuring energy security: can the United States achieve oil independence?", *Energy Policy*, v. 38, pp. 1614–1621.
  - Secure energy for national defense.

Socrates is not a cat, and oil dependence is not an externality.  
 Are oil prices a random walk?

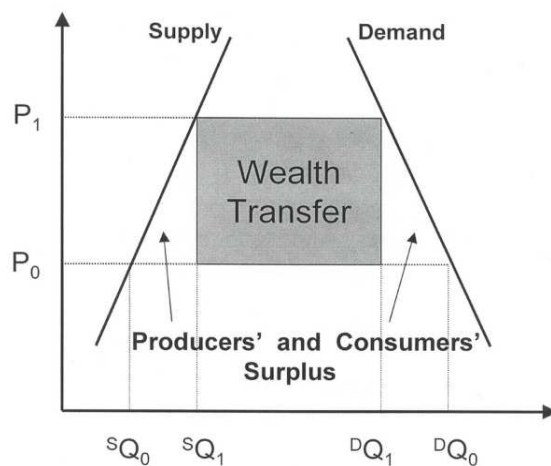


Why couldn't 8 presidents solve this problem?  
 (Jon Stewart, June, 2010)

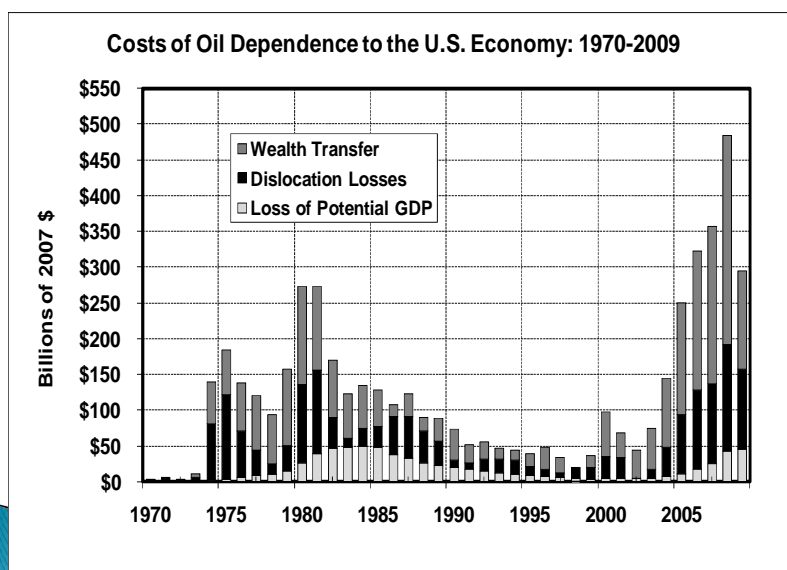
“You don't miss your water till the well runs dry.”



- Oil dependence results in 3 types of economic costs:
1. Wealth transfer (a real economic loss to the US)
  2. Shrinkage of production frontier (potential GDP)
  3. Disruption losses (price shocks)

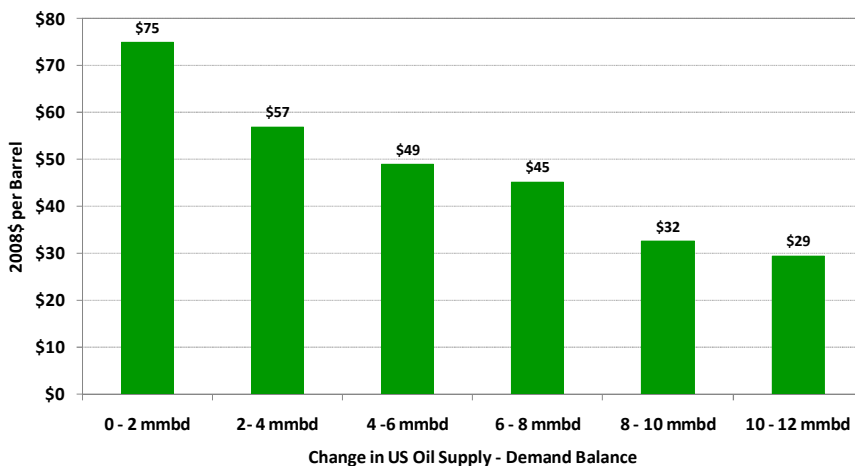


## How much? A lot. (\$1T: 2007-9)

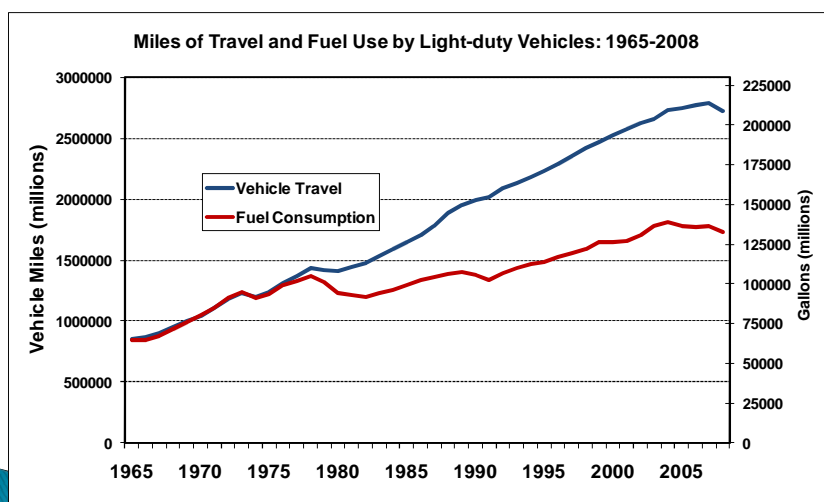


What would it be worth in reduced oil dependence costs if we decreased consumption or increased domestic supply by 2,4,6,...12 million barrels per day (change in  $Q_s - Q_D$ )?

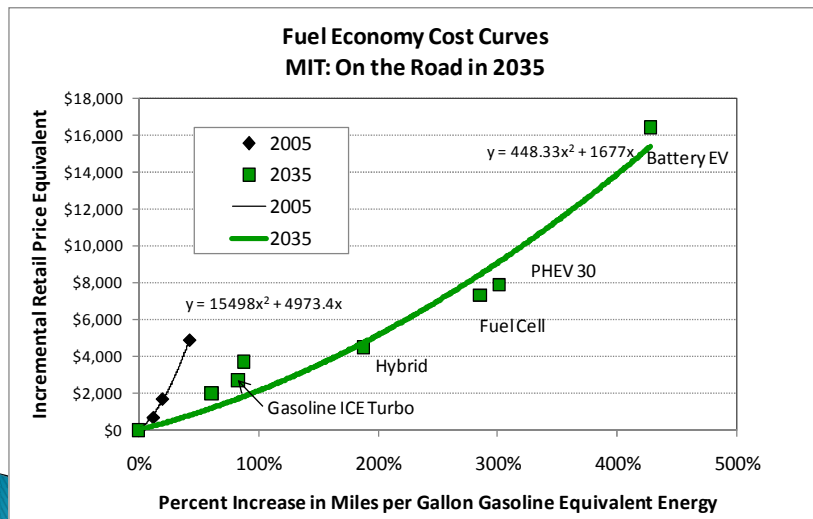
Savings in Expected Oil Dependence Cost per Barrel in 2030  
AEO 2009 Reference, High & Low Oil Price Cases



Fuel economy and fuel economy standards:  
They work. (>60 Bgals. saved in 2008)

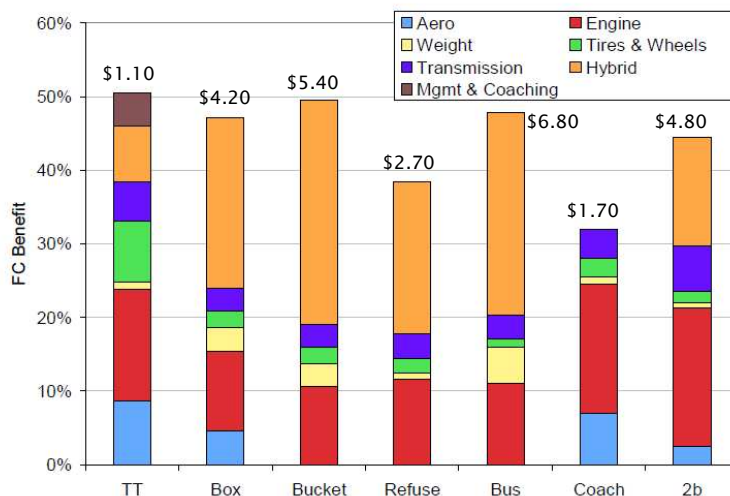


## Where can we go from 2016?



## What about heavy trucks?

NRC, 2010, "Technologies and Approaches to Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles", Figure S-1. Break-even fuel prices shown above bars.



## Is that good enough?

- ▶ Reduce demand by at least 33% by 2030:
  - 2X to 3X light-duty fuel economy
  - 50% to 100% increase in heavy truck MPG
  - Aircraft efficiency & alternative fuels
  - Industrial petroleum use
  - Eliminate oil use for home heating
- ▶ Increase domestic supply by 33% (Sorry!):
  - Offshore production and EOR
  - Biofuels, shale oil, CTL, GTL
- ▶ National Commission on Energy Policy, 2004. *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges.*

THANK YOU.

## Details of NCEP energy plan.

**TABLE 1 Estimated Changes in U.S. Oil Supply and Demand in 2030 for the Modified NCEP Oil Independence Strategy (Millions of Barrels per Day)**

	Oil Demand	Oil supply
Reference Case	27.57	10.42
<b>NCEP Case Changes</b>		
Light vehicle fuel economy	-3.50	
Heavy vehicle fuel economy	-0.53	
Rail and ship energy efficiency	-0.20	
Eliminate building heating with oil	-0.37	
Industrial efficiency, substitution	-0.62	
<b>Coal to liquids</b>		<b>1.00</b>
<b>ANWR and Pacific Offshore</b>		<b>2.00</b>
Biofuel	-2.00	
<b>Subtotal: Decrease in Demand</b>	<b>-7.22</b>	
<i>Subtotal: Increase in Supply</i>		<i>3.00</i>
<b>NCEP Case Totals</b>	<b>20.35</b>	<b>13.42</b>
<b>Percent Change from Reference Case</b>	<b>-26%</b>	<b>29%</b>