

# How Might Higher Oil and Gas Taxes Affect U.S. Energy Security?

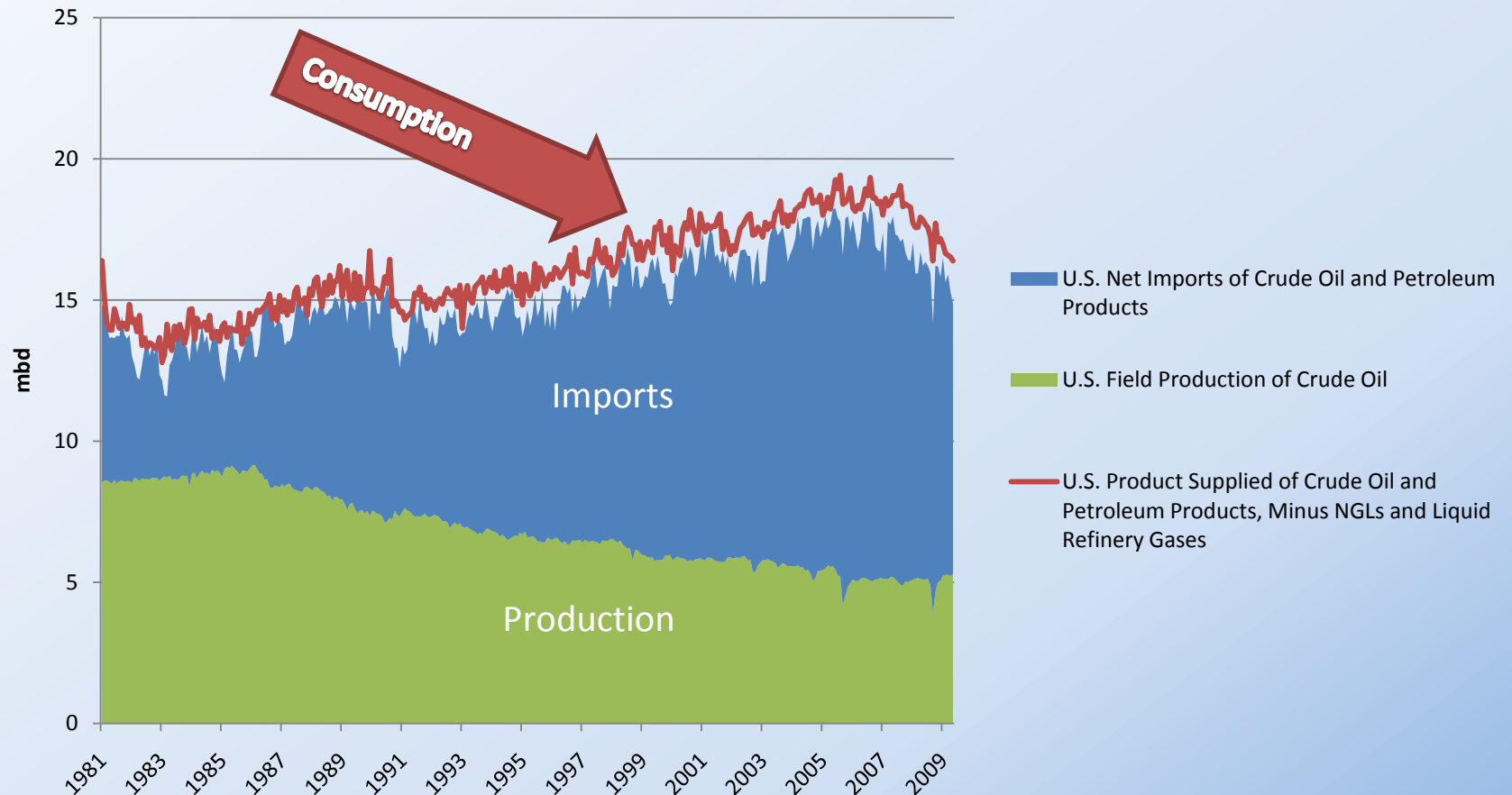
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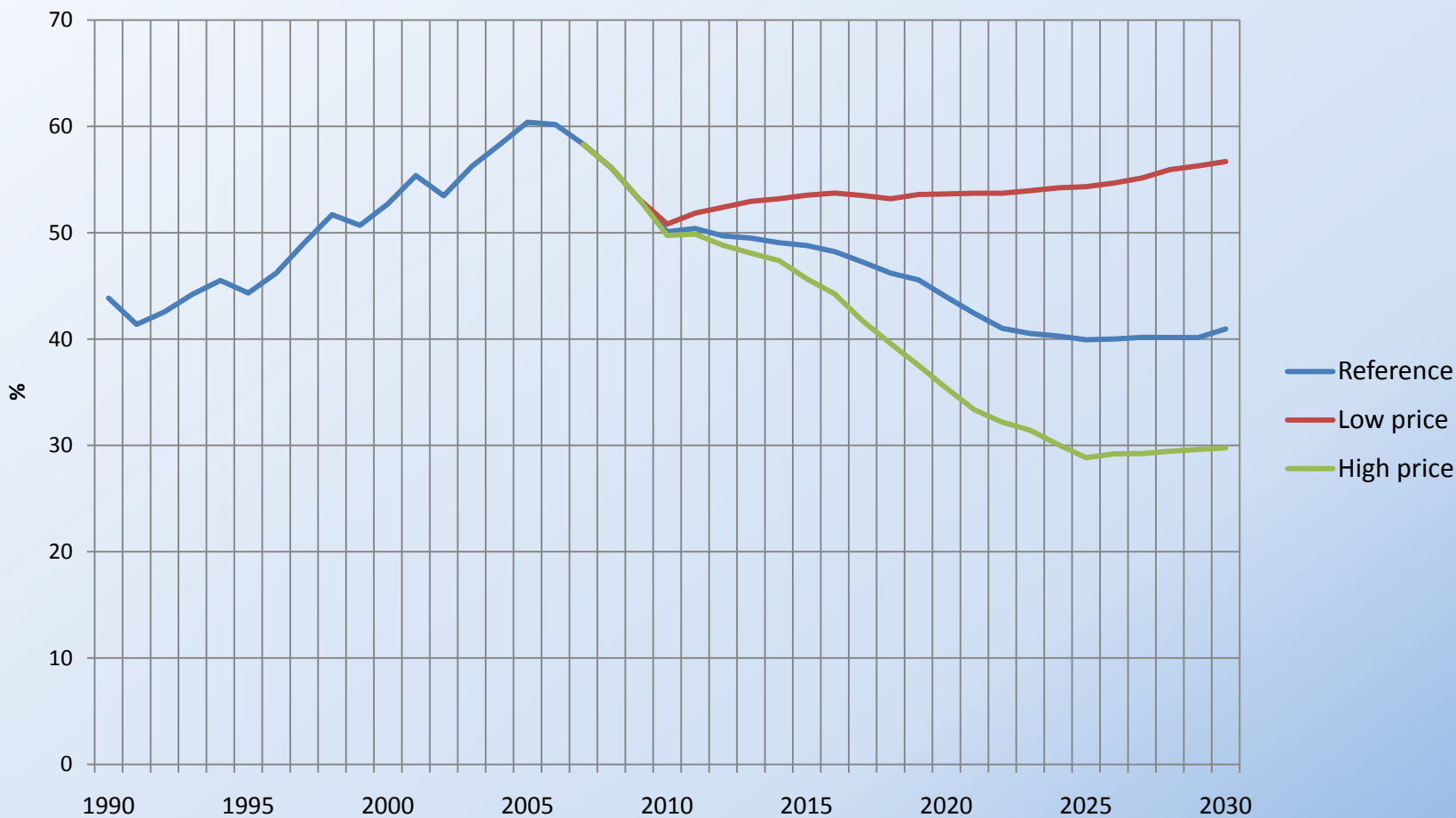
Workshop for Congressional Staff  
Assessing Policy Choices for the U.S. Oil and Gas Industry  
Rayburn House Office Bldg, B-339  
September 28, 2009

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



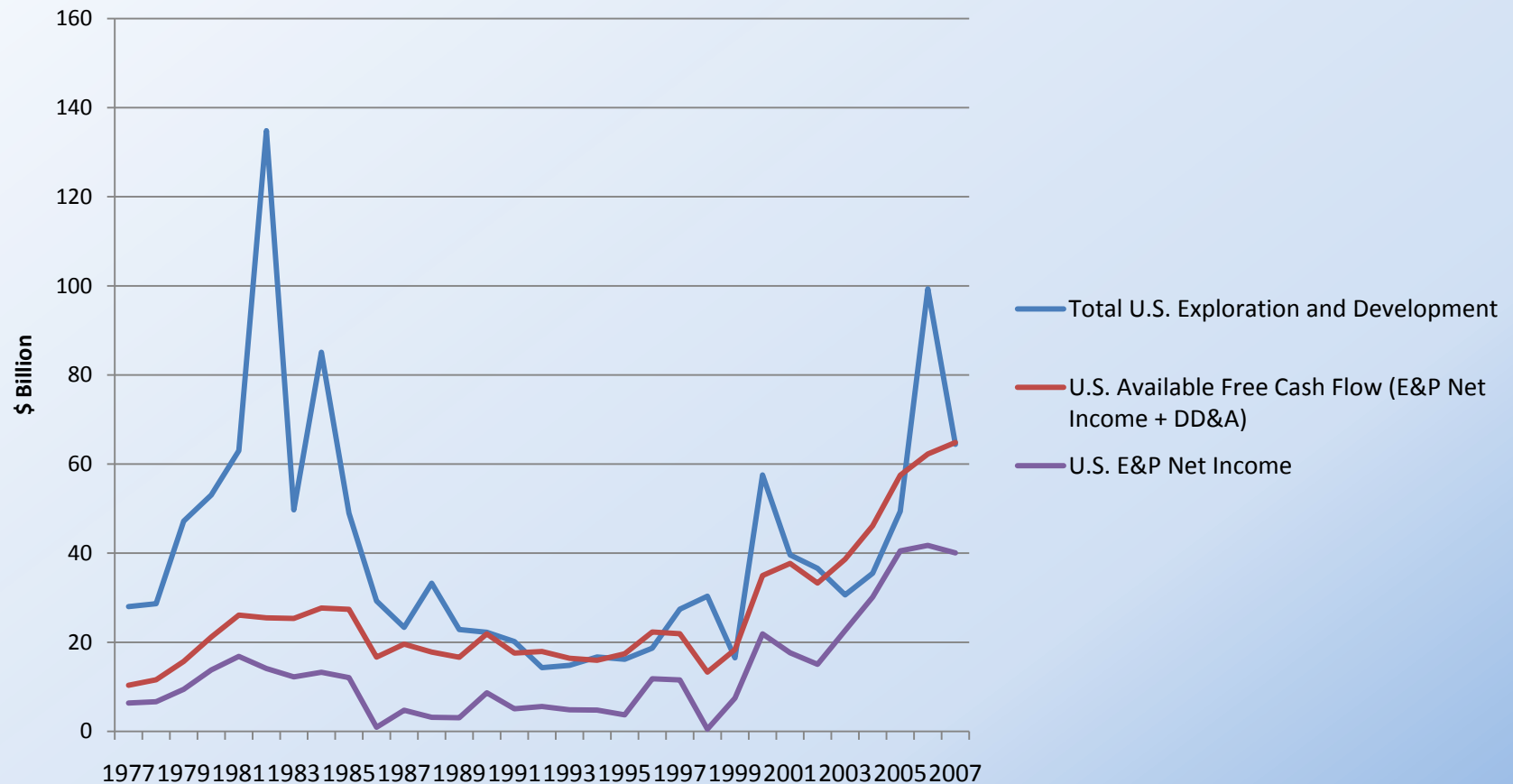
Source : EIA Data, EPRINC Calculation. NGLs are not included in any of these data sets.

# Net Import Share of U.S. Liquid Fuels Consumption in Three Cases



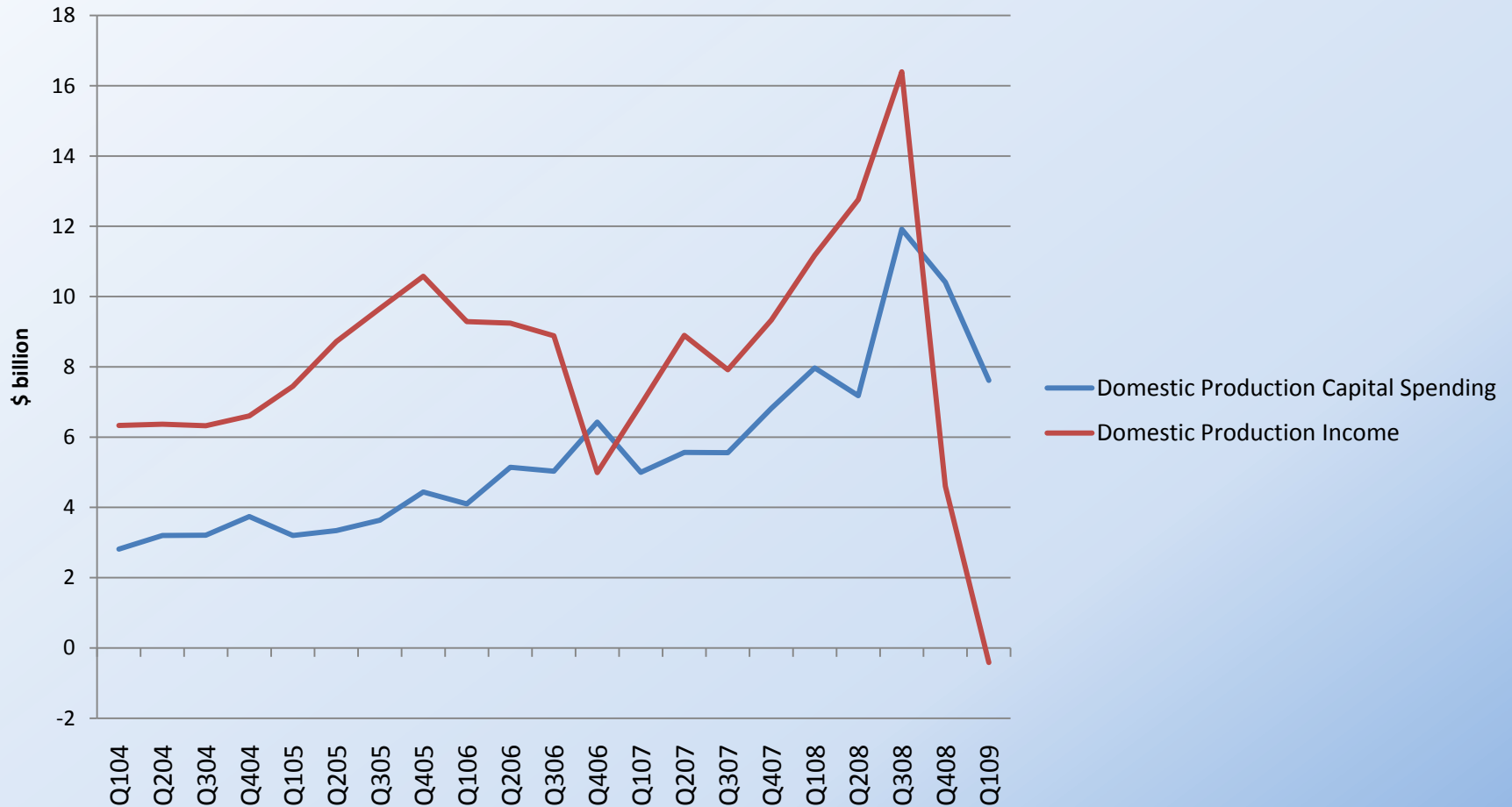
Source: EIA 2009 Annual Energy Outlook.

# Free Cash Flow and E&D Spending for FRS Companies (after tax)



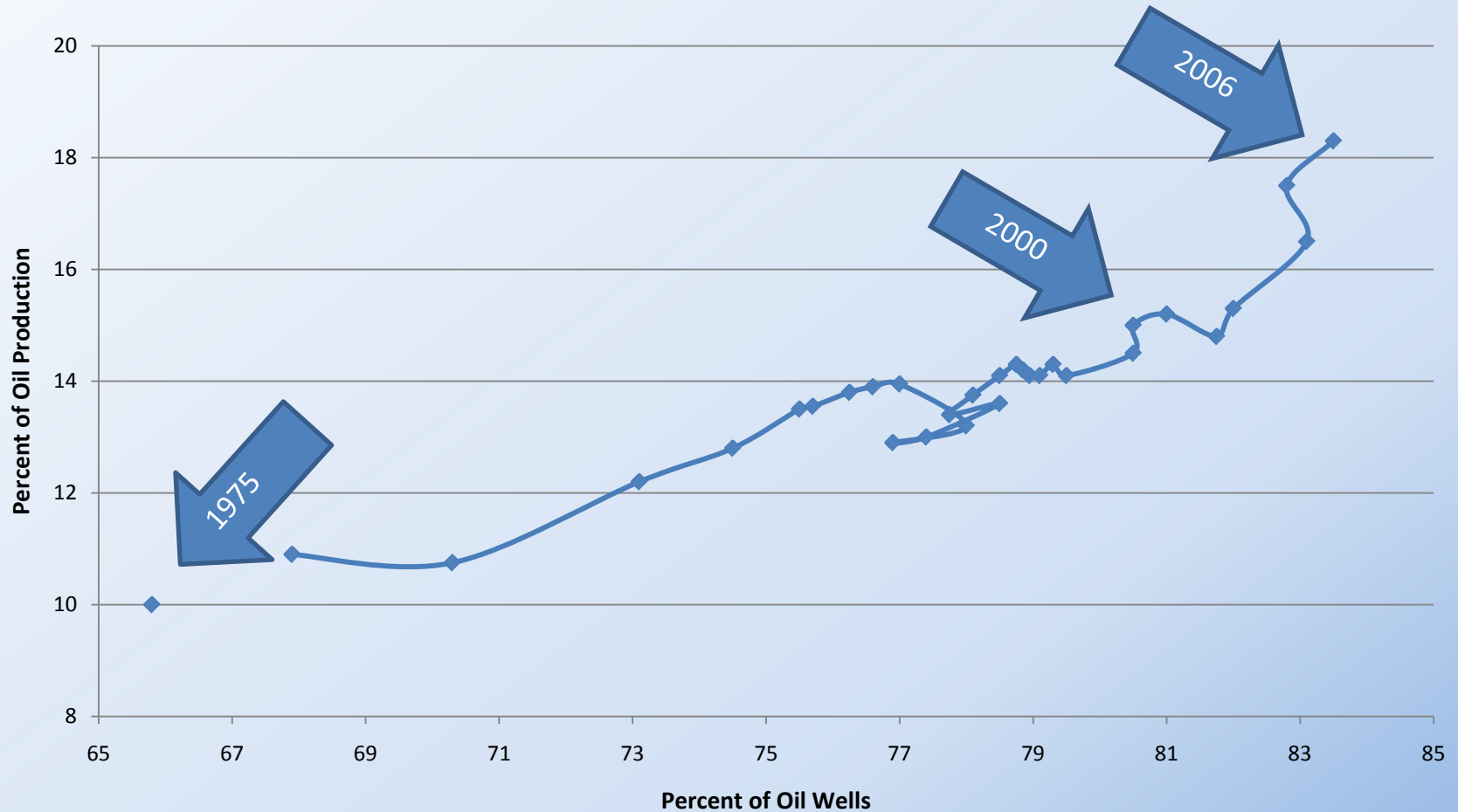
Source: EIA Data, EPRINC Calculations

## Domestic Oil and Gas Production Income and Capital Spending for Recent Quarters (pre-tax)



Source: EIA Data

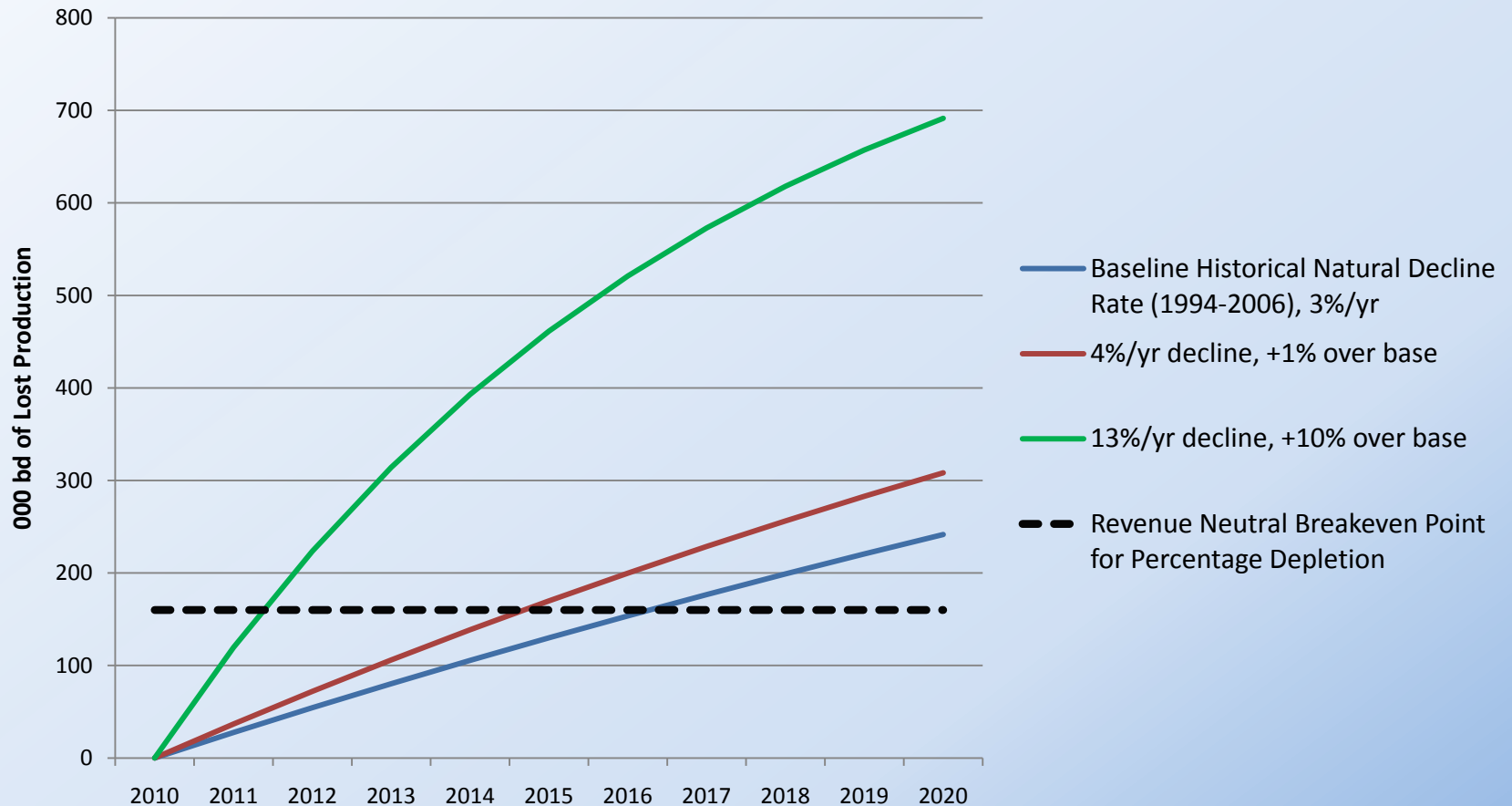
# Stripper Well Production



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)

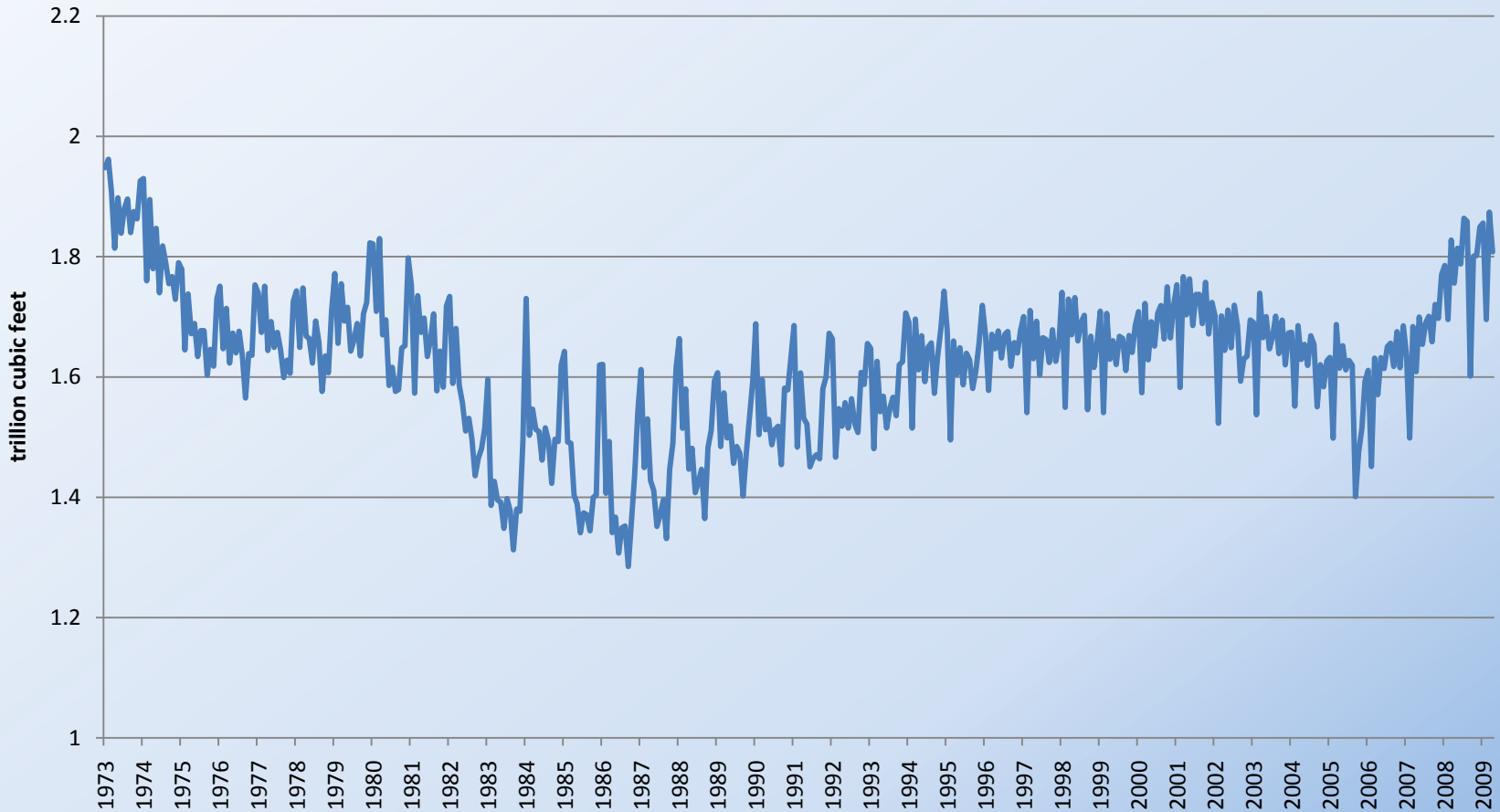
## Lost Production Breakeven Points for Repeal of Percentage Depletion

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



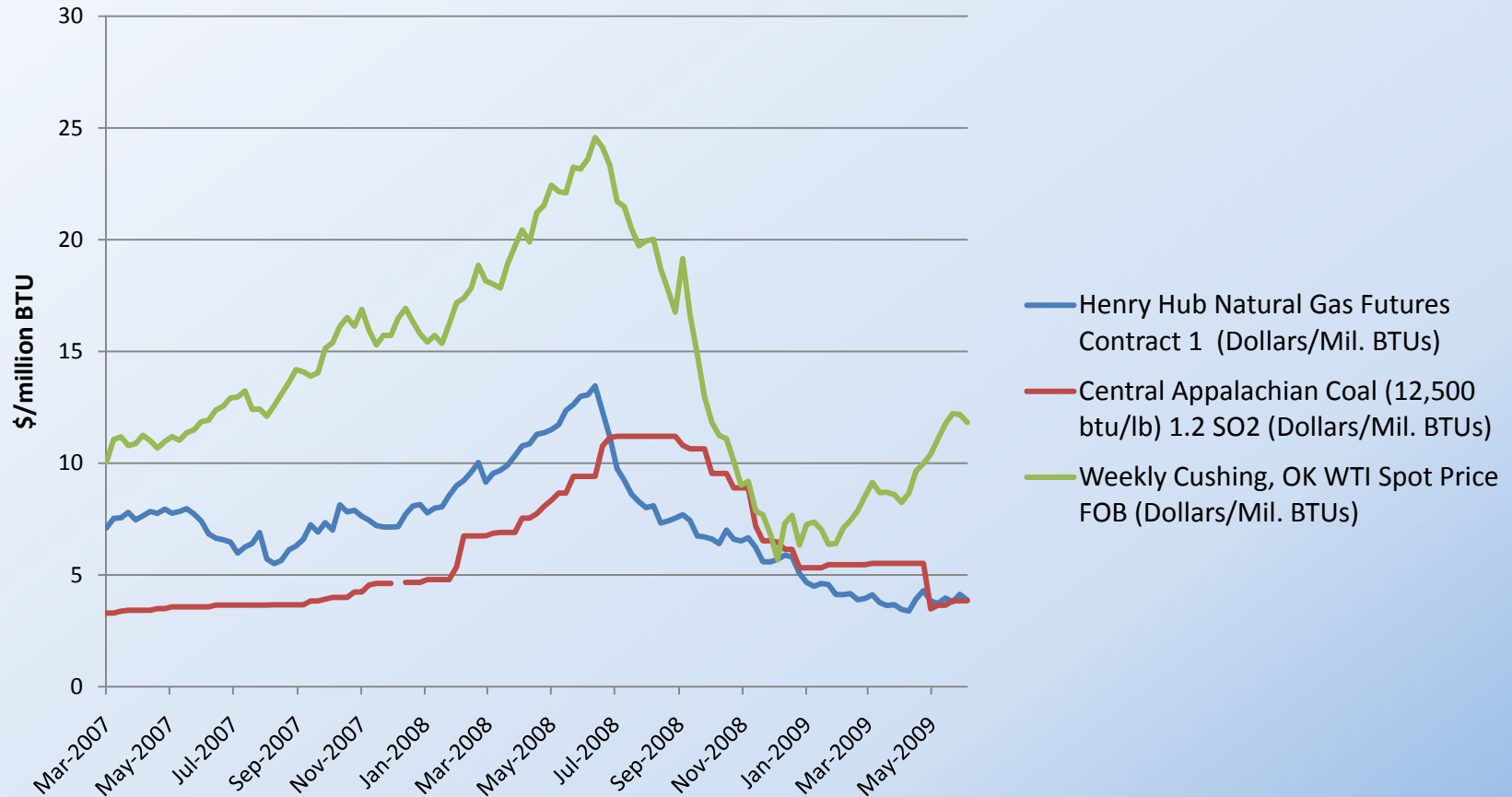
Source: Source: EPRINC calculations. Marginal oil wells tend to decline at about 3 percent per year. The loss in the depletion allowance will likely increase this rate of decline to anywhere from 4 to 13 percent per year. Natural gas production, which has experienced very low prices as gas values, at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

# Marketed Monthly U.S. Natural Gas Production



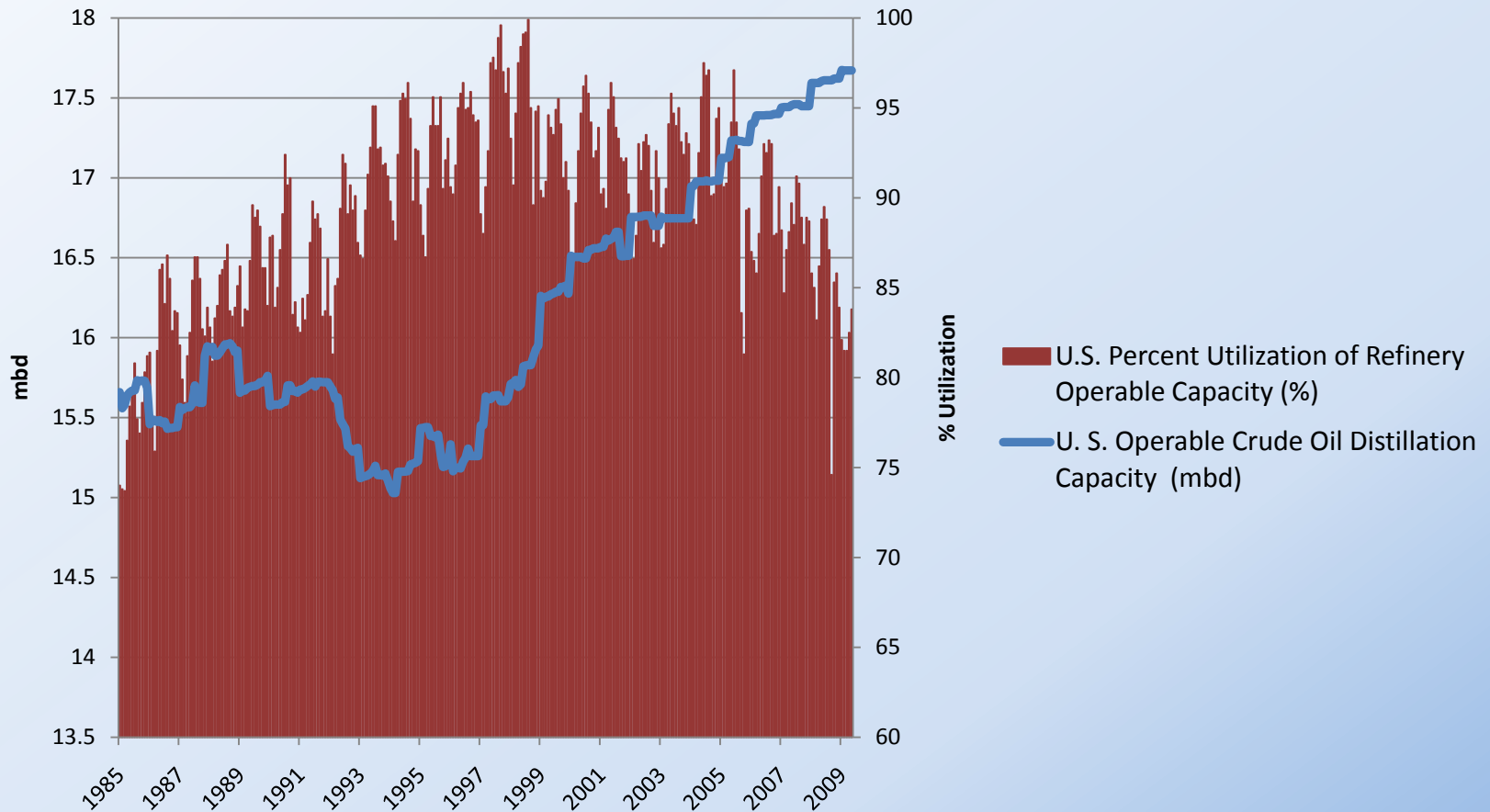
Source: DOE

# Recent Trends in Coal, Oil, and Natural Gas Prices



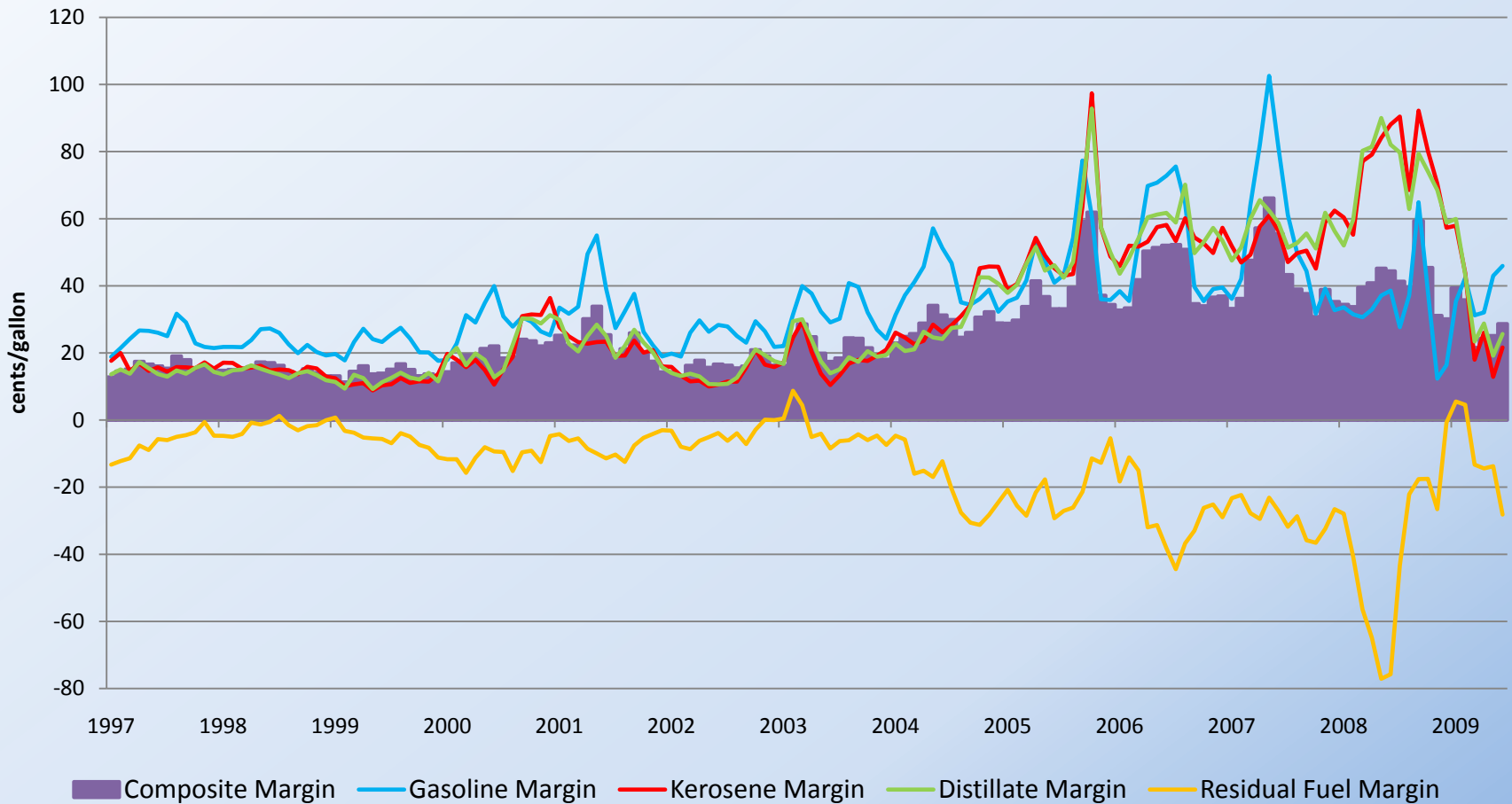
Source: EIA Data, EPRINC Calculation

# U.S. Refinery Operable Capacity and Utilization Rates



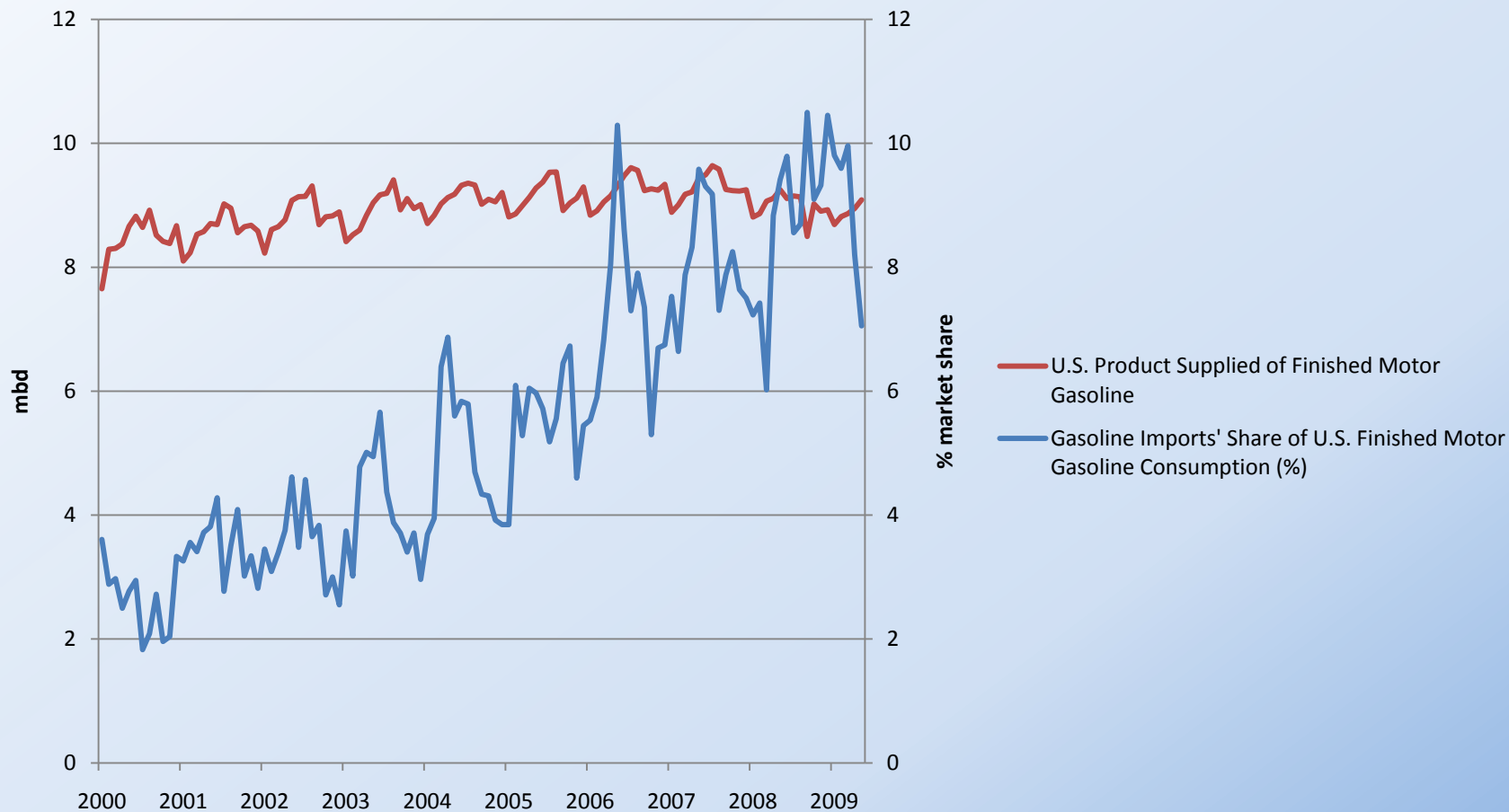
Source: EIA Data, EPRINC Calculations

# U.S. Refiner Margins



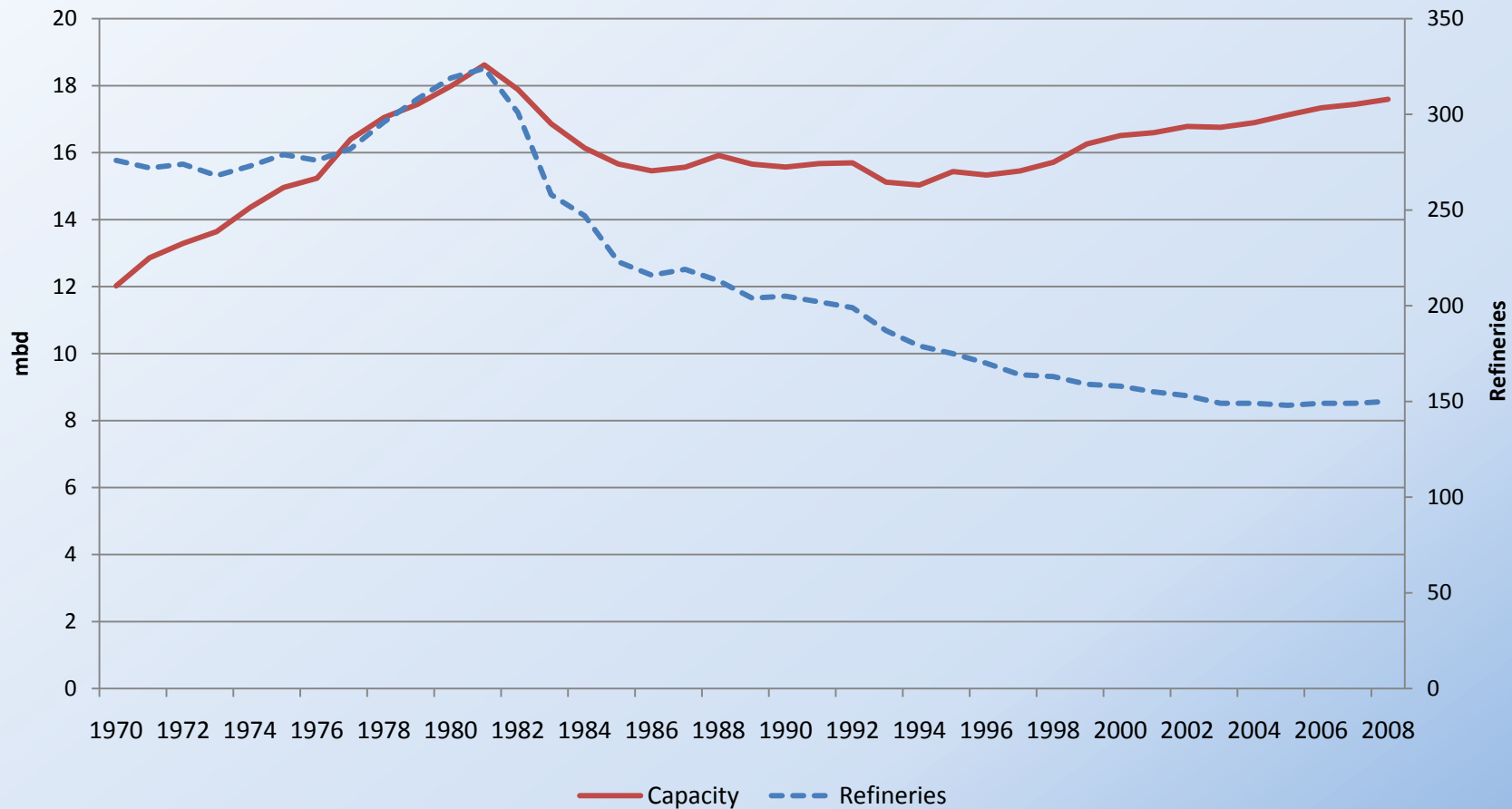
Source: EIA Data, EPRINC Calculations

# U.S. Gasoline Consumption and Imports' Market Share Since 2000



Source: EIA Data, EPRINC Calculations

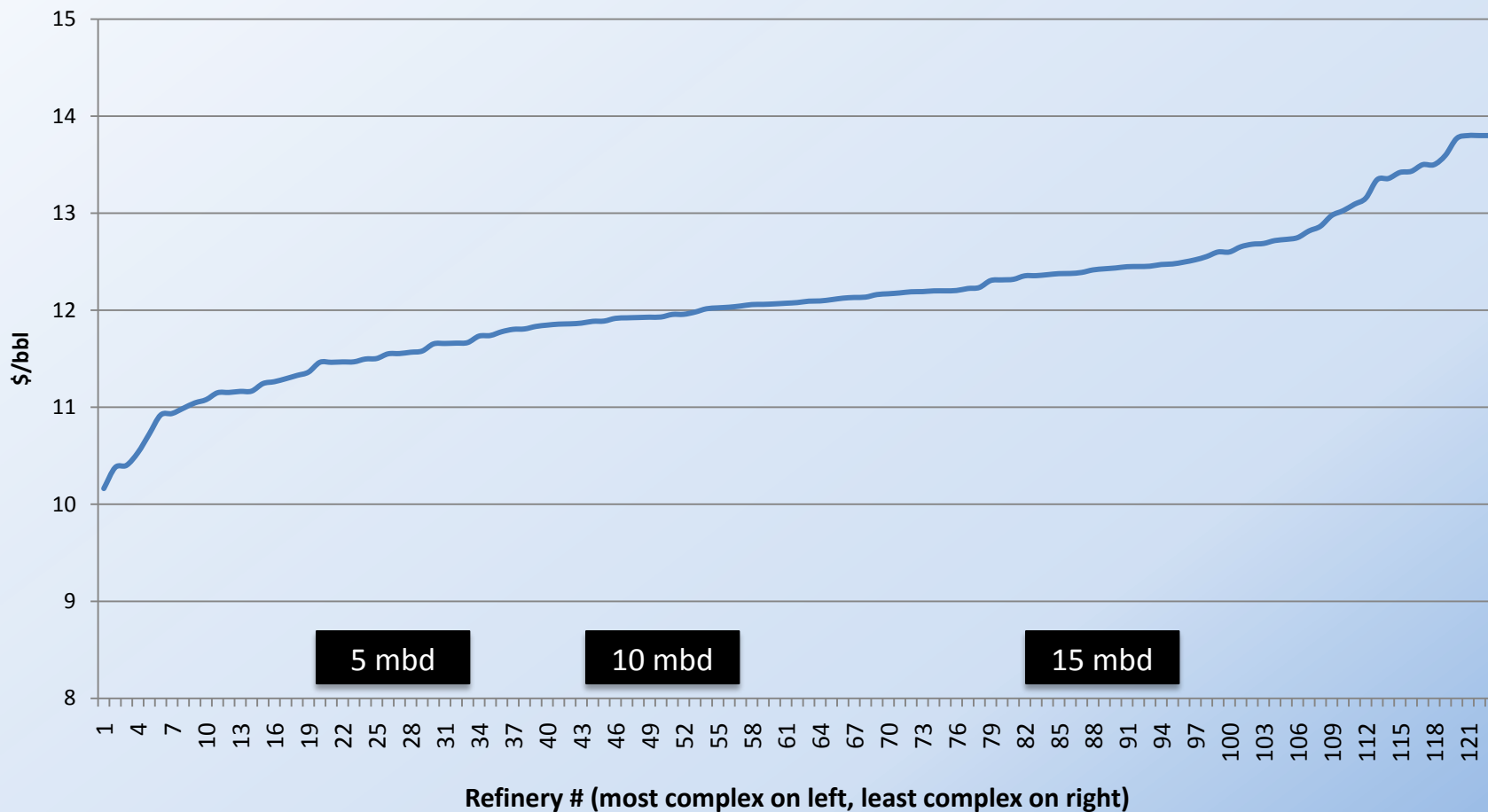
## # of U.S. Refiners and Refining Capacity



Source: EIA Data, EPRINC Calculations

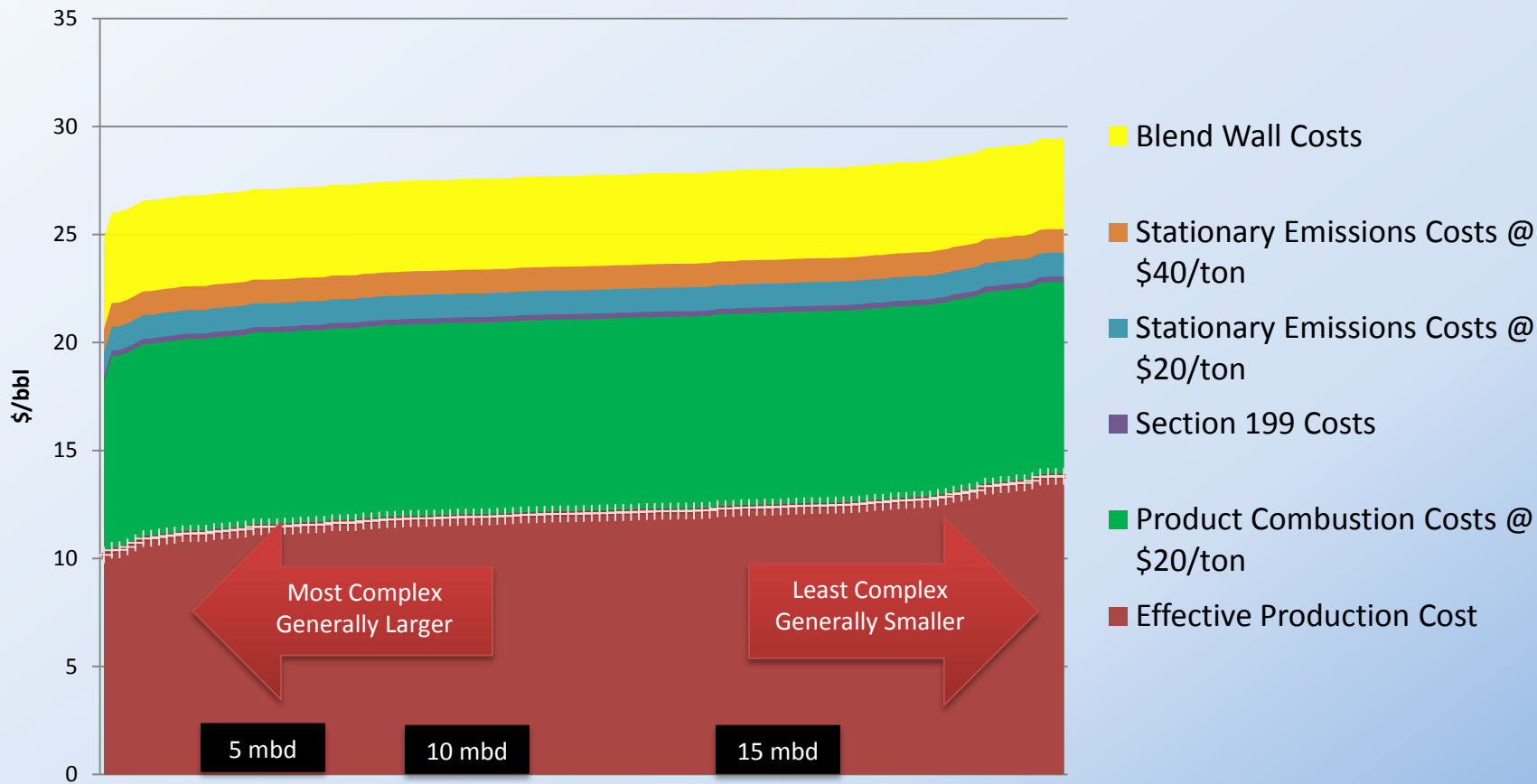
# U.S. Refiners' Effective Cost of Production

(i.e., adjusted for value of product slate)



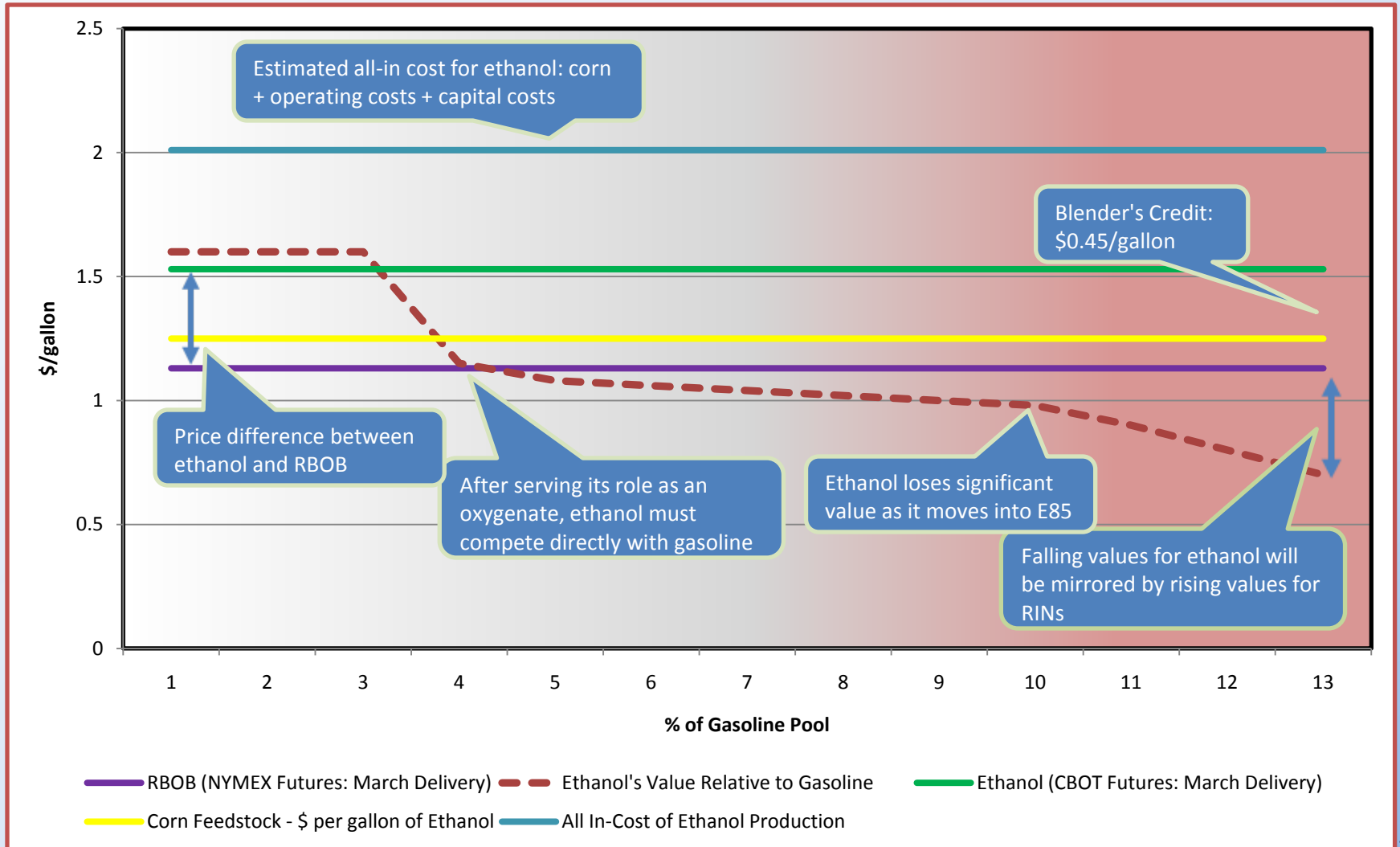
Source: EIA Data, EPRINC Calculations

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



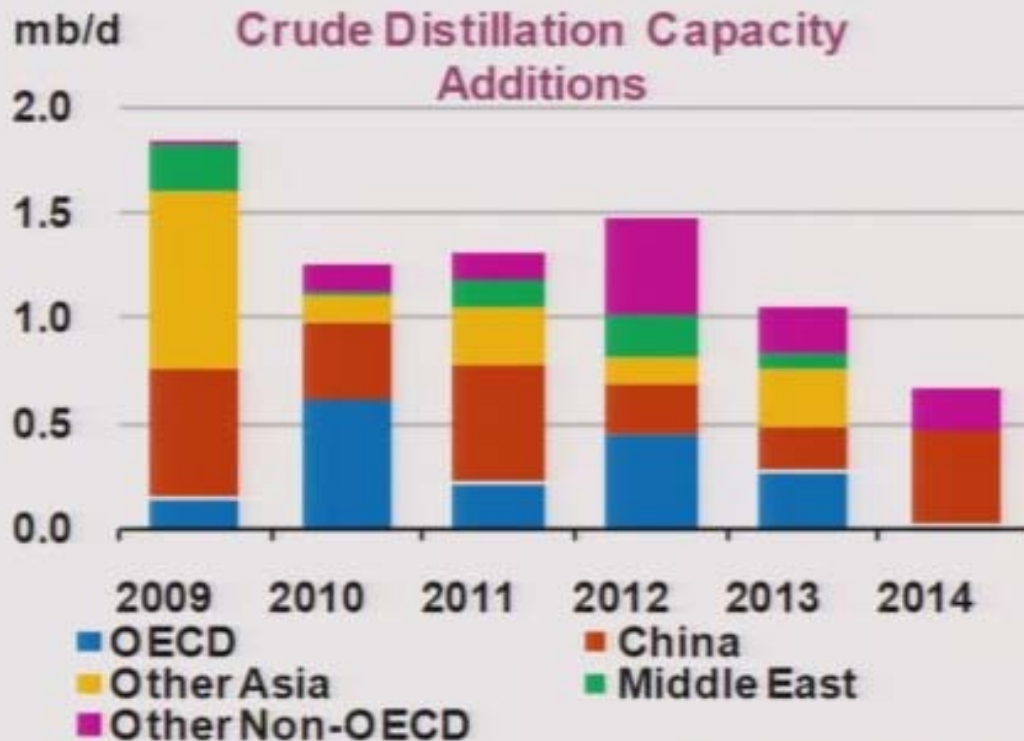
Source: EPRINC Calculations, EIA Data

# The Blend Wall in a low RBOB World



# IEA Forecast: Global Refining Capacity

## Capacity additions +7.6mb/d



This forecast does not include 3 new projects in Saudi Arabia, which now appear to be going forward and will add 0.8 – 1.2 mb/d by 2014 on top of this forecast

# Large Projects in Asia and the Middle East

		Net Addition to Capacity (thousand bd)
India - Jamnagar Export Refinery	2009	580
China - already becoming a net refined products exporter, plans to increase capacity from 8.8 mbd in 2008 to 14.4 in 2014.	2014	5,600
Saudi Arabia - Ras Tanura	2012	400
Saudi Arabia - Jubail	2013	400
Saudi Arabia - Yanbu Export Refinery	2014	400
Abu Dhabi - Ruwais	2014	400
<b>Total:</b>		<b>7,780</b>

- These refineries will likely operate in an environment without carbon costs and with lower environmental regulation
- Saudi refineries will reduce supply of crude oil available to non-Saudi refineries

**Energy Subsidies Not Related to Electricity Production, 2007**

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

## European Emission Trading System (EU ETS)

- A cap-and-trade system similar to that proposed in ACES
  - Participating countries are allocated a certain number of allowances which are then distributed at that country's discretion.
- European Refiners yet to feel a significant impact:
  - Product emissions are handled at the consumption end (in the form of high gasoline and diesel taxes at the pump)
  - Refiners have been allocated enough carbon credits to cover most of or all of their stationary emissions
  - ETS' overall cap remains loose

## EU ETS and Carbon Leak

- As the cap tightens, refiners will receive some relief as they have met the “Carbon Leak” criteria.
- Carbon Leak is a mechanism built into the ETS to prevent emissions from “leaking” overseas in competitive, carbon intensive industries.
  - Goal is to prevent loss of domestic market share in situations where emissions will simply move abroad.
  - If emissions outside of the EU increase as a result of decreased emissions from within the EU (due to ETS), this is considered carbon leakage. Affected industries may be eligible for additional allowances.
    - The EU has recognized refiners’ vulnerability to foreign competition and refiners will be under consideration for additional allowances in the future.

# Conclusions

- Taxation that reduces US upstream production will show up in higher imports.
- Approx. 20% of US crude output is very high cost and at risk.
- Taxation can alter efficient output decisions – more effective to take the tax revenue up front. High returns to US from stable expectations on contract and tax regimes.
- Refining is a manufacturing process and subject to highly competitive international market– ROI lower for refining than other industries. Market share and capacity stability at risk -- taxes and other cost additions will reduce market share of US producers.