Biofuel Implications for Agriculture and the Environment

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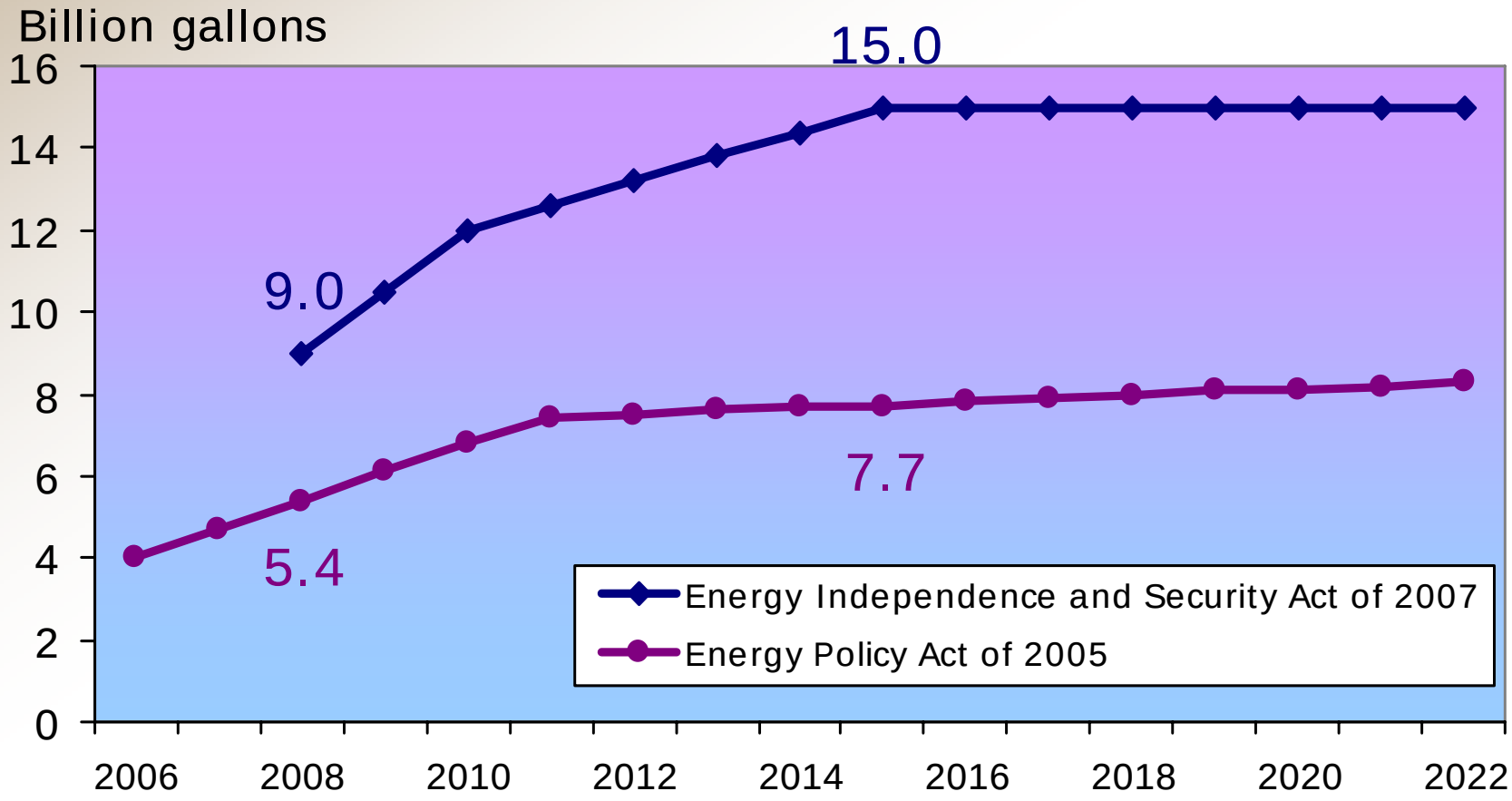
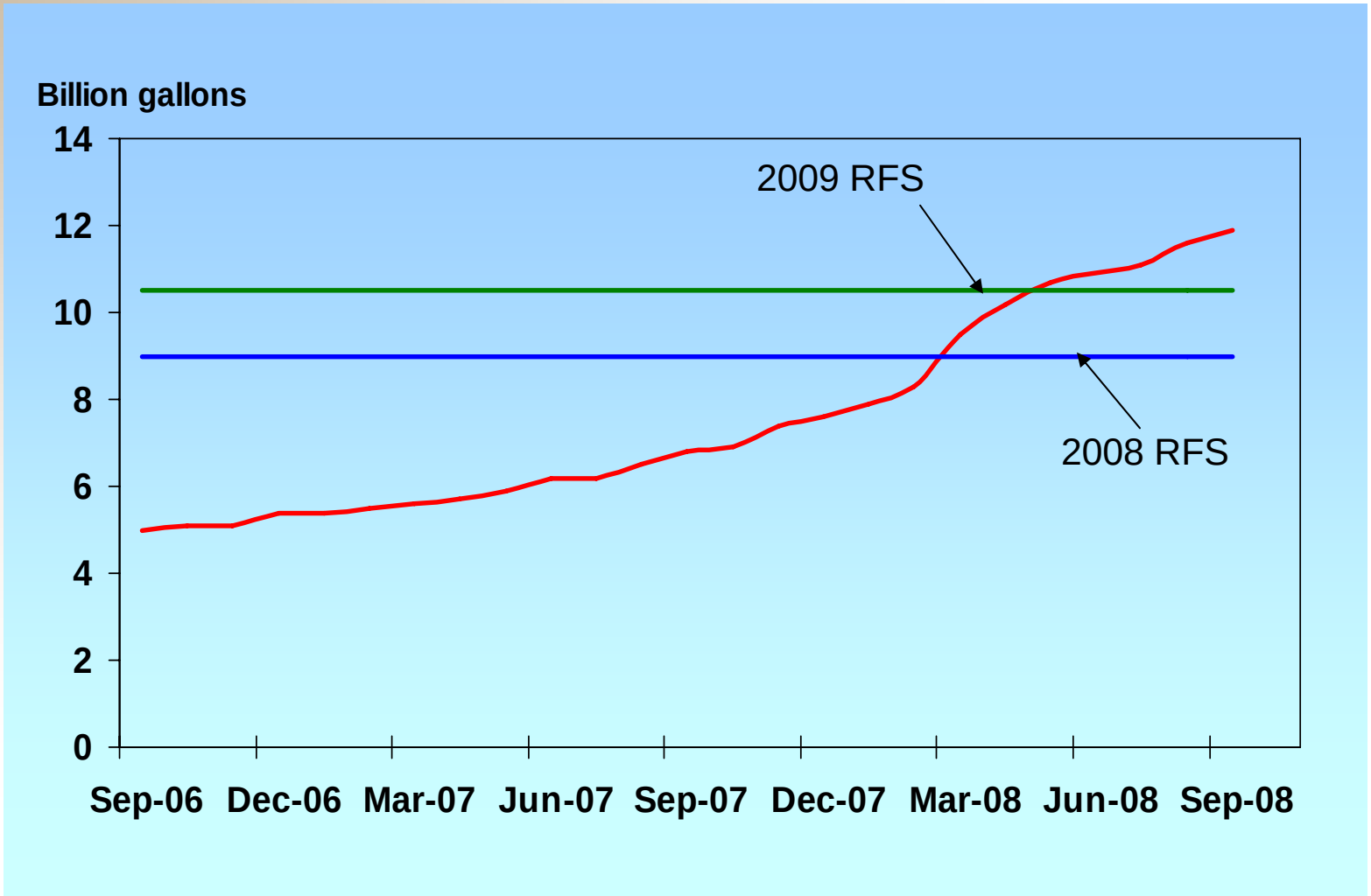
Renewable Fuel Standards (RFS)

Corn starch based ethanol, 2006 through 2022

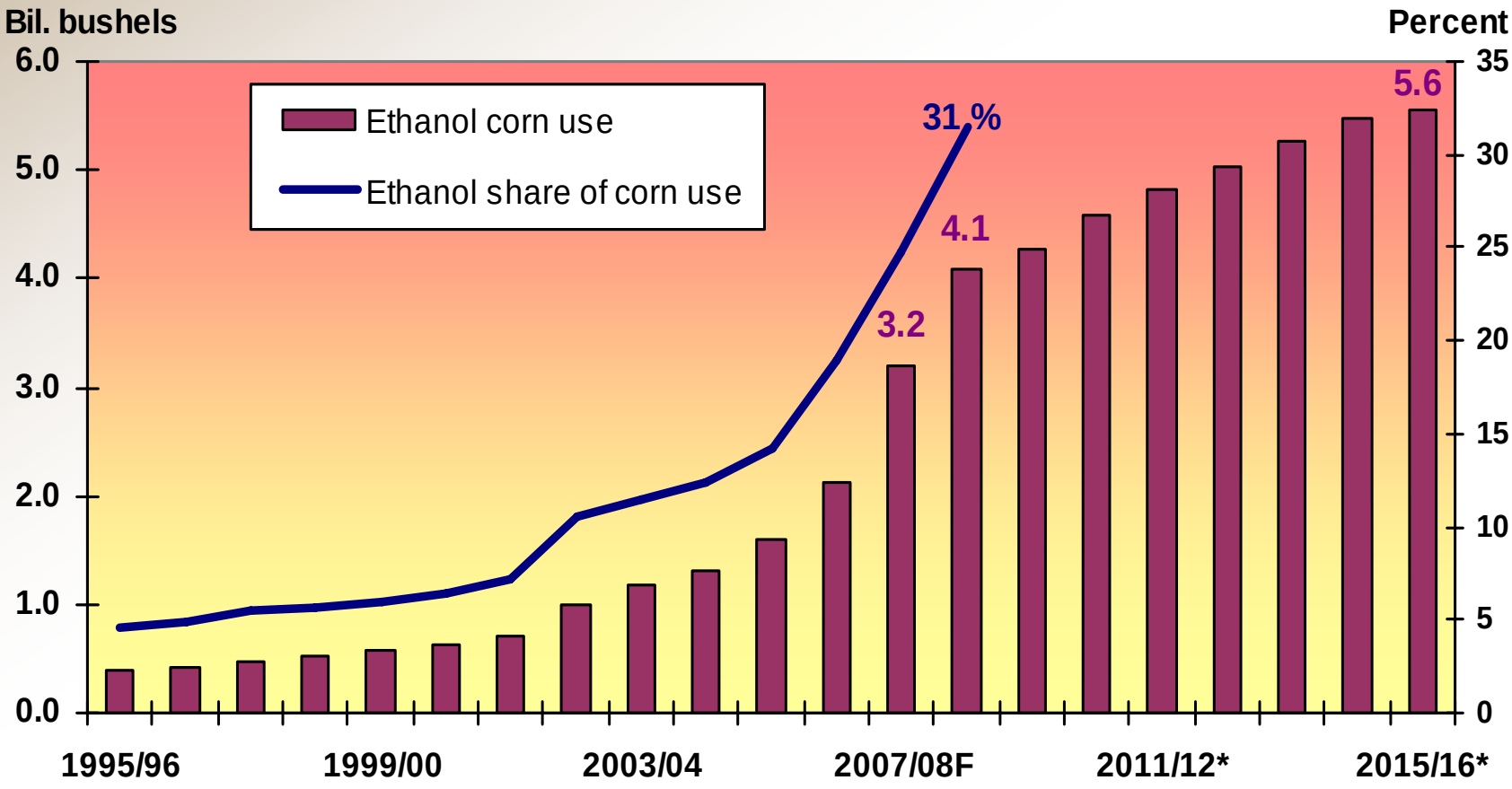


Expansion of U.S. Ethanol Production Capacity Well Ahead of 2007 RFS Requirements

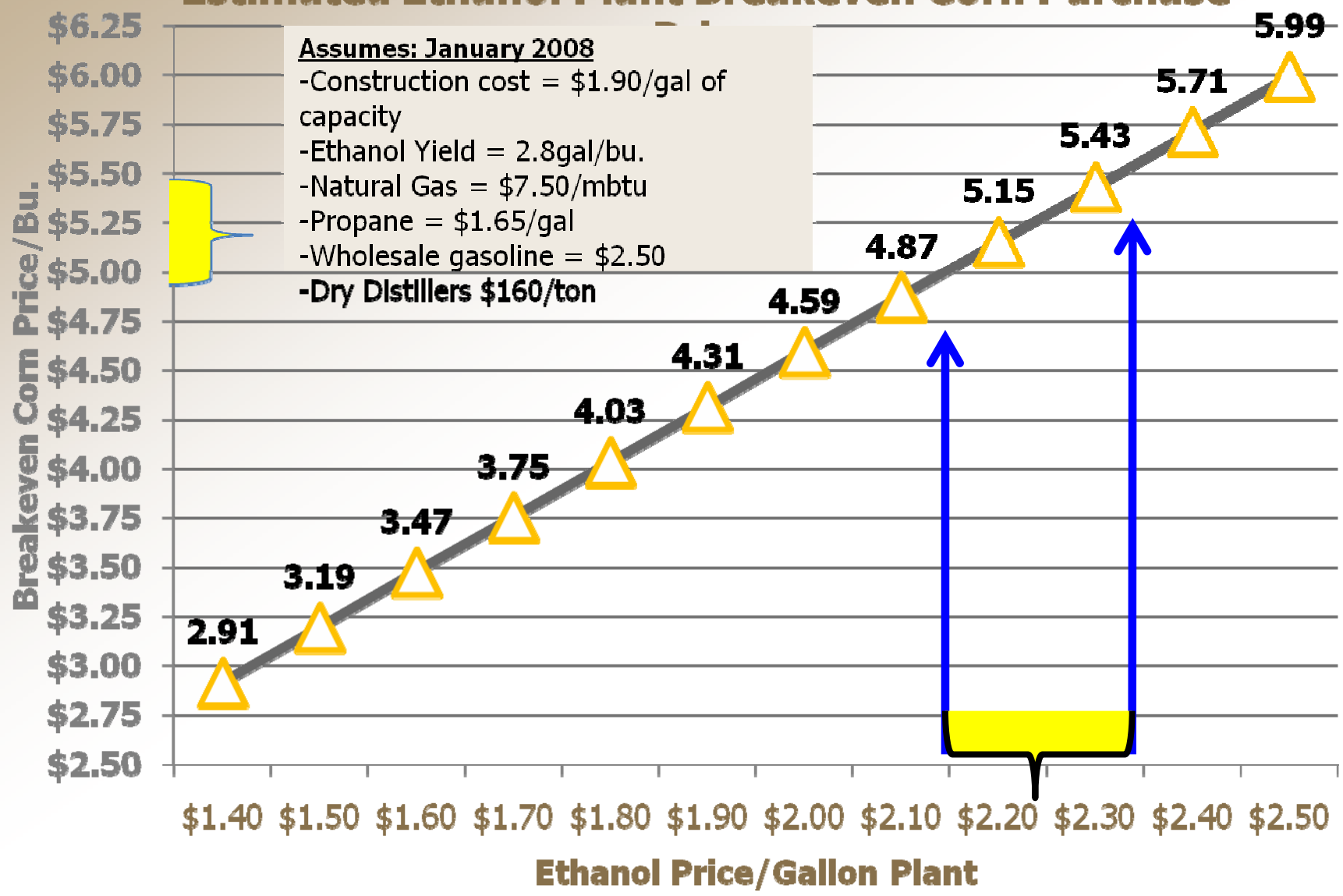


U.S. Corn Used for Ethanol

1995/96 through 2015/16*



Estimated Ethanol Plant Breakeven Corn Purchase

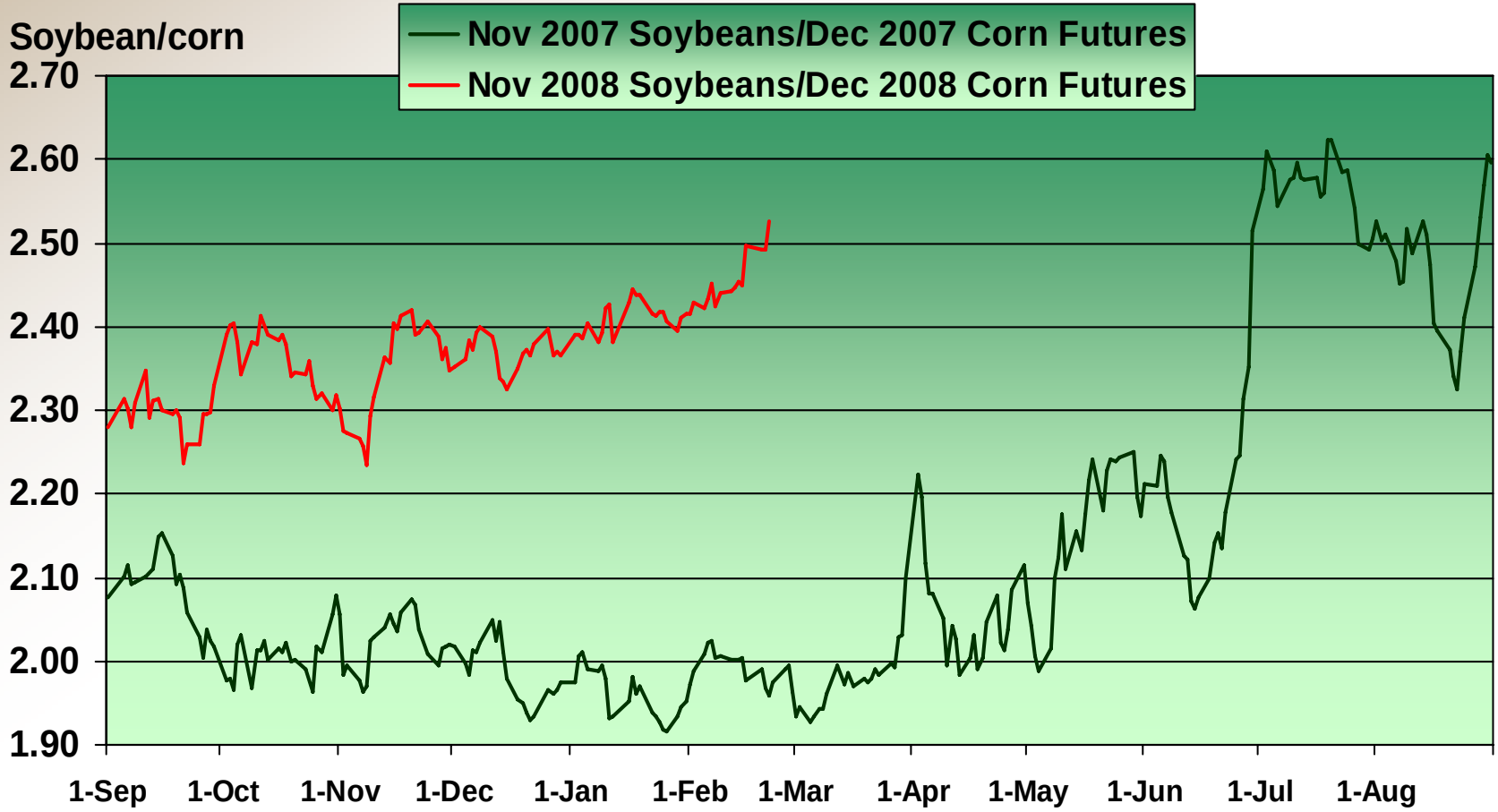


Major Crop and CRP Acreage
(USDA Outlook Forum – Feb. 2008)

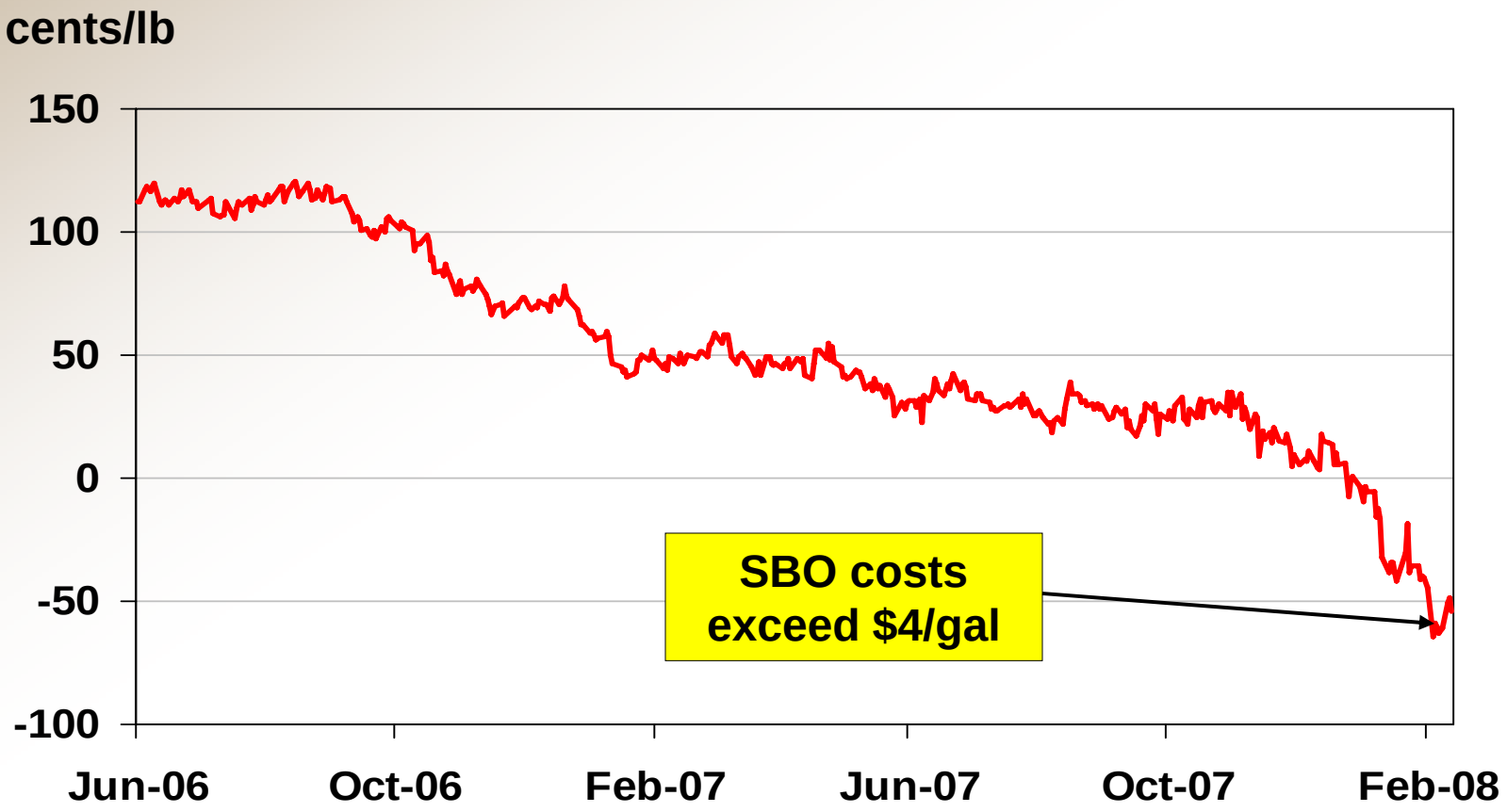
	2007/08	2008/09	Change
	Million acres		
Corn	93.6	90.0	-3.6
Soybeans	63.6	71.0	+7.4
Wheat	60.4	64.0	+3.6
All Cotton	10.8	9.5	-1.3
Rice	2.76	2.70	-0.1
5-crop total	231.2	237.2	+6.0
CRP acres	36.8	34.8	-2.0

New-crop Soybean/Corn Price Ratios

2007-crop and 2008-crop to date



Biodiesel Margin

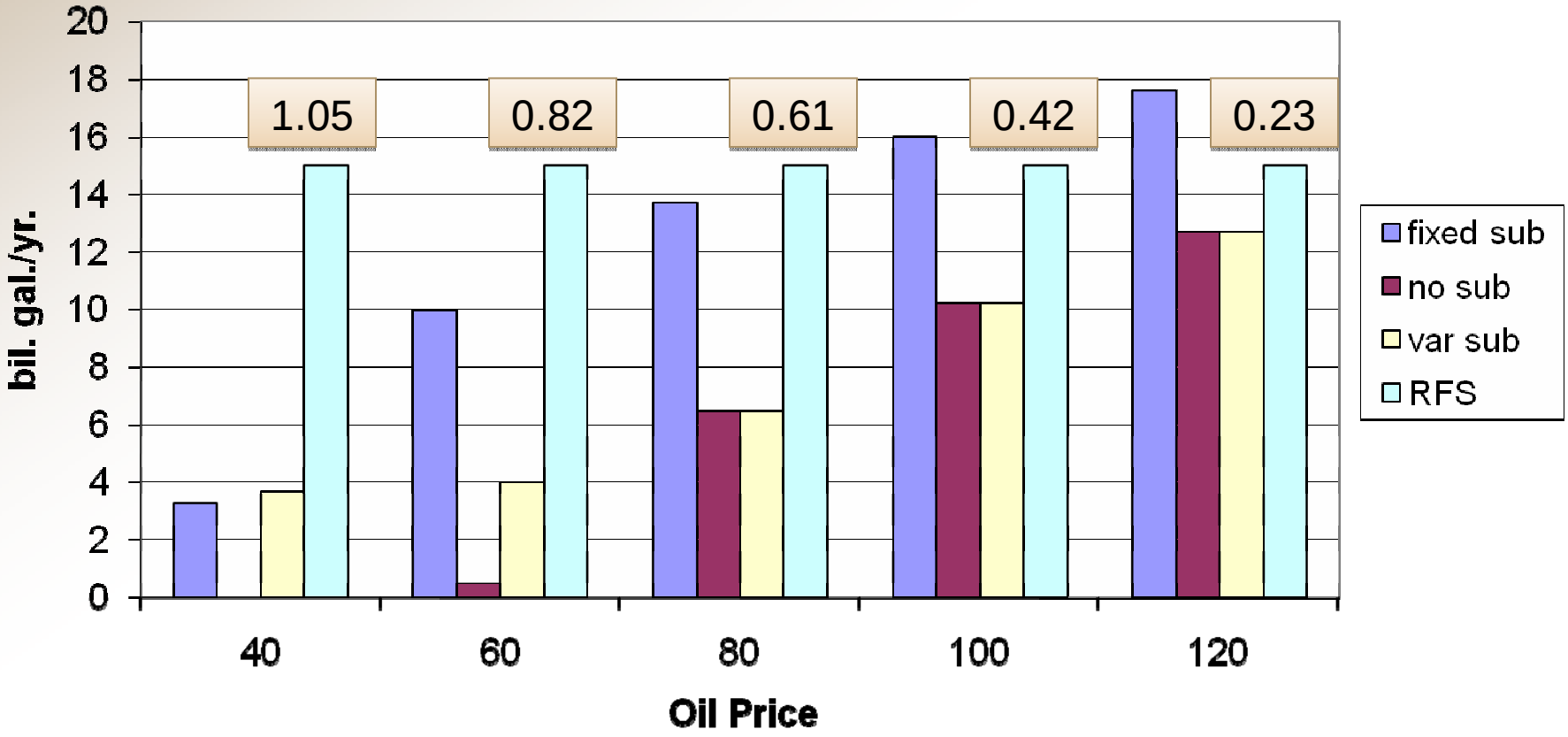


Agricultural and Energy Historic Price Correlations

Data Pair	Correlation Coefficient
Crude-gasoline	0.98
Crude-ethanol	0.88
Gasoline-ethanol	0.86
Ethanol-corn	0.25
Crude-corn	0.16
Crude-soybeans	0.13
Corn-soybeans	0.72

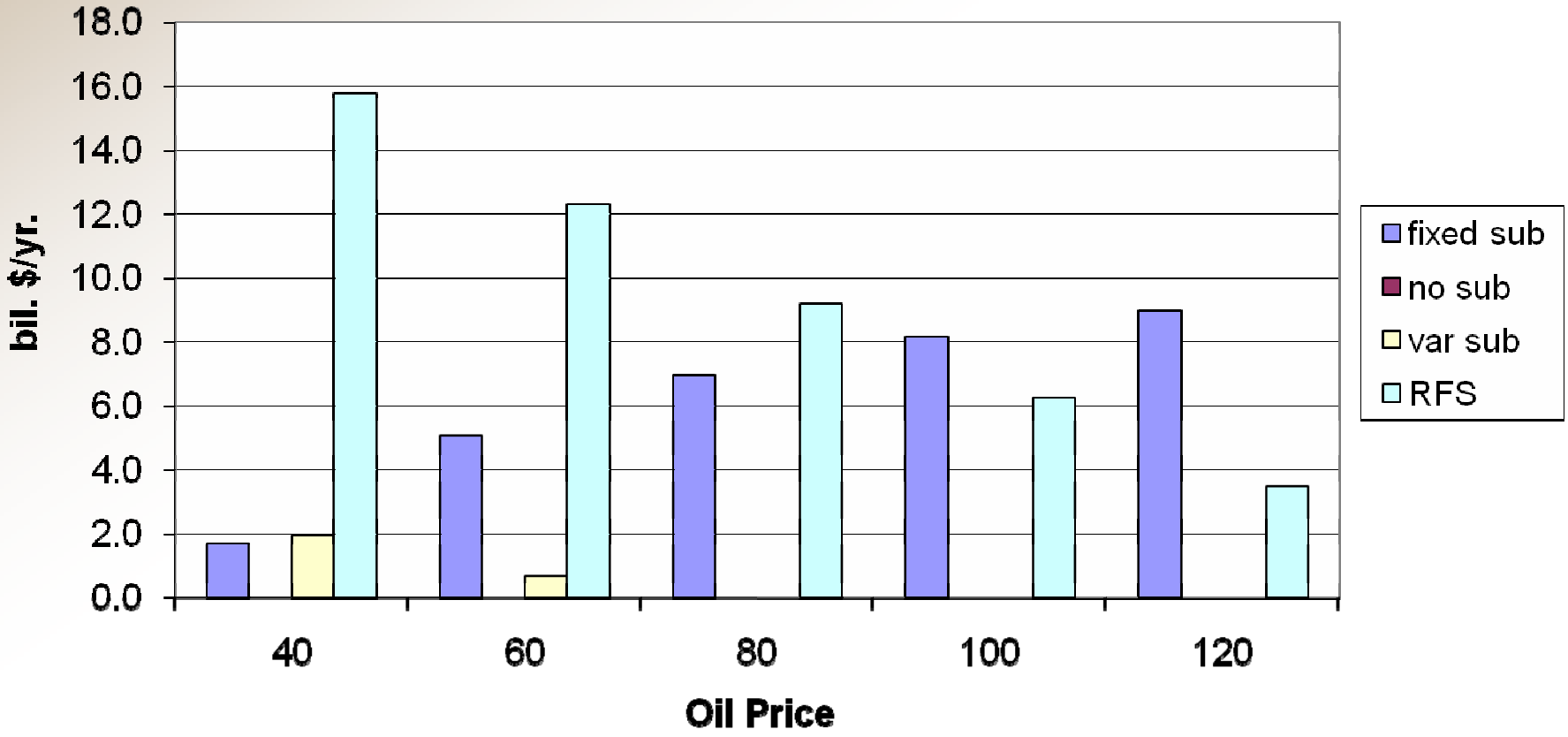
Ethanol Production

no demand shock



Policy Costs

no demand shock



Cost Competitiveness of Cellulosic Ethanol, Feb. 2007

	Corn Based	Cellulosic Today?-- *Illustrative*	Cellulosic 2010-12— *DOE target*
Feedstock	$1.17 @$3.22/bu 2.75g/bu	$1.00 @$60/dt 60g/dt	$0.33 @$30/dt 90g/dt
By-Product	-$0.38	-$0.10	-$0.09
Enzymes	$0.04	$0.40	$0.10
Other Costs**	$0.62	$0.80	$0.22
Capital Cost	$0.20	$0.55	$0.54
Total	$1.65	$2.65	$1.10

Biofeedstock Costs Including One –Way Transportation

Draft estimates not for attribution

Corn Stover		Switch Grass	
5 Miles	$35.64	5 Miles	$66.02
15 Miles	$36.09	15 Miles	$67.51
25 Miles	$38.34	25 Miles	$69.01
35 Miles	$39.84	35 Miles	$70.51
45 Miles	$41.34	45 Miles	$72.01

Water Quality Issues for Biofuels

- It Depends
- Location, Location, Location

CO_2 Issues

- Consistent standards
- Where one draws the envelope