



# *Florida Solar Energy Center* *(FSEC)*



*Creating Energy Independence Since 1975*

**Dr. James Fenton, Director**



*Practicing What We Preach*

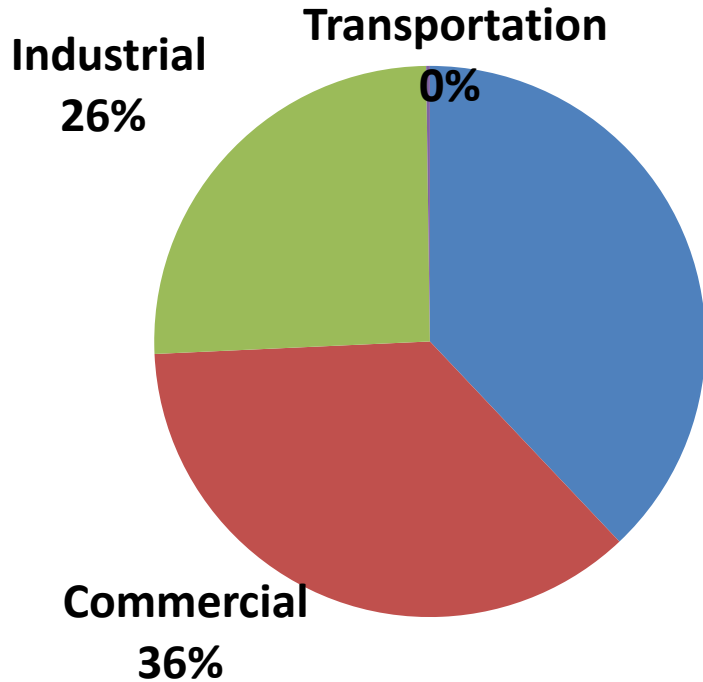
A Research Institute of the University of Central Florida



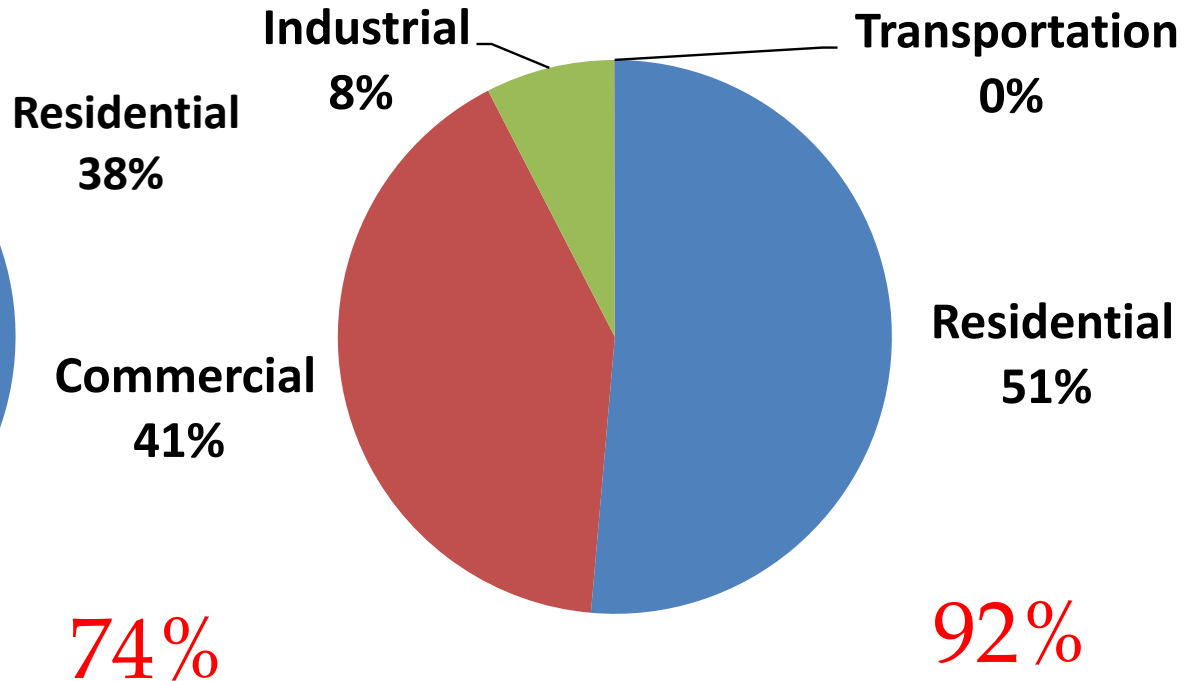
# *Residential Dominates use of Electricity*



**U.S. 2009 Electric Sales by Sector  
(3,596 TWh)**



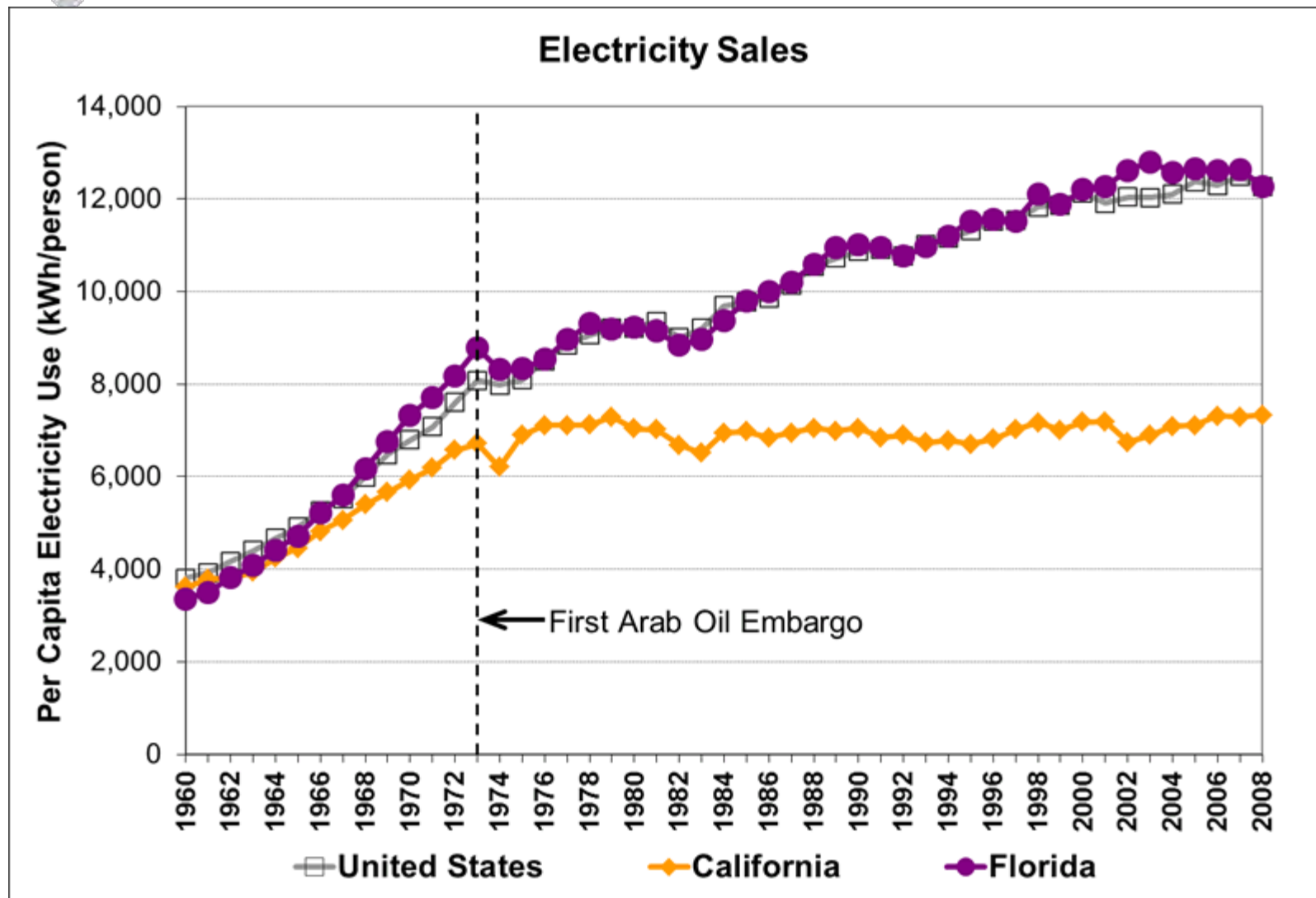
**Florida 2009 Electric Sales by Sector  
(228 TWh)**



Source: EIA, "Retail Sales of Electricity to Ultimate Customers: Total by End-Use Sector"



# California went Efficiency First Then it had a Million Solar Roofs





# *The Art of the Possible*

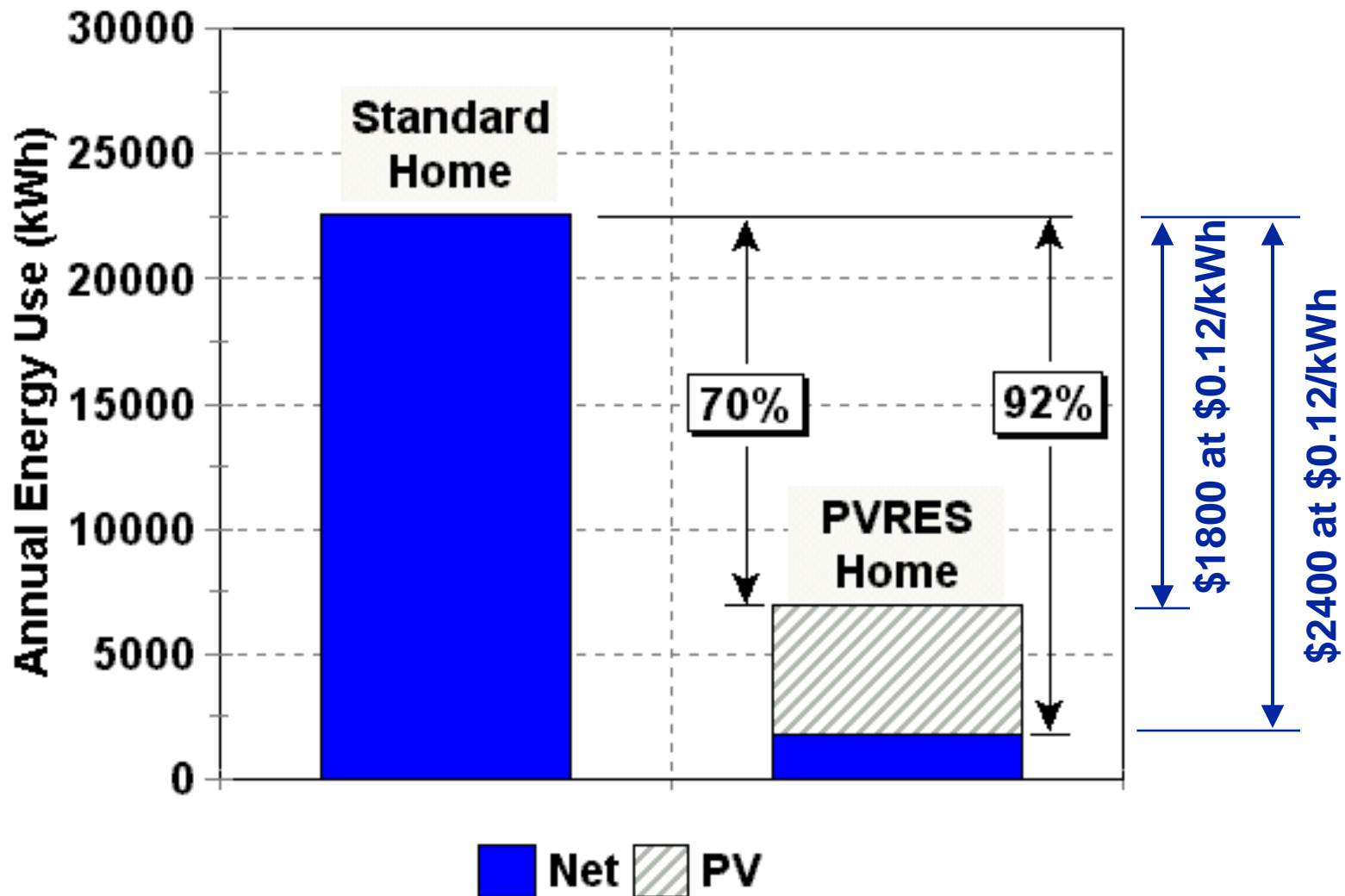


## *The Lakeland, Florida, House Project*





# Efficiency First, then free fuel for the electric car?









# What does America Want?

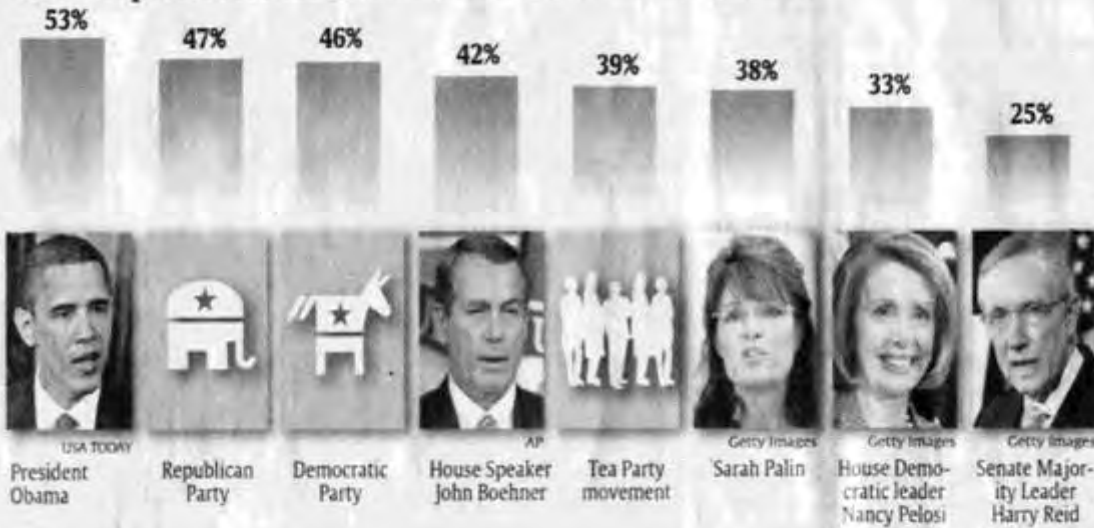
## Get along and Go Green!



### Americans' expectations of the president and Congress (Story, 1A)

USA TODAY  
Gallup Poll

Views of political leaders Percentage who say they have a favorable opinion about:



Confront or compromise?

Percentage who say President Obama over the next two years should:

Work to pass legislation most Democrats want whether Republicans agree with it or not



Work to pass legislation Democrats and Republicans can agree on, even if it's not what most Democrats want



Now that Republicans control the U.S. House, how important should the following goals be? (Percentage who say "extremely" or "very" important)

Work with Obama and the Democratic leadership in the Senate to pass new legislation that both parties can agree on

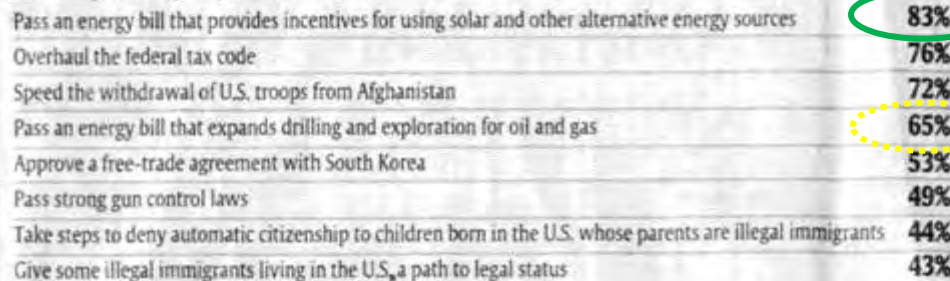


Prevent Obama and the Democratic leadership in the Senate from passing legislation that Republicans disagree with

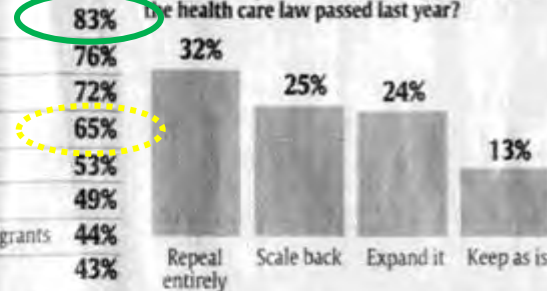


### What should Congress do this year?

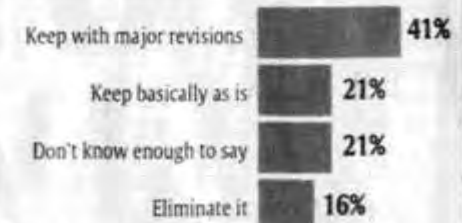
Percentage who say they favor action:



What would you like to see Congress do about the health care law passed last year?



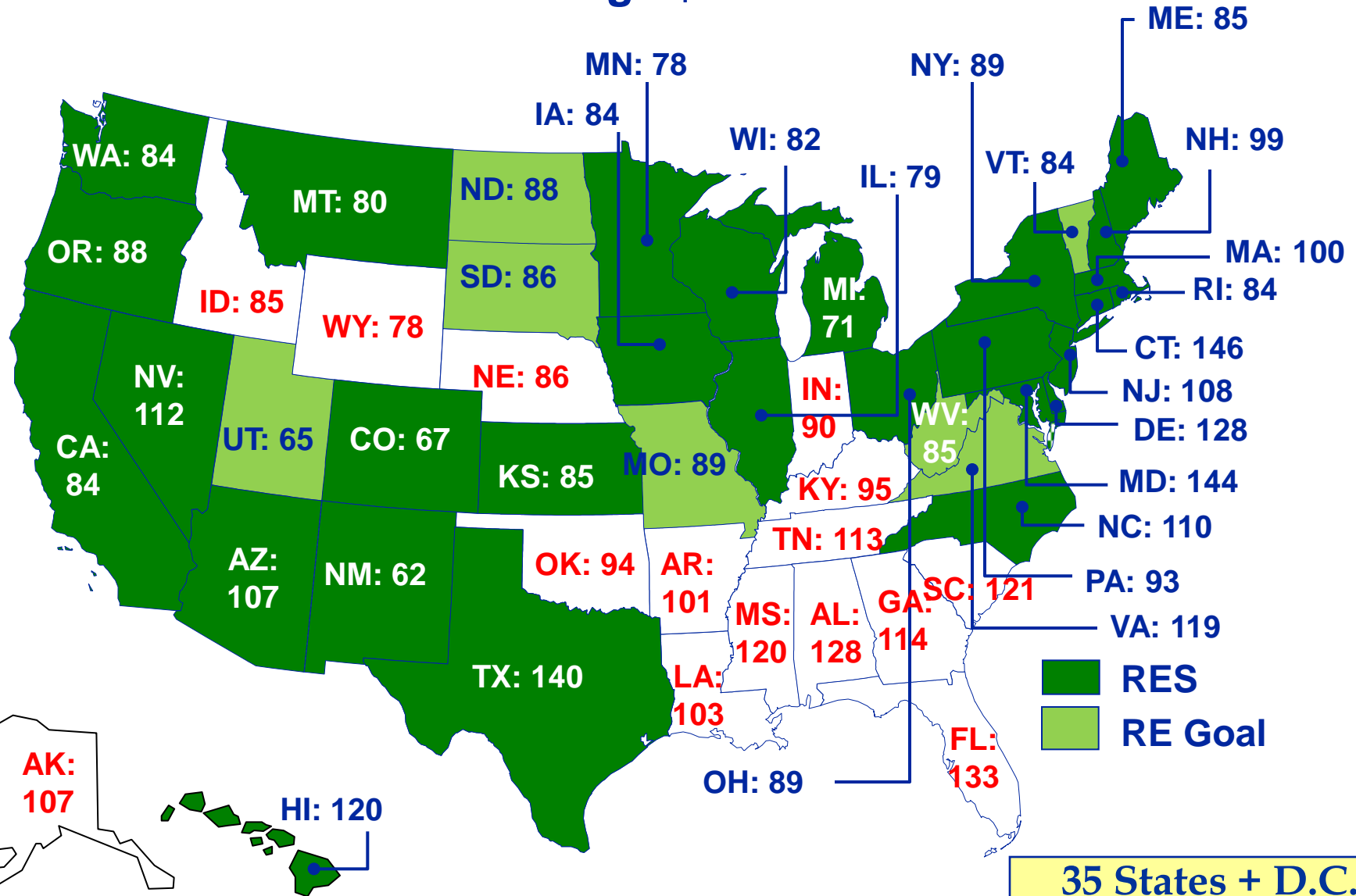
What action would you like to see Congress take on the No Child Left Behind education law?





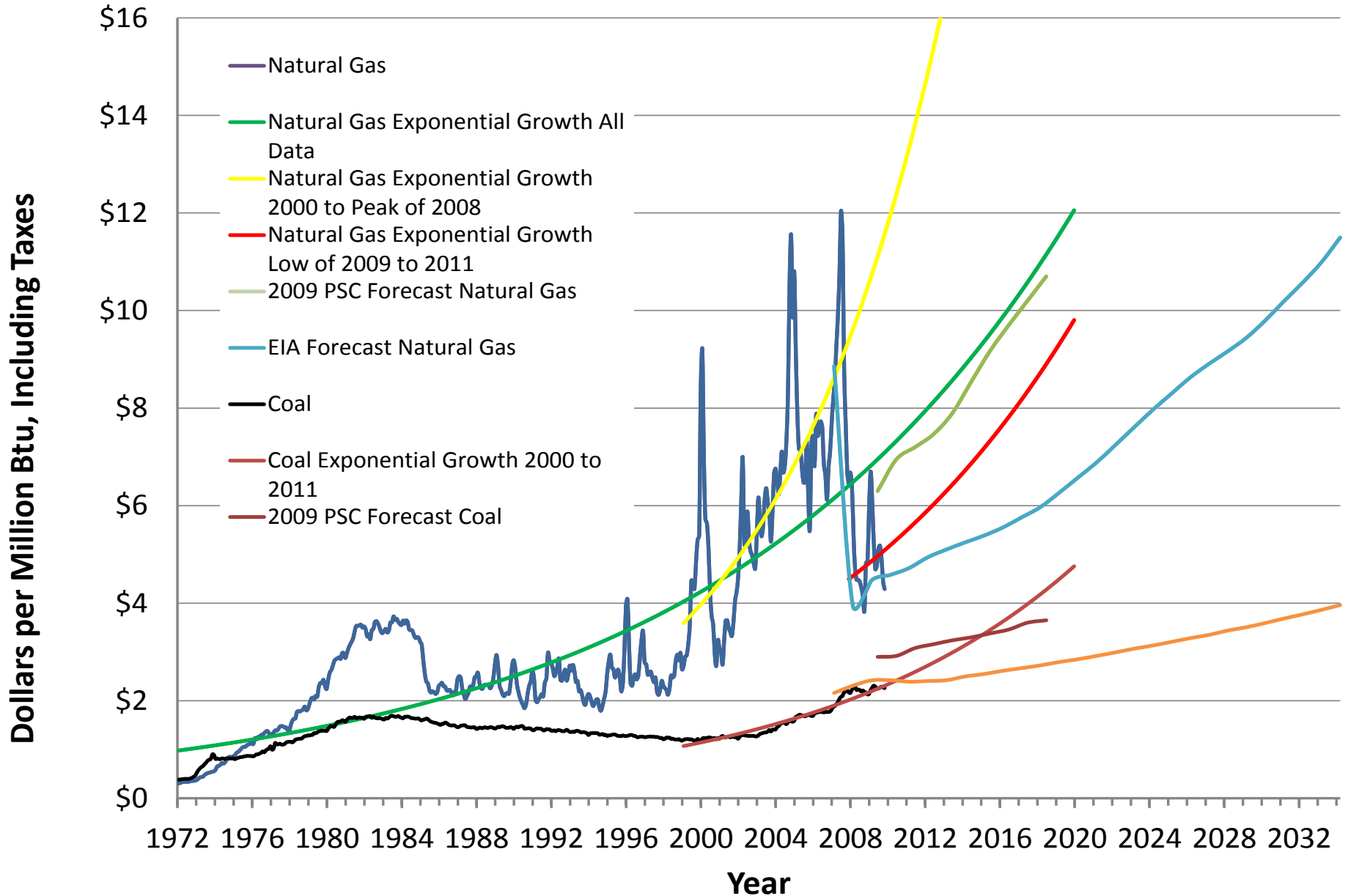
# Alternative Energy Cheaper?

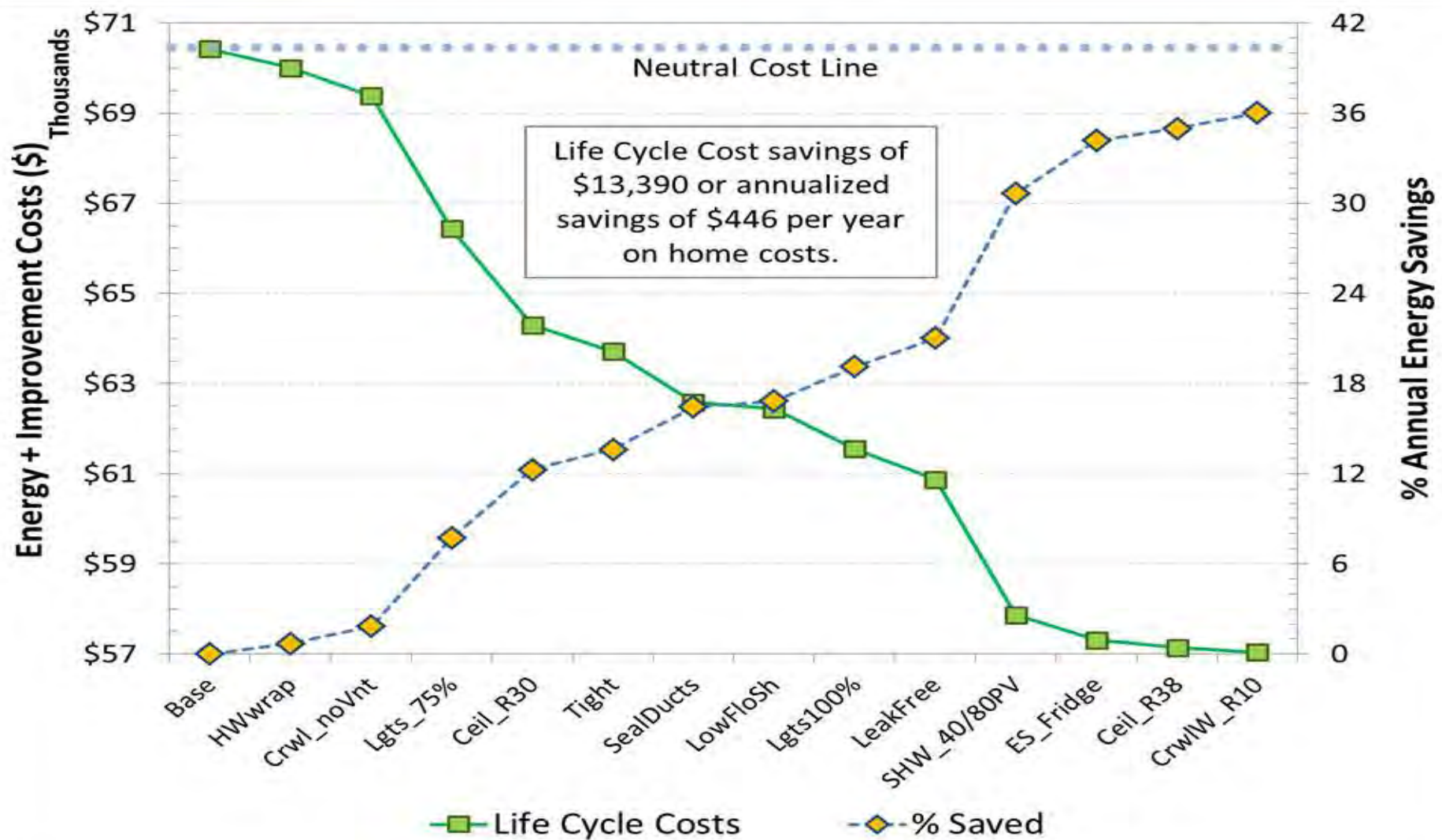
2009 Average Household Monthly Electric Bill (\$/mon)  
US Average \$101/month

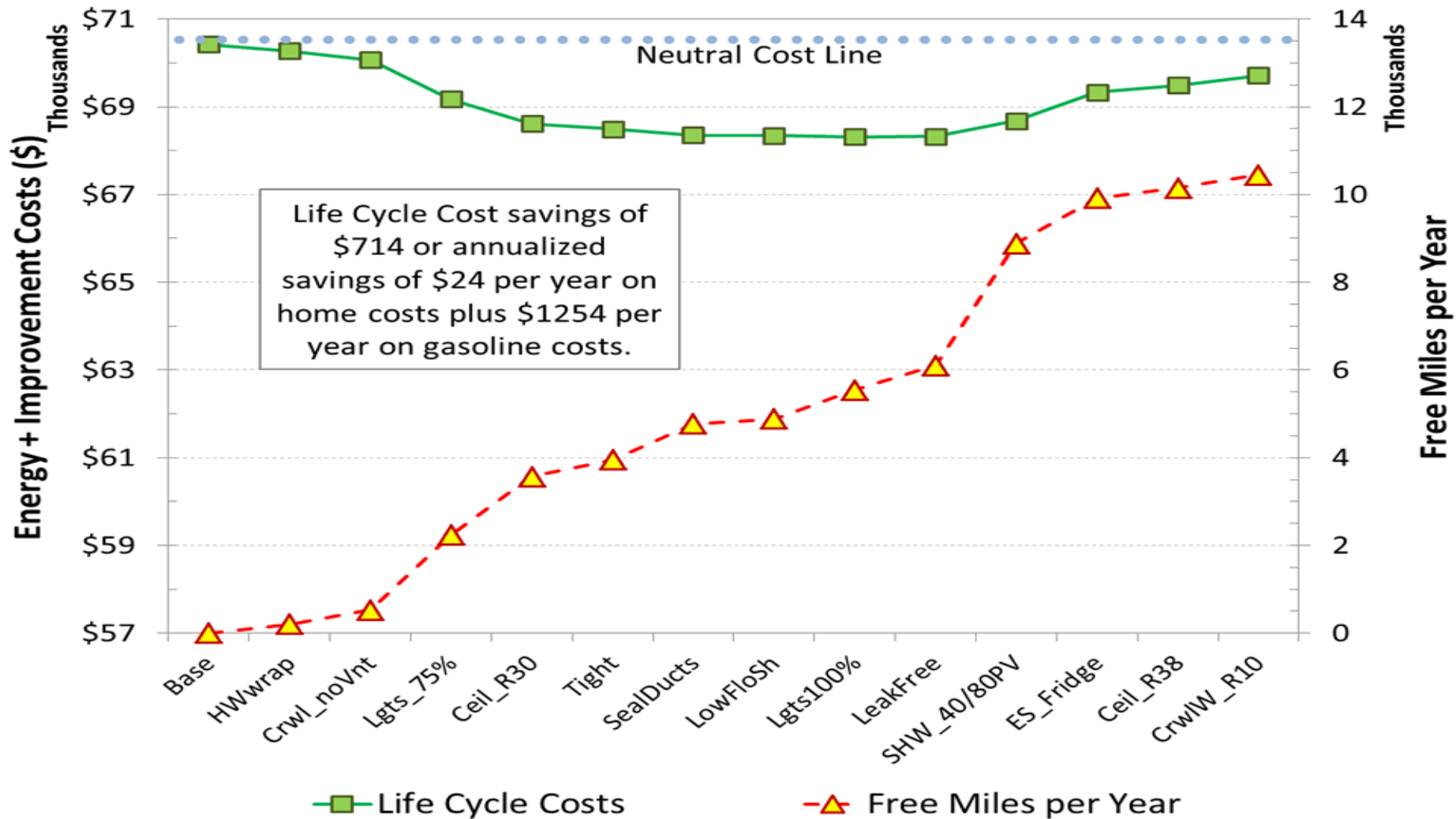


35 States + D.C.  
taken from DSIRE: [www.dsireusa.org](http://www.dsireusa.org)

# Cost of Fossil-Fuel Receipts at Electric Generating Plants









## *But . . .*



- ❖ Heavily reducing automobile fuel use and vehicle miles traveled while providing the equivalent transportation services will require significantly more electric transportation
- ❖ Significantly more electric commuter and plug-in hybrid vehicles
- ❖ Significantly more electric trains and mass transit systems (as in Europe)
- ❖ From where will the additional electricity come?



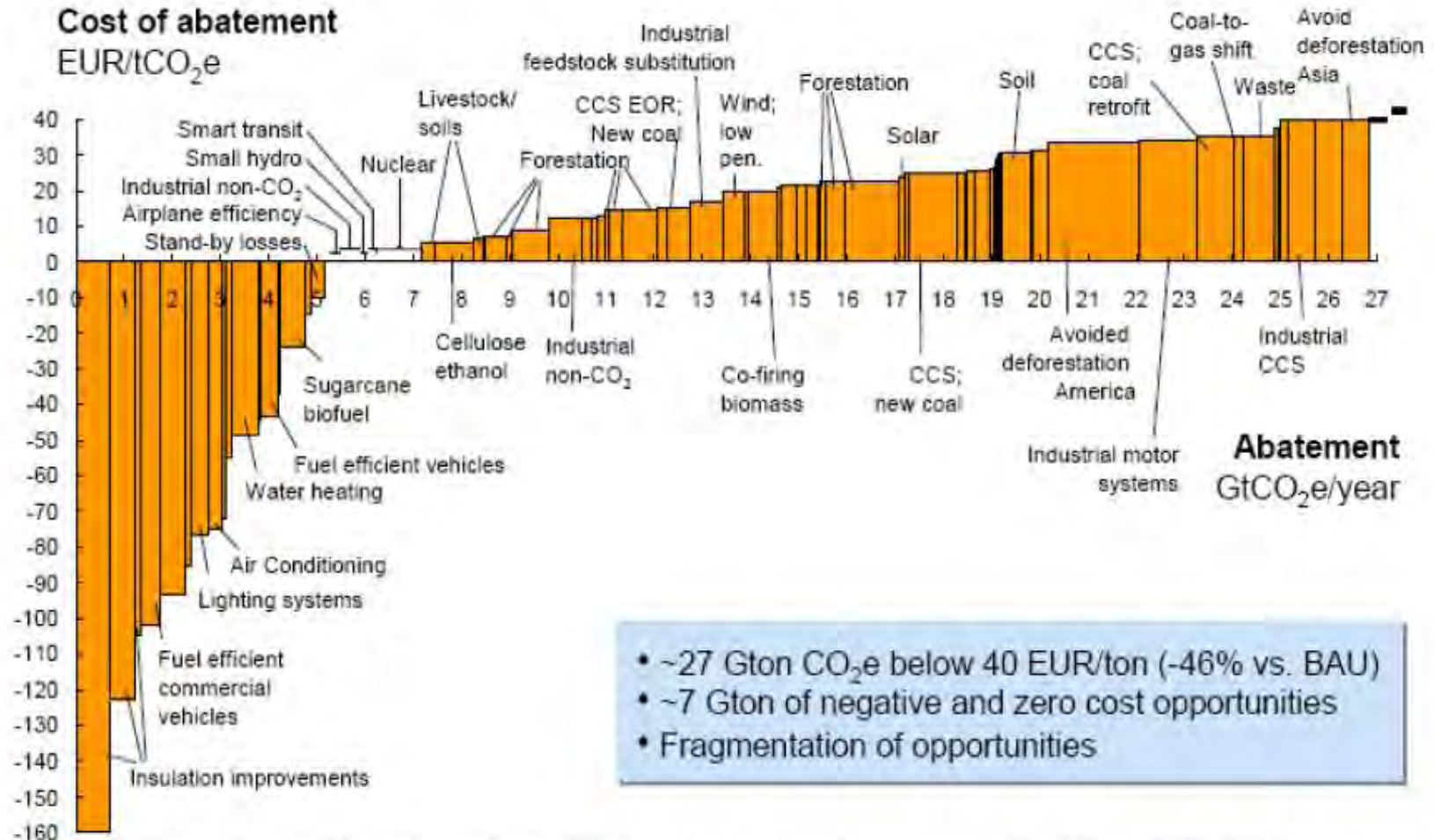
# *Electricity from Where?*



- ❖ Of the 4 trillion kWh used by U.S. in 2006, homes and buildings consumed 2.8 trillion kWh (70%)
- ❖ Most studies show that it is cost-effective now to save 30% of that energy through efficiency improvements
- ❖ Efficiency technology advances and rising energy prices will certainly push that up to at least 40% by 2030
- ❖ Result: 0.85 trillion kWh/yr savings by 2020 and 1.4 trillion kWh/yr savings by 2030 (i.e. 21% of 2006 use by 2020 and 35% by 2030!)



# McKinsey-Vattenfall Curve



- ~27 Gton CO<sub>2</sub>e below 40 EUR/ton (-46% vs. BAU)
- ~7 Gton of negative and zero cost opportunities
- Fragmentation of opportunities

Figure 5. Financial cost-benefit analysis of CO<sub>2</sub> mitigation options prepared by Vattenfall, 2007.