

# US Energy Policy: Time for a Reality Check?

*Lucian Pugliaresi*  
*Energy Policy Research Foundation, Inc*

**Open Round Columbia 2010**

***Columbia Petroleum Show***  
***Industrial Panel***

Bogota  
December 2, 2009

# EPRINC

Fighting Ignorance About Oil and Gas Markets Since  
1944\*

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**\* It's taking longer than we thought.**

## **What are the Energy Policies of the Obama Administration?**

- **1 million plug-in-electric hybrid vehicles (PHEVs) on the road by 2015**
- **5 million new green jobs by investing \$150 billion over 10 years**
- **Reducing US oil consumption within 10 years by 2- 3 mb/d**
- **Requiring 10 percent of the nation's electricity to come from renewable energy by 2012 and 25 percent by 2025.**
- **Establishing an economy-wide cap-and-trade program that cuts US greenhouse gas emissions (Waxman-Markey calls for cuts of 2 gigatons by 2030)**

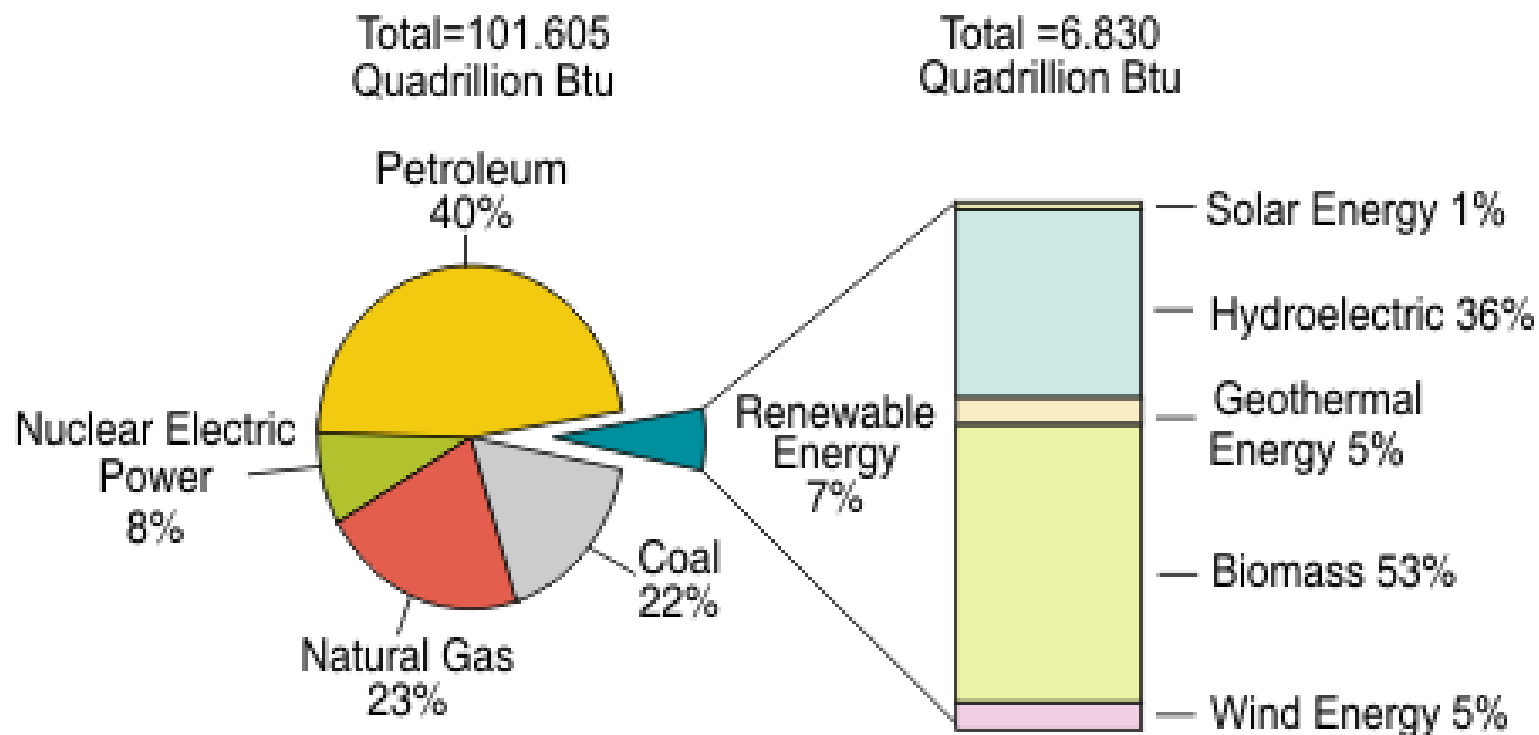
**Not a Complete List!!!!**

## A Few of the

### Administration's Implementation Strategies

- Higher taxes on upstream and downstream operations – to provide more funding for renewables (**US is over investing in oil and gas**)
- Mandates -- biofuels and use of renewables in electricity generation
- Subsidies for Green Job Technologies
- Cap and Trade
- Expanding Nuclear and Upstream Petroleum Production?

## Renewable Energy Plays a Role in the Nation's Energy Supply (2007)



Note: Sum of components may not equal 100 percent due to independent rounding.

Source: EIA, *Renewable Energy Consumption and Electricity Preliminary 2007 Statistics*, Table 1: U.S. Energy Consumption by Energy Source, 2003-2007 (May 2008).

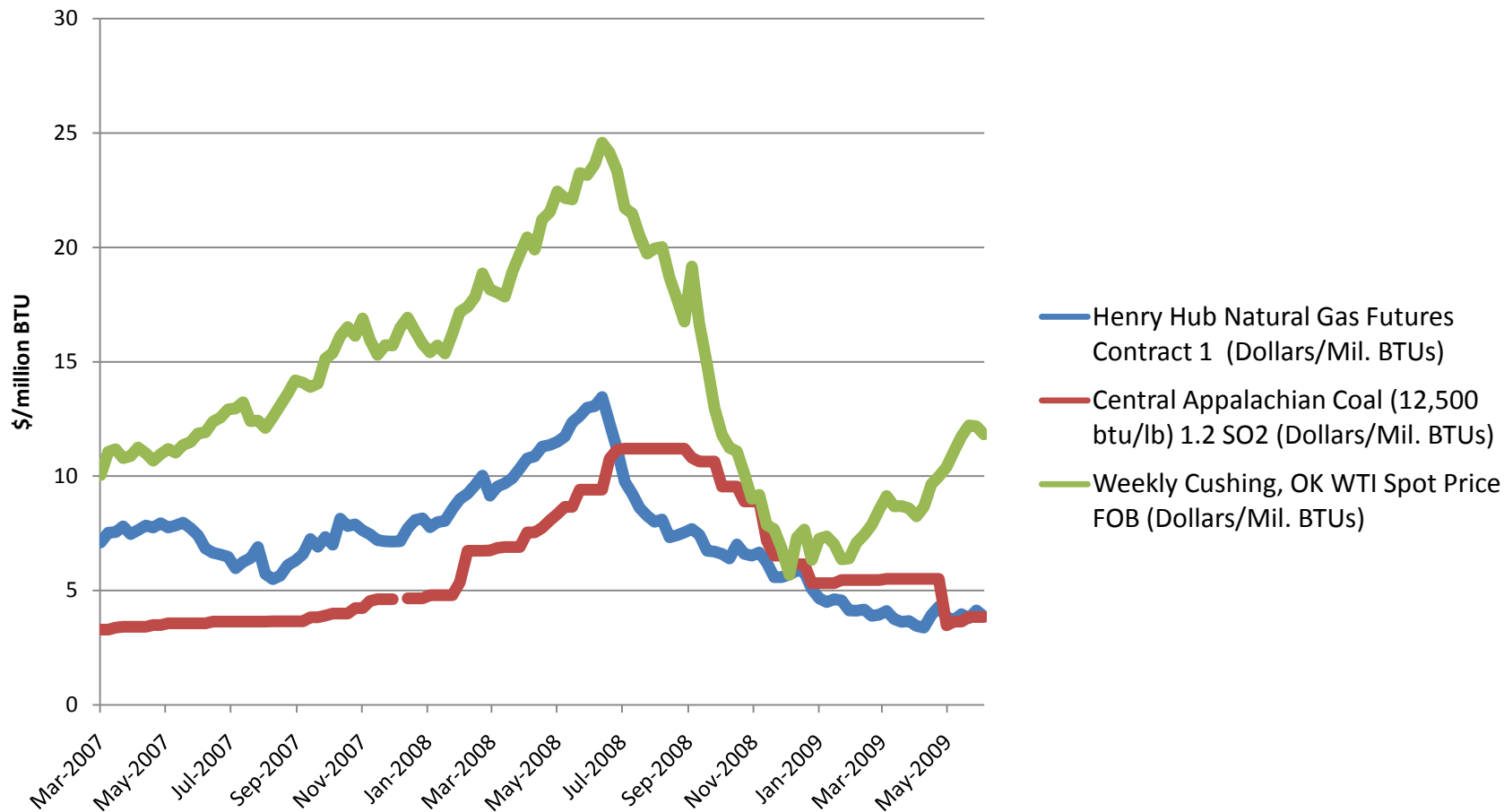
# Tax Proposals in Treasury Green Book

- Repeal of IDC expenses
- Repeal G&G Expenses
- Raise Corporate Income Taxes – for Oil and Gas Operations Only
- Repeal of Percentage Depletion Allowance
- Fee on Non Producing Leases
- And Lots More.....

## Energy Subsidies Not Related to Electricity Production

Category	Fuel Consumption (Quadrillion BTU)	FY 2007 Subsidy and Support (million 2007 dollars)	Subsidy per Million BTU
Coal	1.93	78	0.04
Refined Coal	0.16	214	1.35
Natural Gas and Petroleum Liquids	55.78	1921	0.03
Ethanol/Biofuels	0.57	3249	<b>5.72</b>
Geothermal	0.04	1	0.02
Solar	0.07	360	<b>2.82</b>
Other Renewables	2.5	184	0.14
Hydrogen	*	230	NM
Total Fuel Specific	60.95	6237	0.1
Total Non-Fuel Specific	NM	3597	NM
Total End-Use and Non-Electricity	NM	9834	NM
Source: EIA Data			

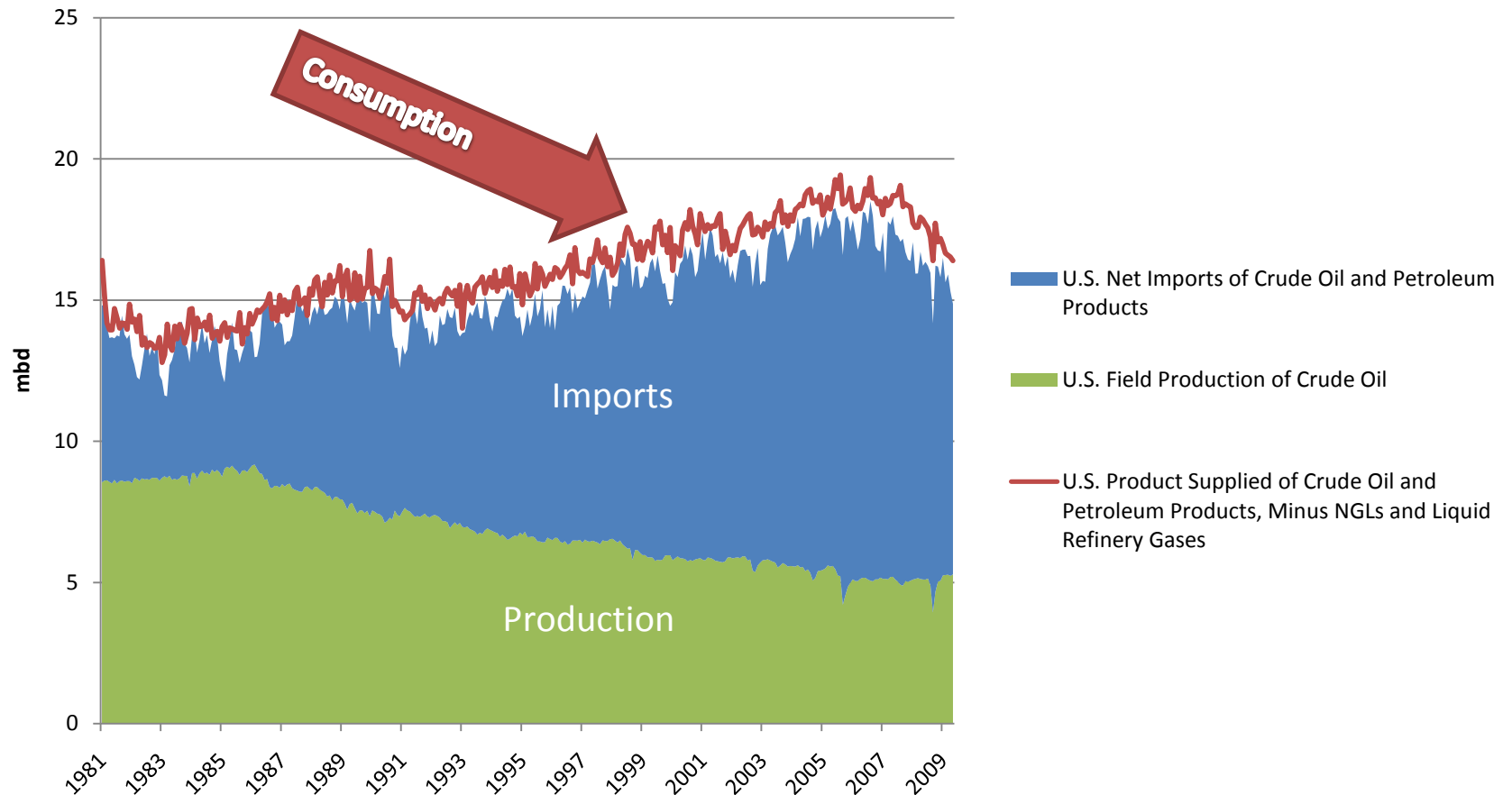
# Recent Trends in Oil, Gas, and Coal Prices



Source: EIA data, EPRINC Calculations



# U.S. Crude Oil Production, Consumption, and Imports



Source: : EIA Data, EPRINC Calculation. NGLs are not included in any of these data sets.

## The Peak Oil Problem: New Supplies Will Be More Expensive, but We Are Not Running Out of Oil



**"One thing is clear: the era of easy oil is over. What we all do next will determine how well we meet the energy needs of the entire world in this century and beyond."**

**- David J O'Reilly, Chairman & CEO, Chevron Corporation, July 2005**

# San Joaquin Valley

## Testing Hubbard-Method Predictions for Reserves and Production (Billions of Barrels)

	1964	1982	2000
<b>Cumulative Discoveries</b>	<b>7.7</b>	<b>11.8</b>	<b>16.1</b>
<b>Percent Attributable to 1915</b>	<b>49%</b>	<b>69%</b>	<b>76%</b>
<b>Cumulative production as of</b>	<b>8.0-9.5</b>	<b>11.9-12.1</b>	<b>16.1-16.2</b>
<b>Year 2000 production projected in: (mb/d)</b>	<b>44-112</b>	<b>189</b>	<b>597(actual)</b>

**Source: EPRINC, October 2006. *Does the Hubbard Method Provide a Reliable Means for Predicting Future Oil Production*, Richard Nehring, October 2006,**

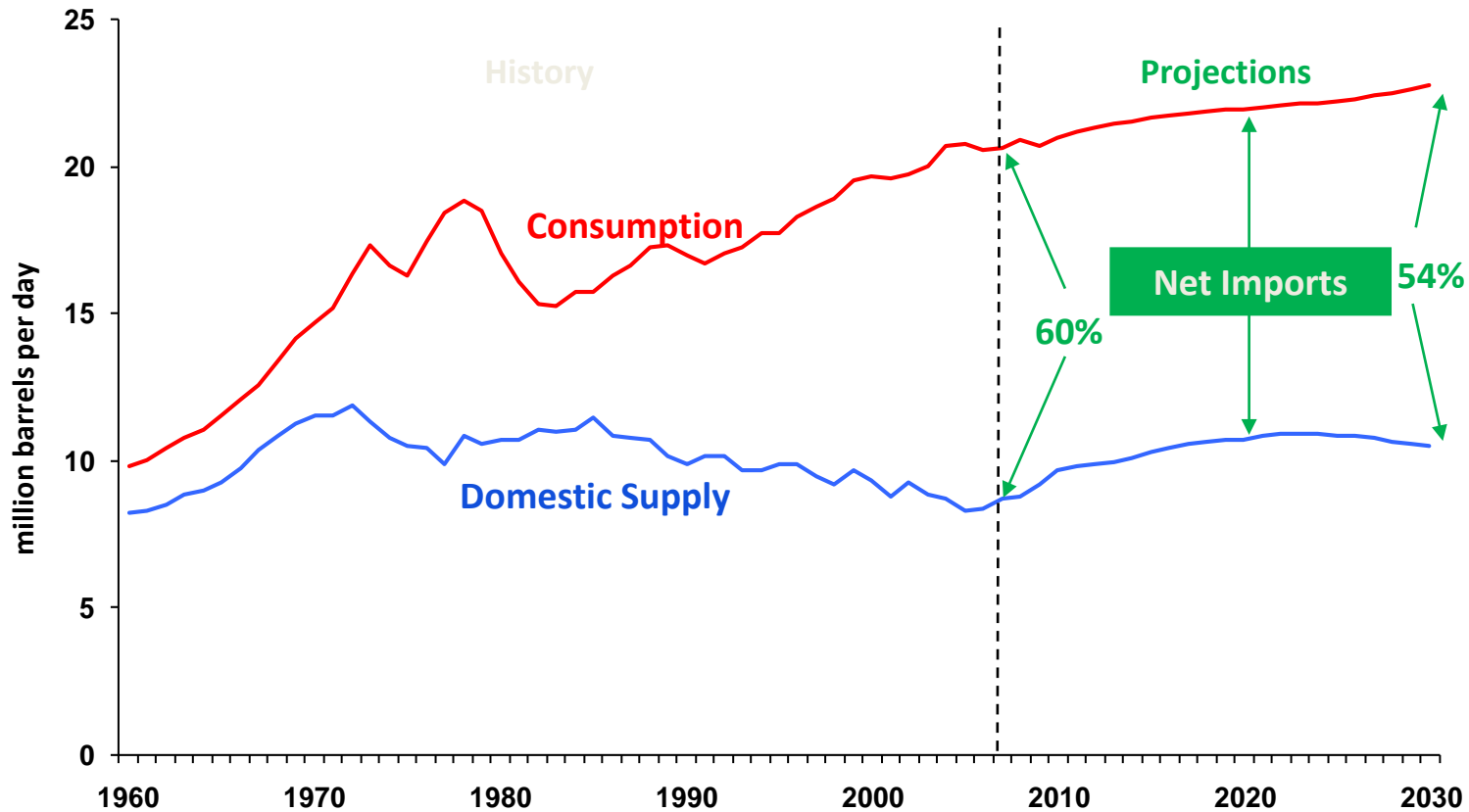
## Permian Basin

### Testing Hubbard-Method Predictions for Reserves and Production (Billions of Barrels)

	1964	1982	2000
<b>Cumulative Discoveries</b>	<b>17.6</b>	<b>27.9</b>	<b>35.2</b>
<b>Percent Attributable to 1950</b>	<b>85%</b>	<b>86%</b>	<b>84%</b>
<b>Cumulative production as of</b>	<b>19-27.5</b>	<b>28.5-30.5</b>	<b>35.8-37.5</b>
<b>Year 2000 production projected in: (mb/d)</b>	<b>162-479</b>	<b>326-479</b>	<b>910(actual)</b>

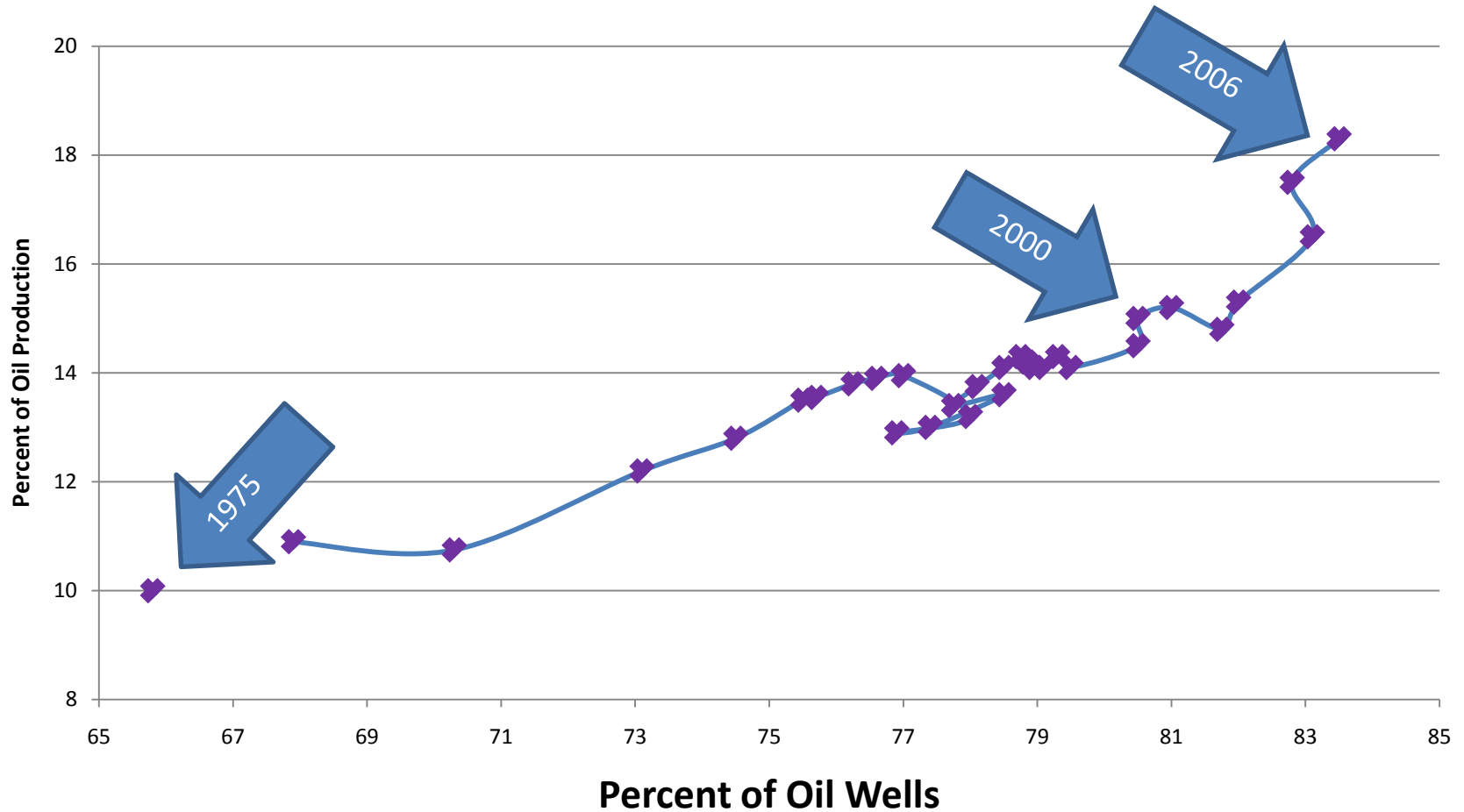
**Source: EPRINC, October 2006. *Does the Hubbard Method Provide a Reliable Means for Predicting Future Oil Production*, Richard Nehring, October 2006,**

# Projected Petroleum Imports -- US



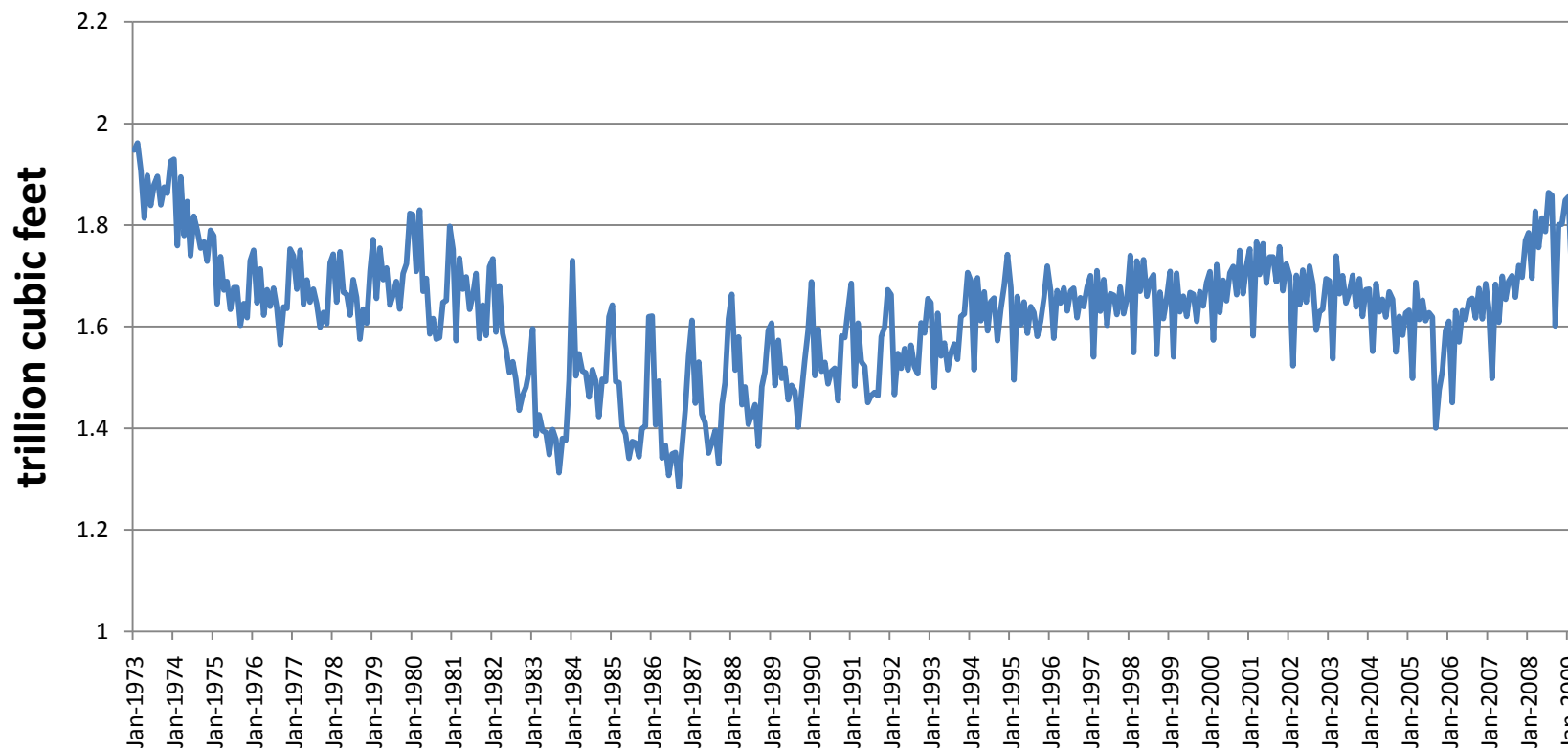
Source: EIA/AEO 2008

# Stripper Well Production



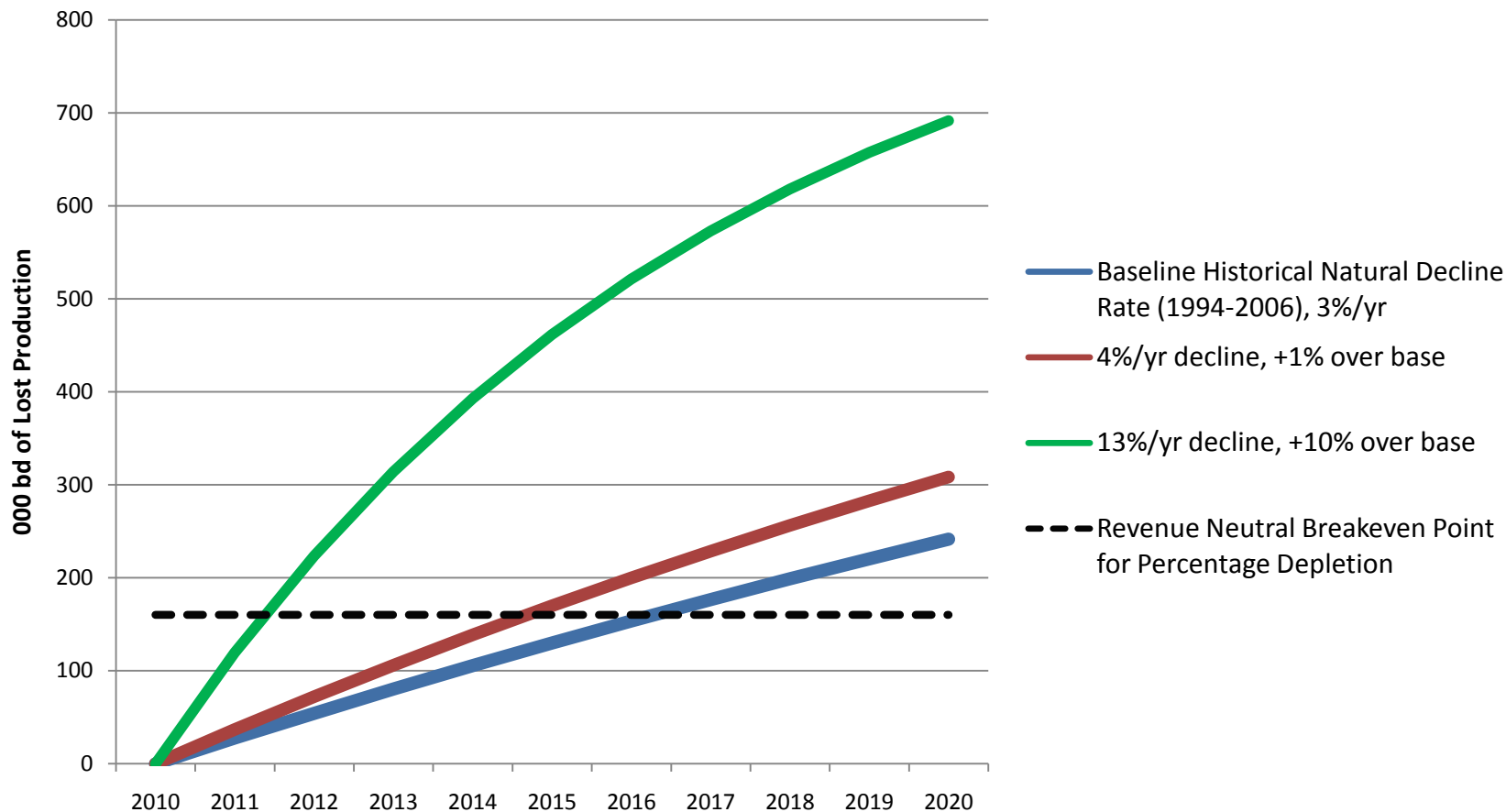
Source: EIA Data, [http://www.eia.doe.gov/pub/oil\\_gas/petrosystem/us-3o.html](http://www.eia.doe.gov/pub/oil_gas/petrosystem/us-3o.html)

# U.S. Natural Gas Marketed Production 1973-2009



# Lost Production Breakeven Points for Repeal of Percentage Depletion

Where Increased Revenue to Treasury = Financial Loss to U.S. Economy from Higher Crude Oil Imports, 2010 – 2020



Source: Source: EPRINC calculations. Marginal oil wells tend to decline at about 3 percent per year. The loss in the depletion allowance will likely increase this rate of decline to anywhere from 4 to 13 percent per year. Natural gas production, which has experienced very low prices as gas values, at least for the near term have decoupled from crude oil, is probably even more at risk.



# Waxman-Markey Cap and Trade

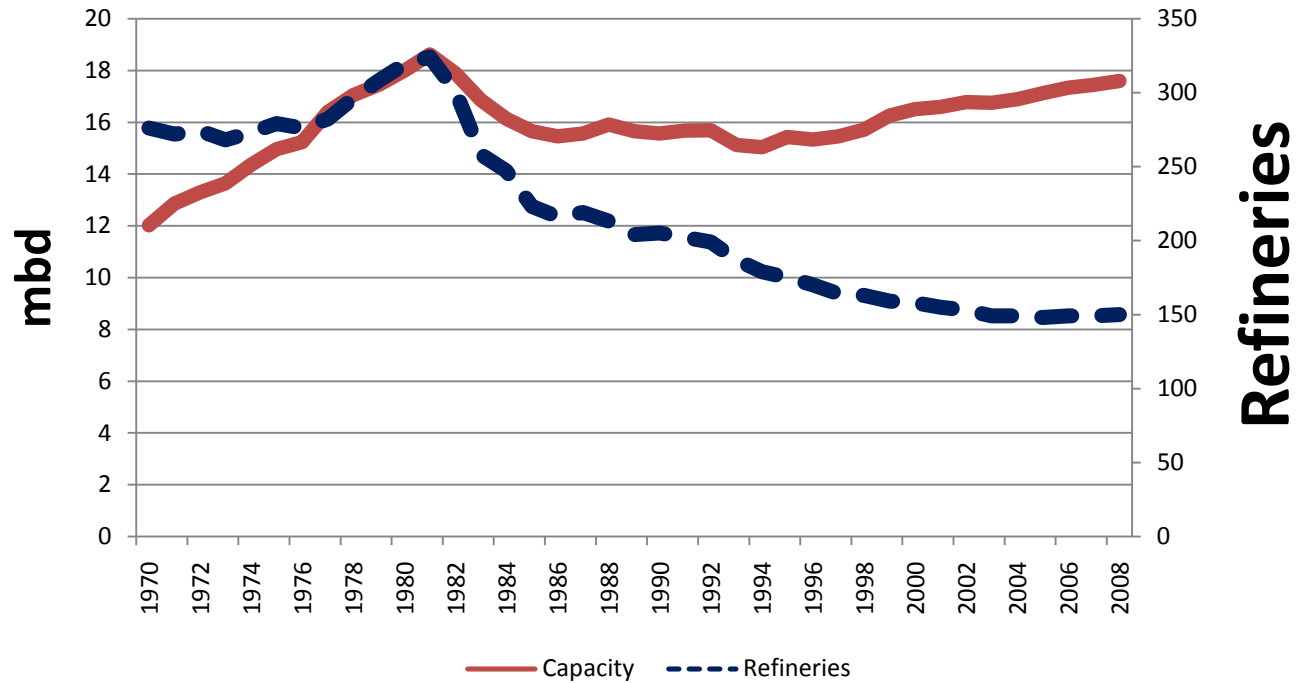
- It May Not be the Most Costly Approach for Removing Carbon – But its Close
- Or
- How to End Refining as We Know It

## What it takes to offset 1 gigaton of carbon...

TODAY'S TECHNOLOGY	Actions providing 1 Gt mitigation/year
Coal-fired power plants	Build 1,000 "zero-emission" 500 MW coal-fired power plants
Geologic sequestration	Install 3,700 sequestration sites like Norway's Sleipner project (0.27 MtC/year)
Nuclear	Build 500 new nuclear plants, each 1 GW in size
Efficiency	Deploy 1 billion new cars at 40 miles per gallon (mpg) instead of 20 mpg
Wind energy	Install capacity to supply 50 times the current global wind generation
Solar photovoltaics	Install capacity to supply 1000 times the current global solar PV generation
Biofuels for transport	Convert a barren area 15 times the size of Iowa's farmland (30 million acres) to biomass production
CO <sub>2</sub> storage in forests	Convert a barren area 30 times the size of Iowa's farmland to new forest

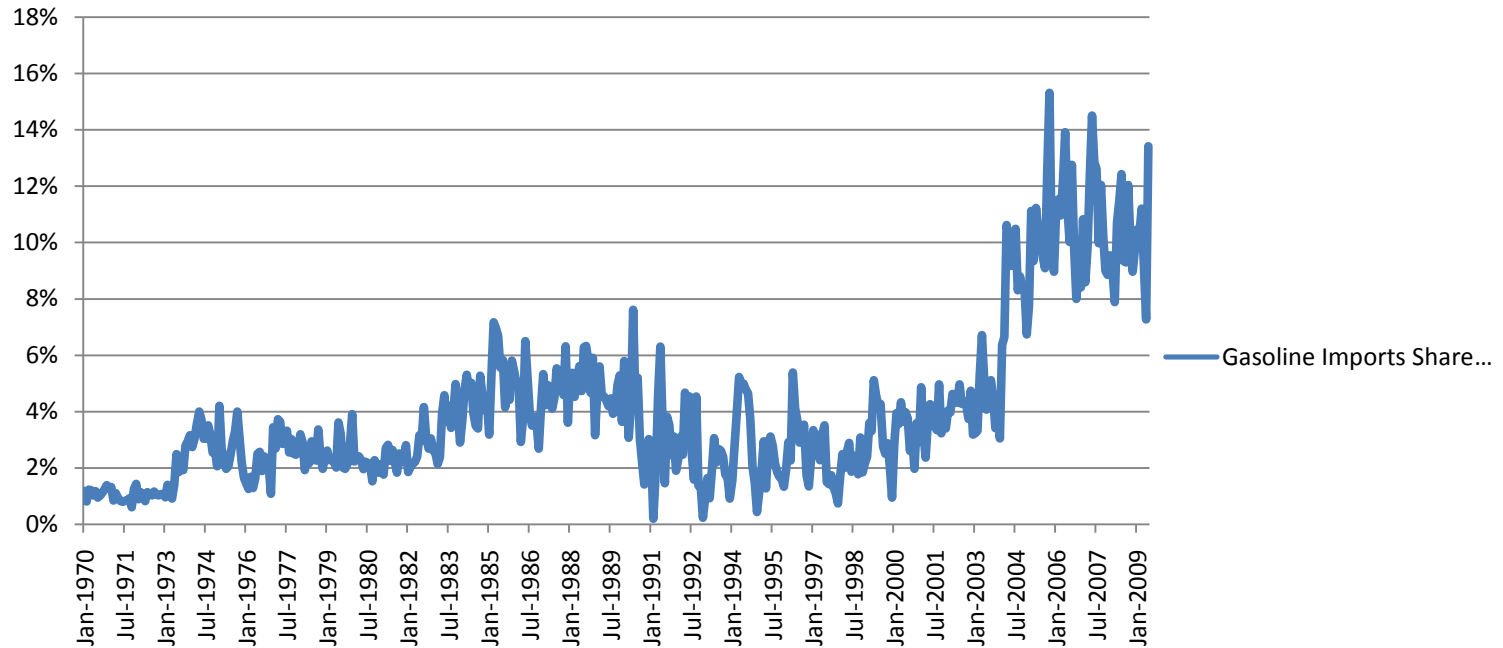
Source: DOE Climate Change Technology Program

## Number of U.S. Refineries and Capacity



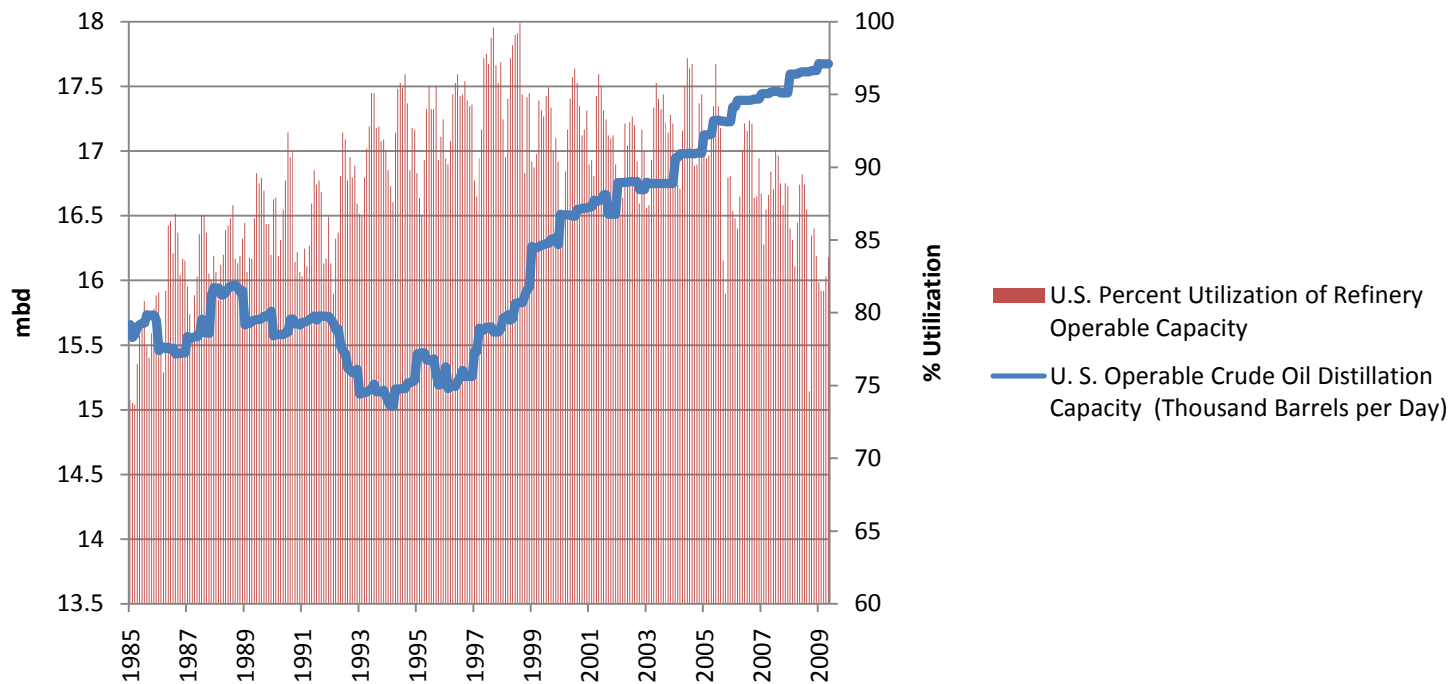
Source: EPRINC calculations, EIA data

# Gasoline Imports to U S 1970-2009



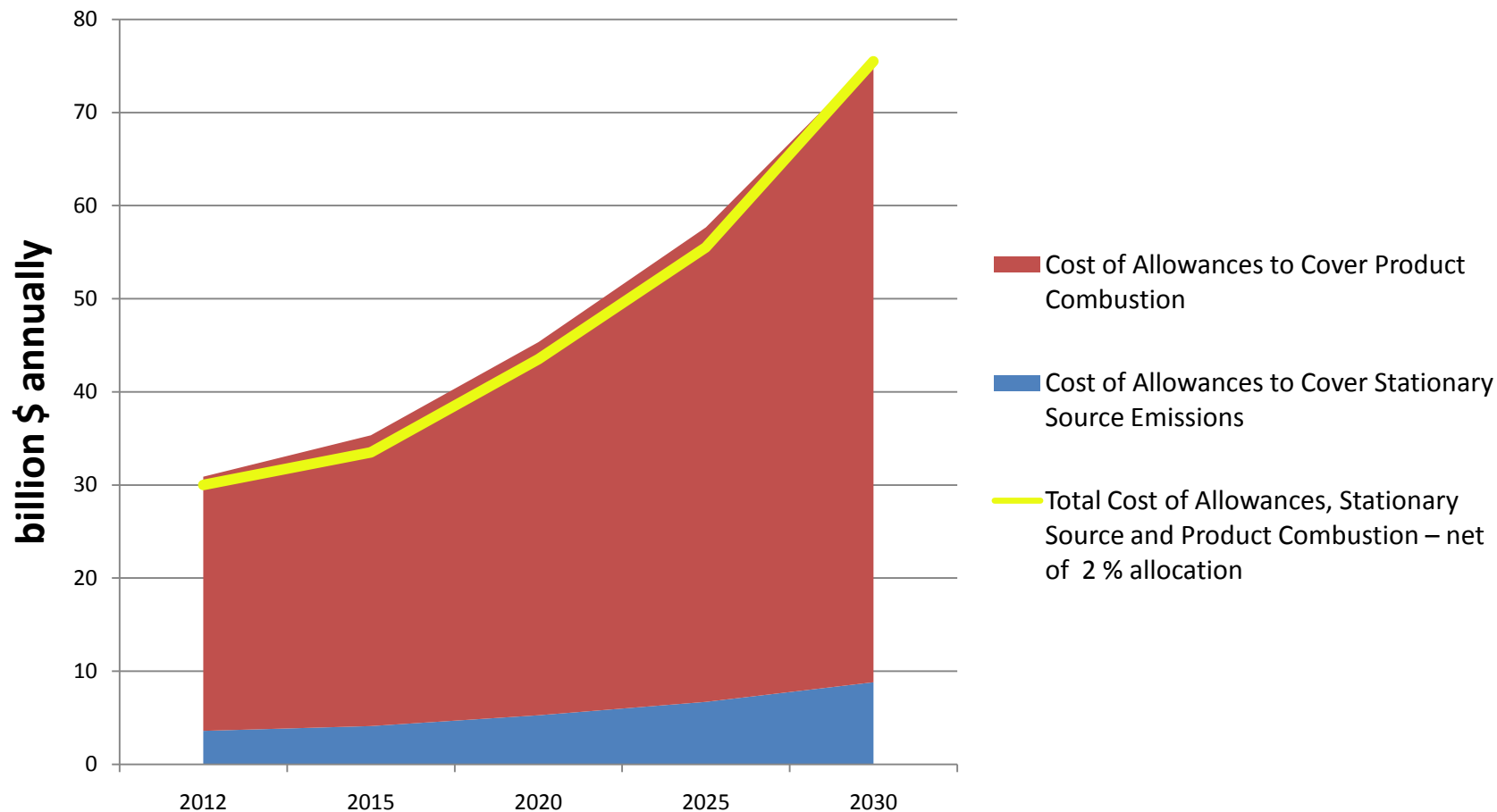
Source: EIA data, EPRINC calculations

# US Refinery Capacity Utilization 1985-2009

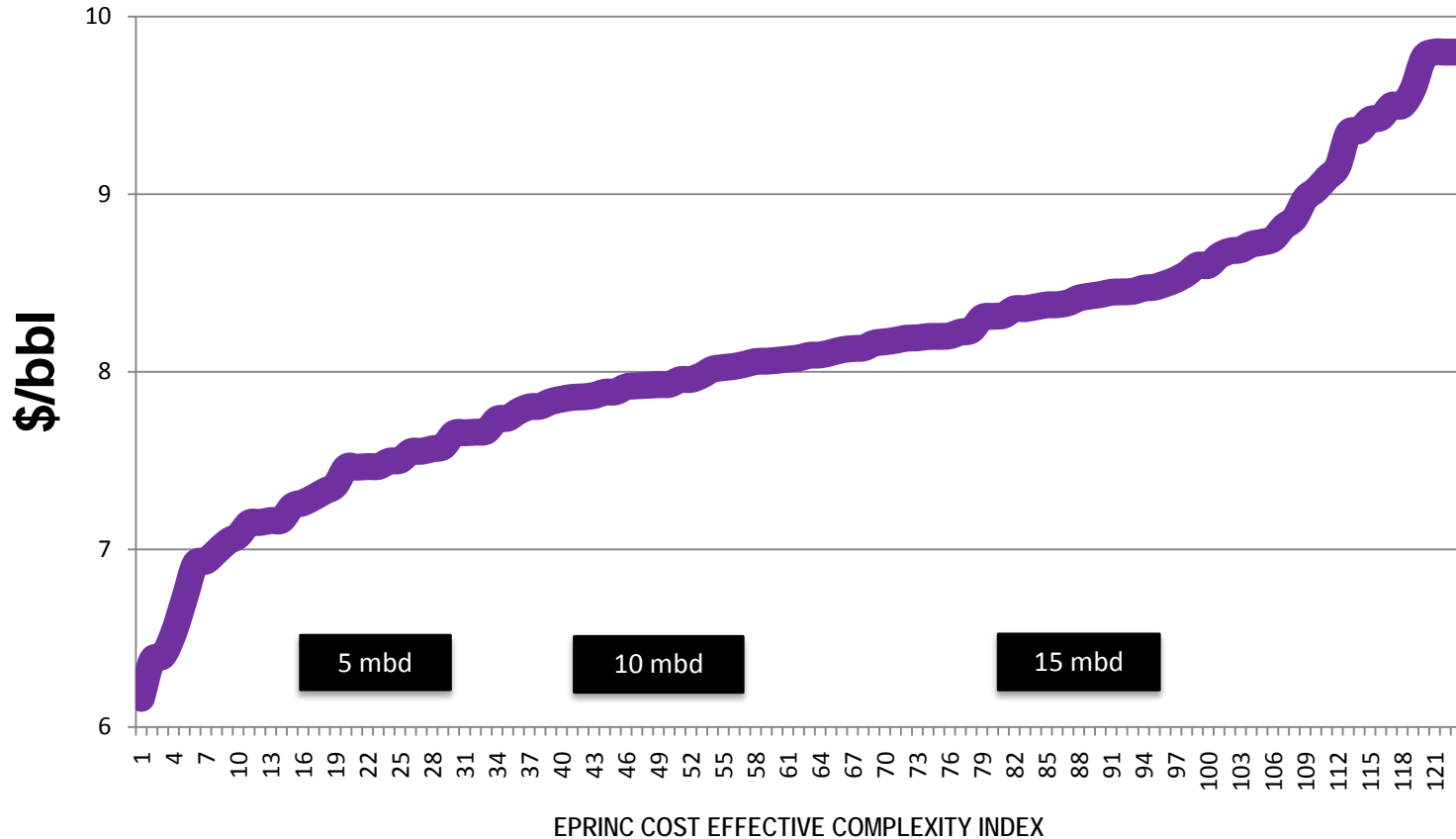


Source: EIA data, EPRINC Calculations

# Compliance Costs: US Refining Industry

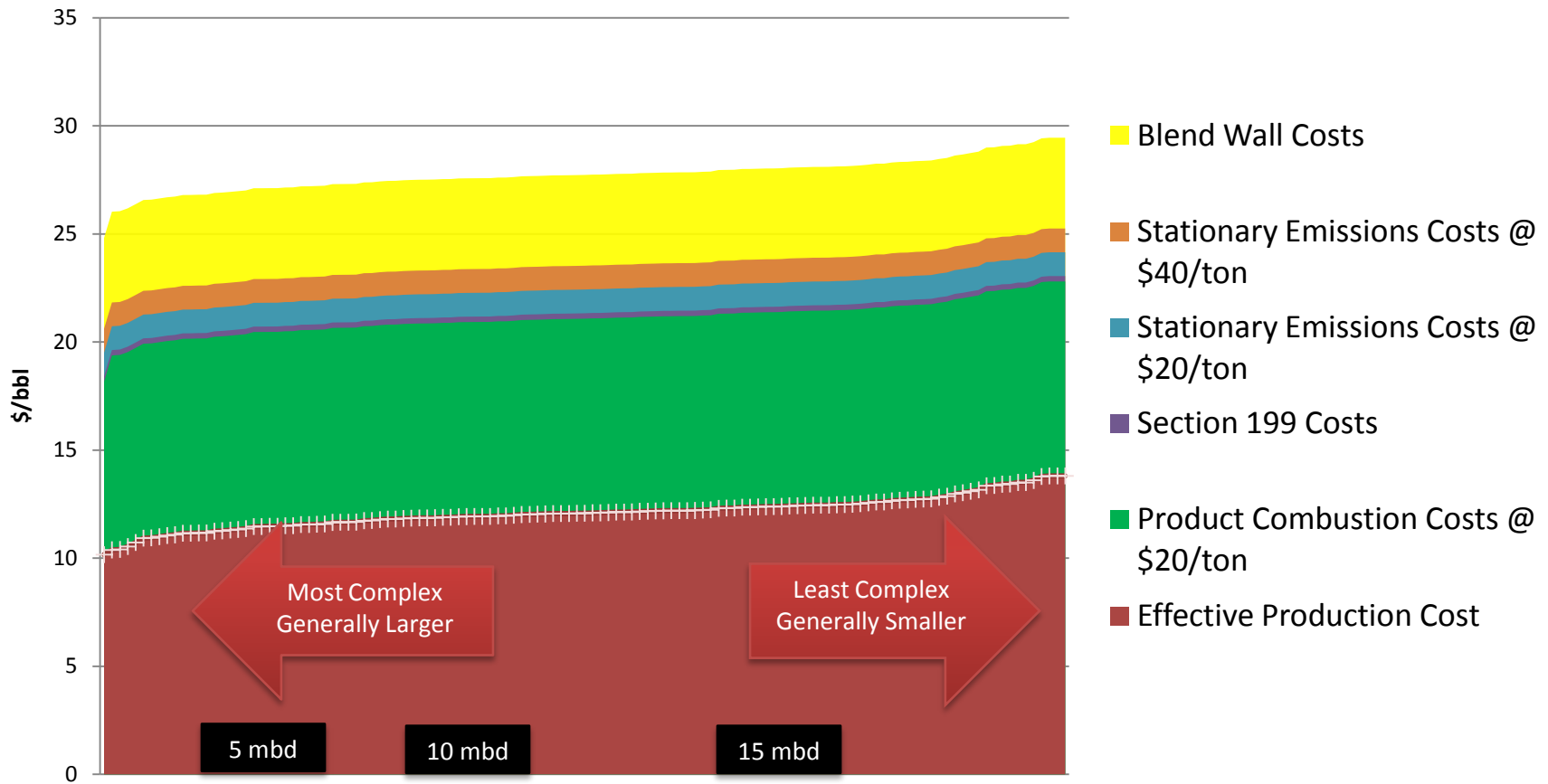


# Effective Cost of Production: US Product Slate



Source: EPRINC Calculations from OGJ and proprietary refinery data sets of complexity, product slate valuations, and location. Product slate standardized to common EPRINC product/cost value index.

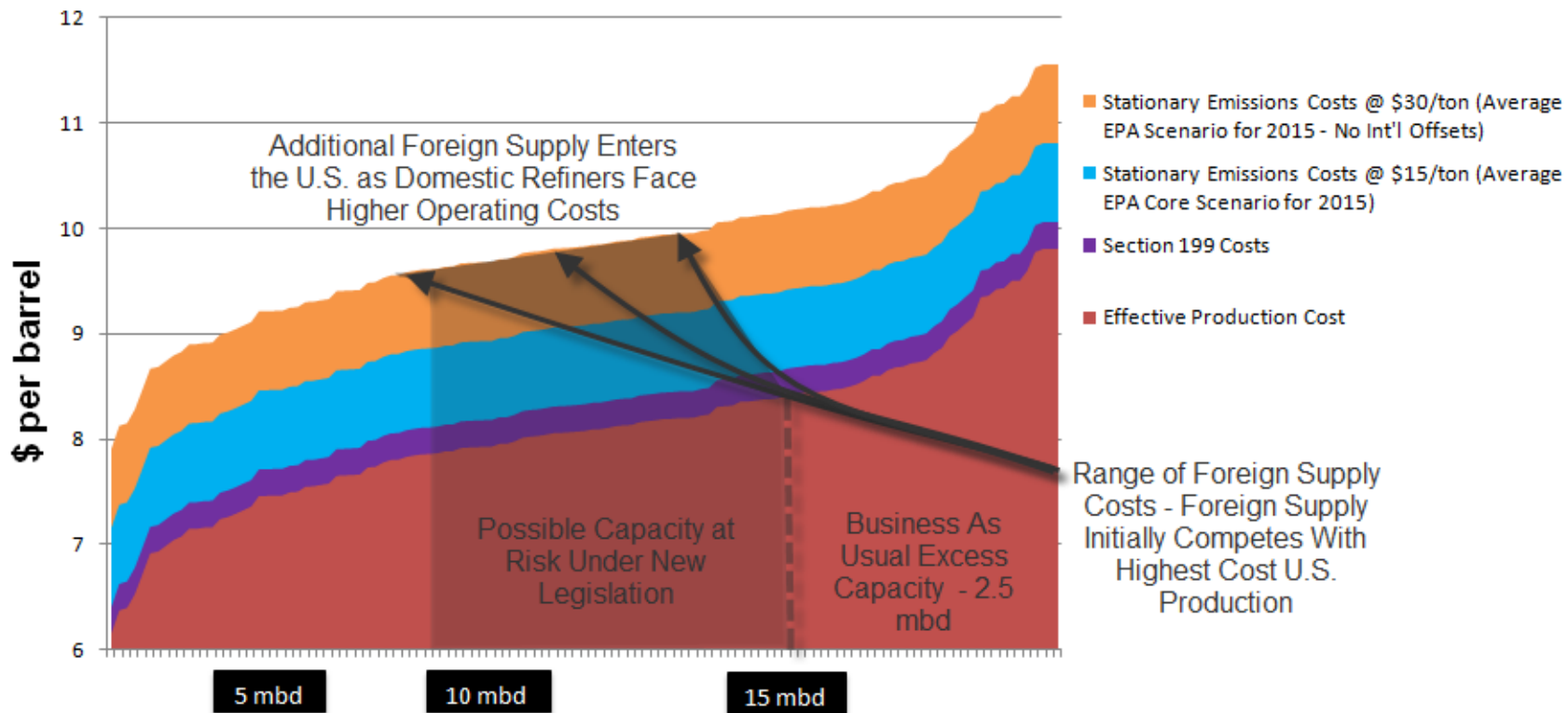
# U.S. Refiners' Future Cost of Production (2015 - 2030)



Source: EPRINC Calculations, EIA Data



# Pass Through or Capacity Losses 2015-2030



Source: Forthcoming EPRINC report on “Capacity Consequences of Waxman-Markey Cap and Trade Program.” EPRINC calculations.

# Conclusions

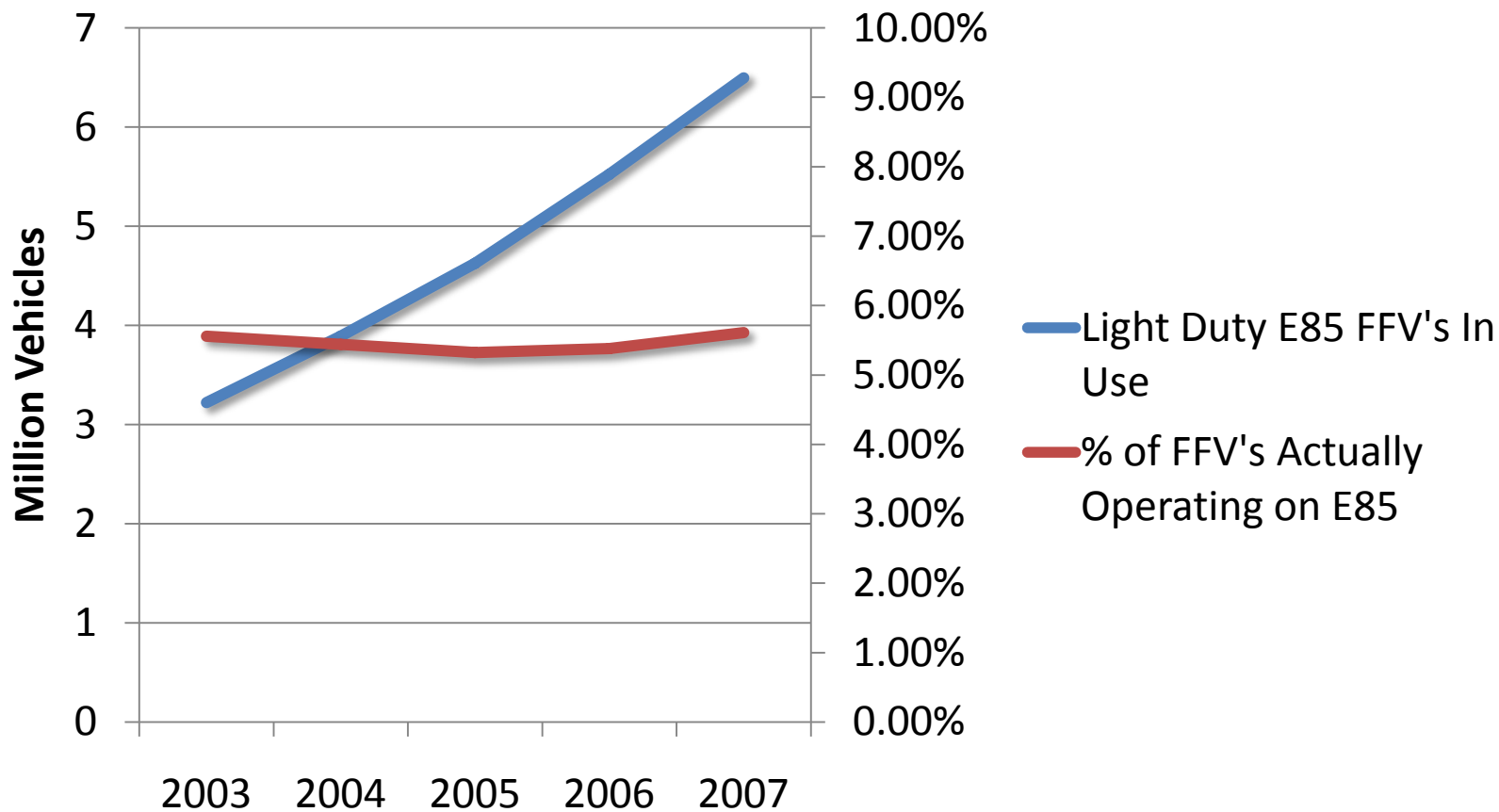
- Administration Still Running on Belief System  
i.e., – Oil is Bad and Renewables Are Good,  
but

Numbers are Disturbing.....

- Trade and Implementation Risks Associated  
with Waxman Markey Not Well Understood,  
and a Long Fight is Ahead

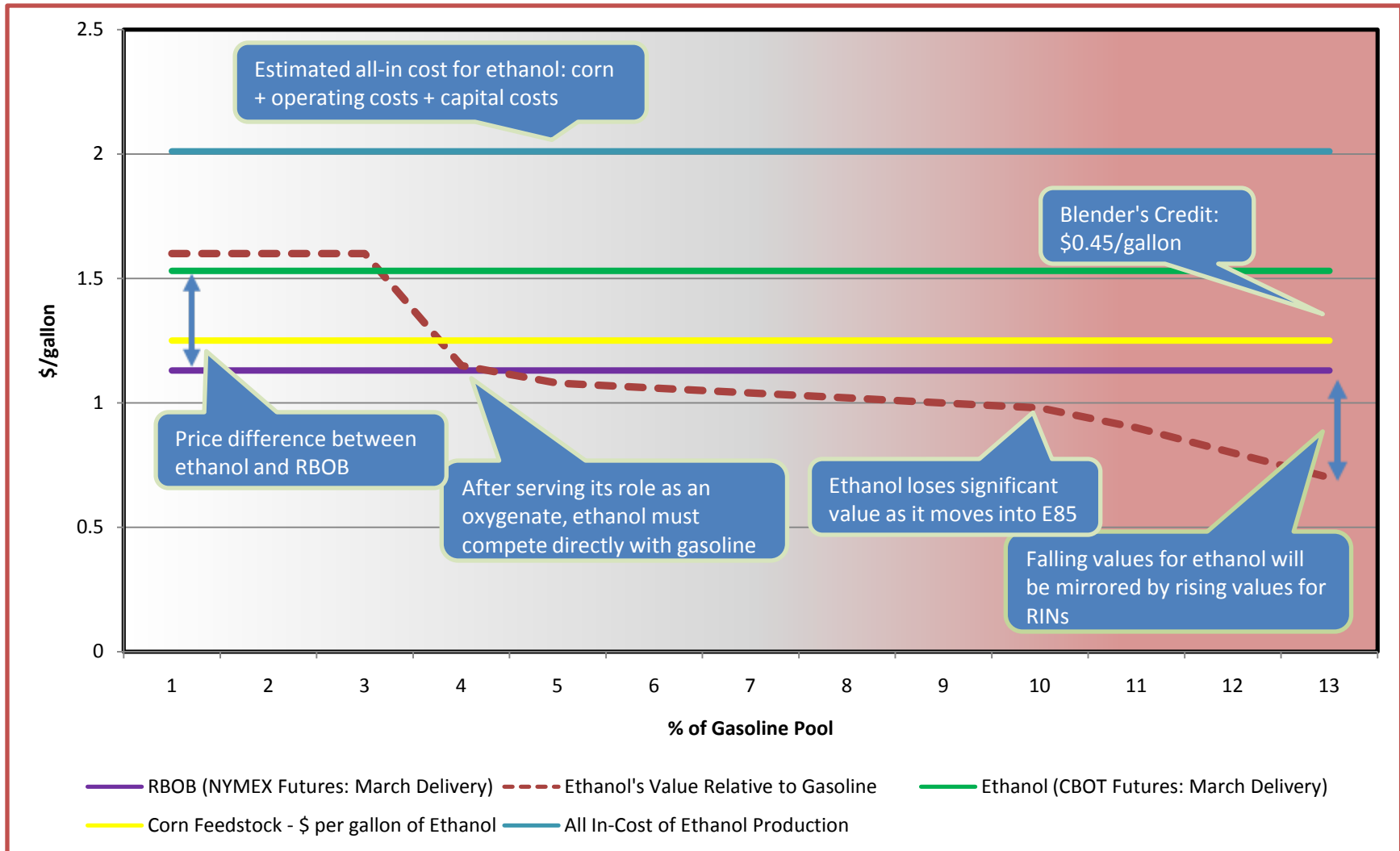
# Extra Slides for Questions and Answers

# FFVs and E85 Usage

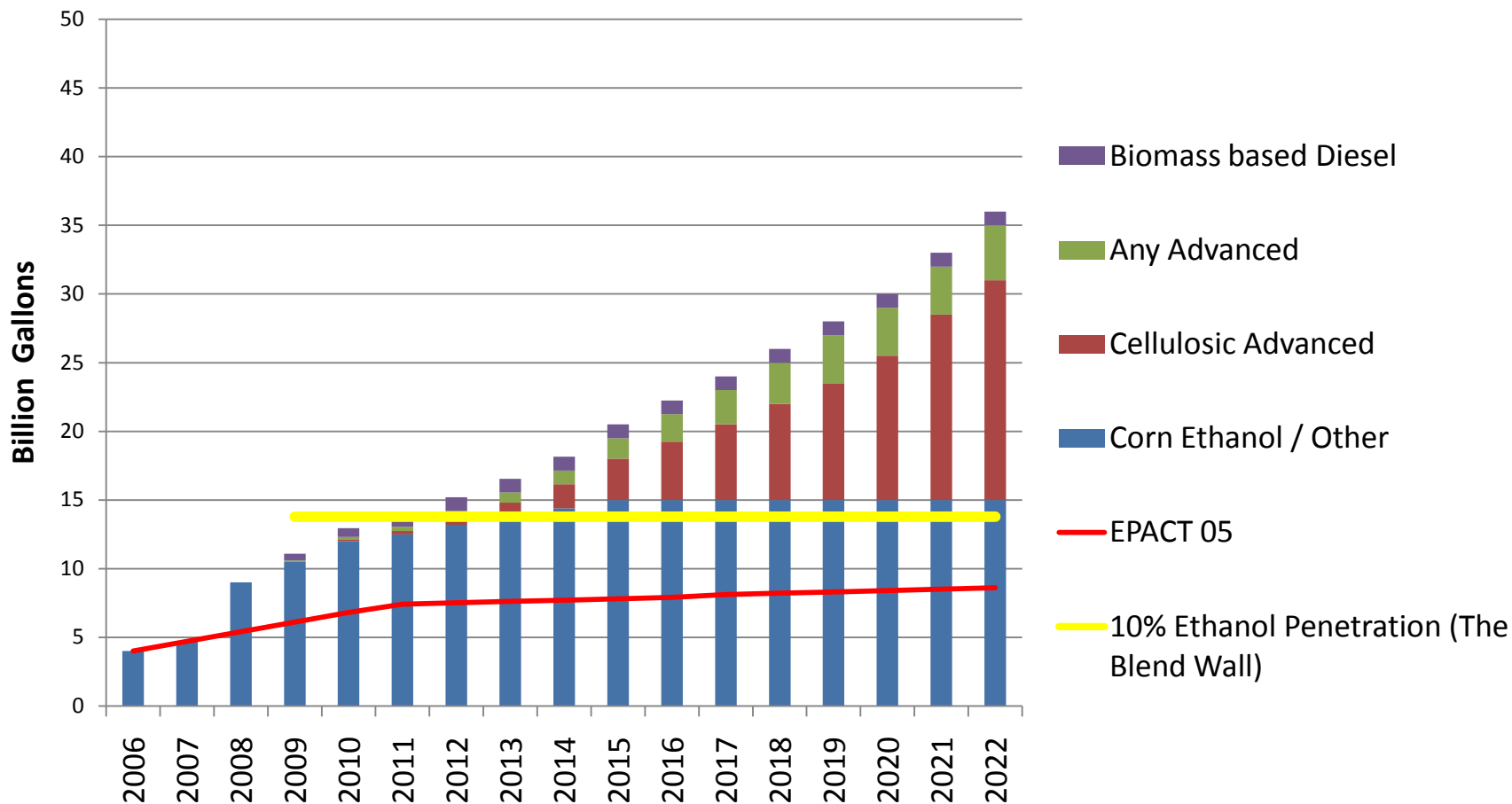


Source: EIA Data, DOE Data, EPRINC Calculations

# The Blend Wall in a low RBOB World



# EISA '07 Renewable Fuels Standard



Source: DOE, EIA Data and June 2009 STEO. Blend wall assumes projected 2009 gasoline consumption found in the June 2009 EIA STEO.

# A Series of Unfortunate Events Leading to New Expectations

