Energy Markets Outlook

September 2009

GSC Energy

Ashmead Pringle – GSC Energy

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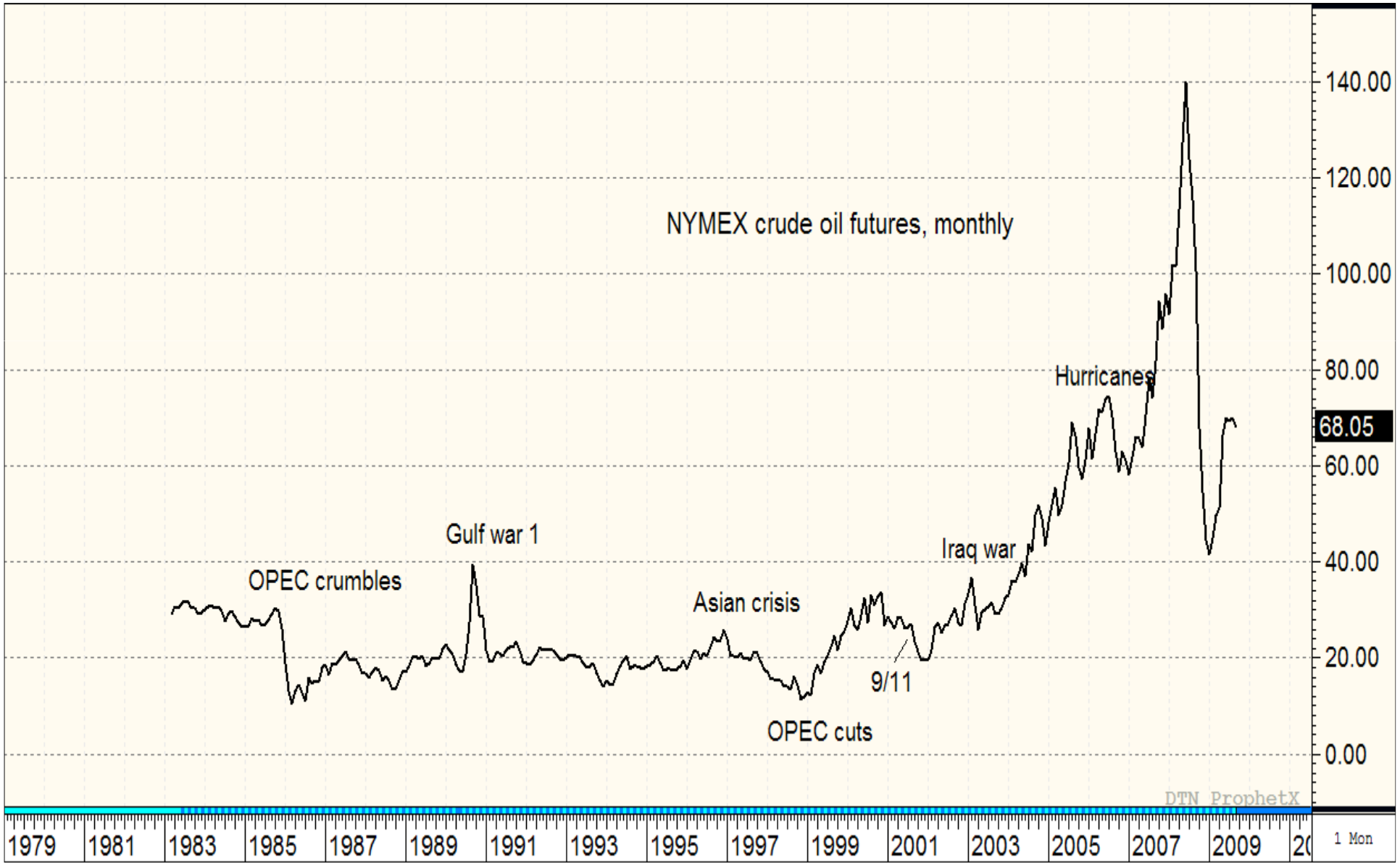
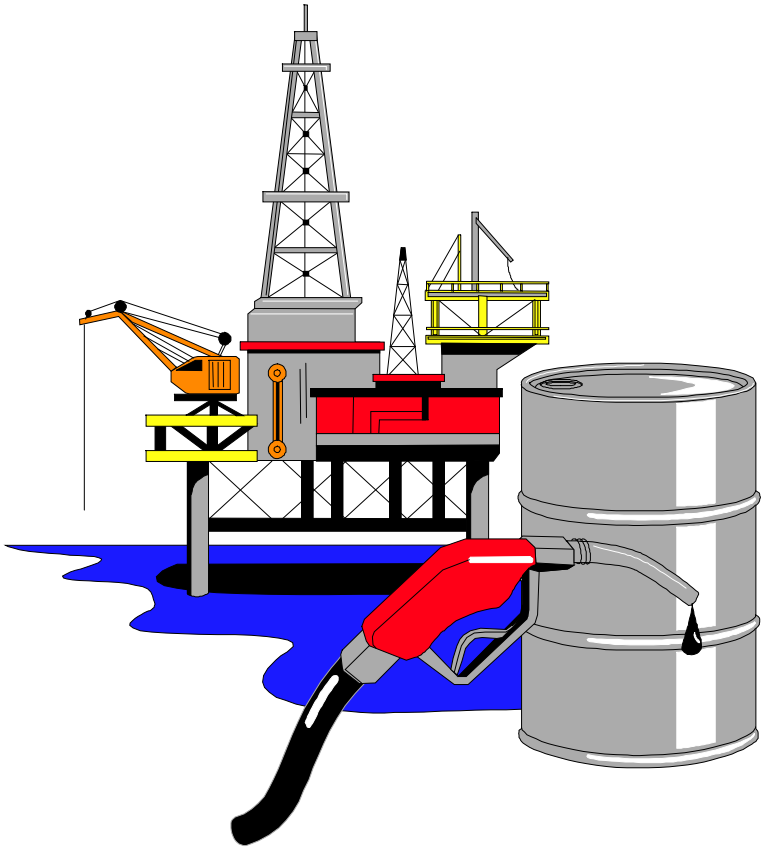
GLOBAL MARKET ISSUES

- Worldwide economies have been in recession, or worse.
- Commodity prices plunged and are recovering.
- U.S. is struggling to finance stimulus and deficits – the dollar is under pressure.
- Higher interest rates (and inflation) ahead?
- Mideast seems quiet – for now.
- Unemployment numbers still making new highs each month.
- Financial crisis seems to be over.
- Global economic outlook is brightening.

Crude Price History

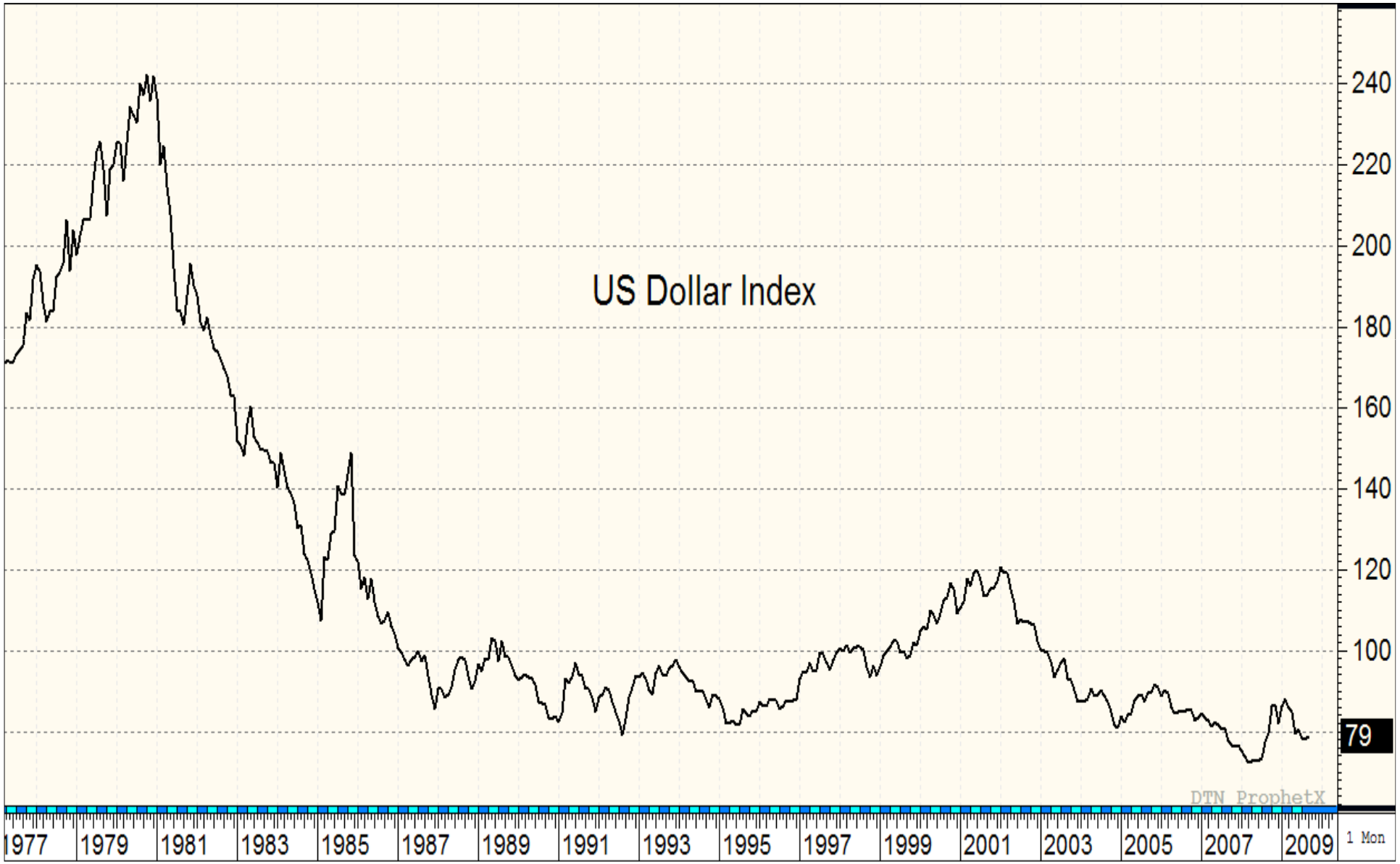


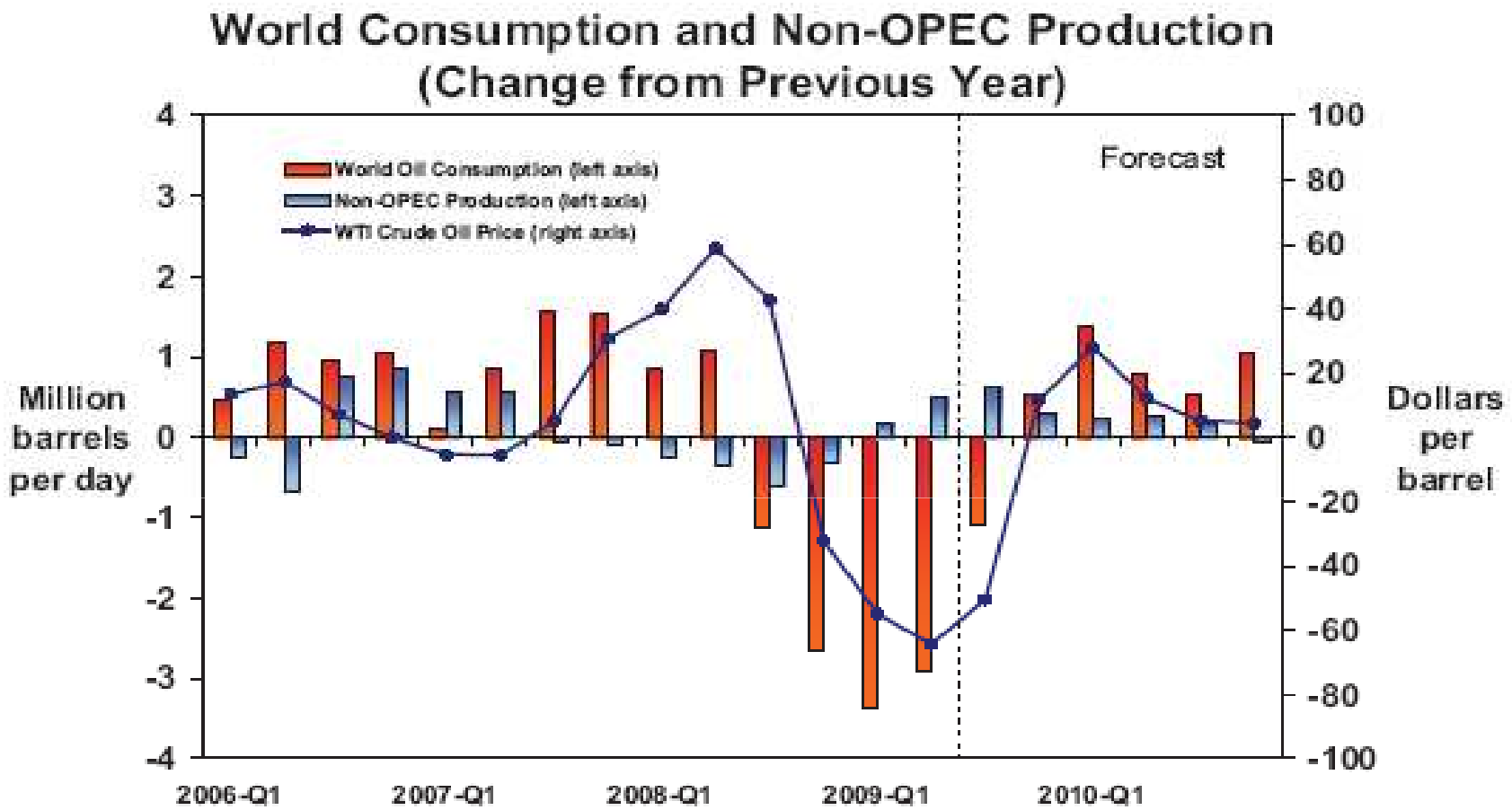
Drivers Behind Crude Prices



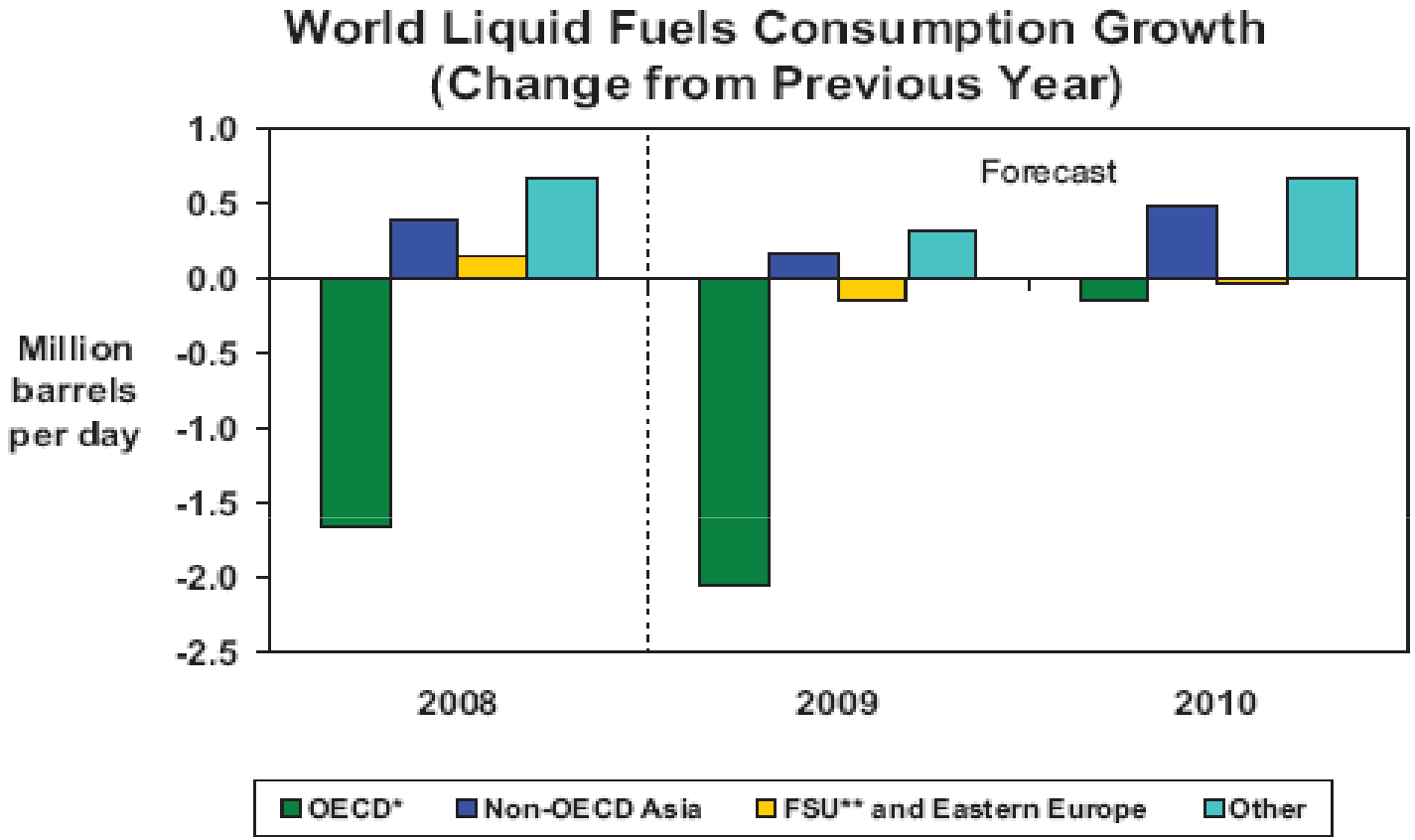
- Currency fluctuations
- Demand
- OPEC
- Inventory levels
- Spare capacity
- Geopolitics

US Dollar Index



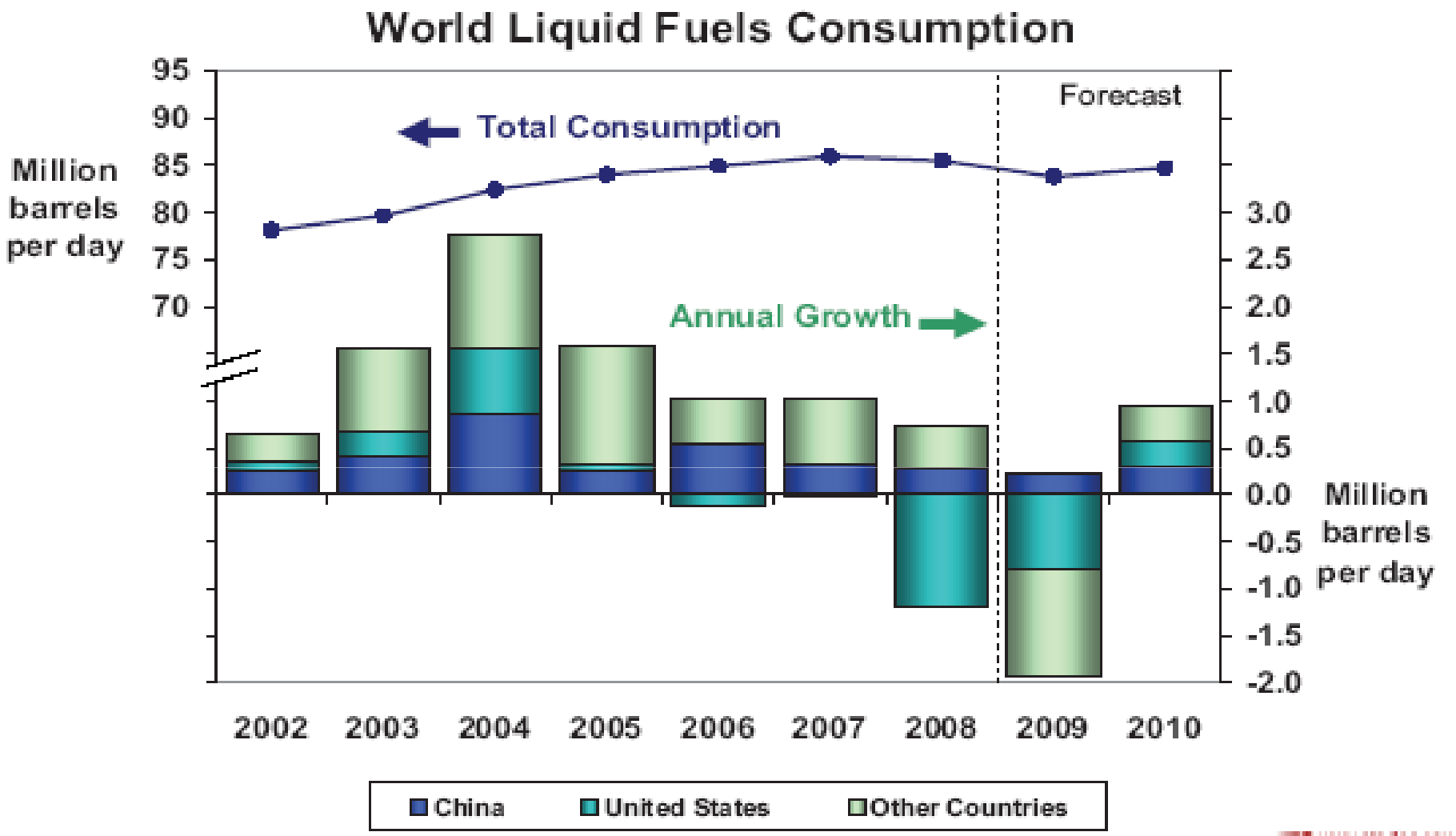


Short-Term Energy Outlook, August 2009

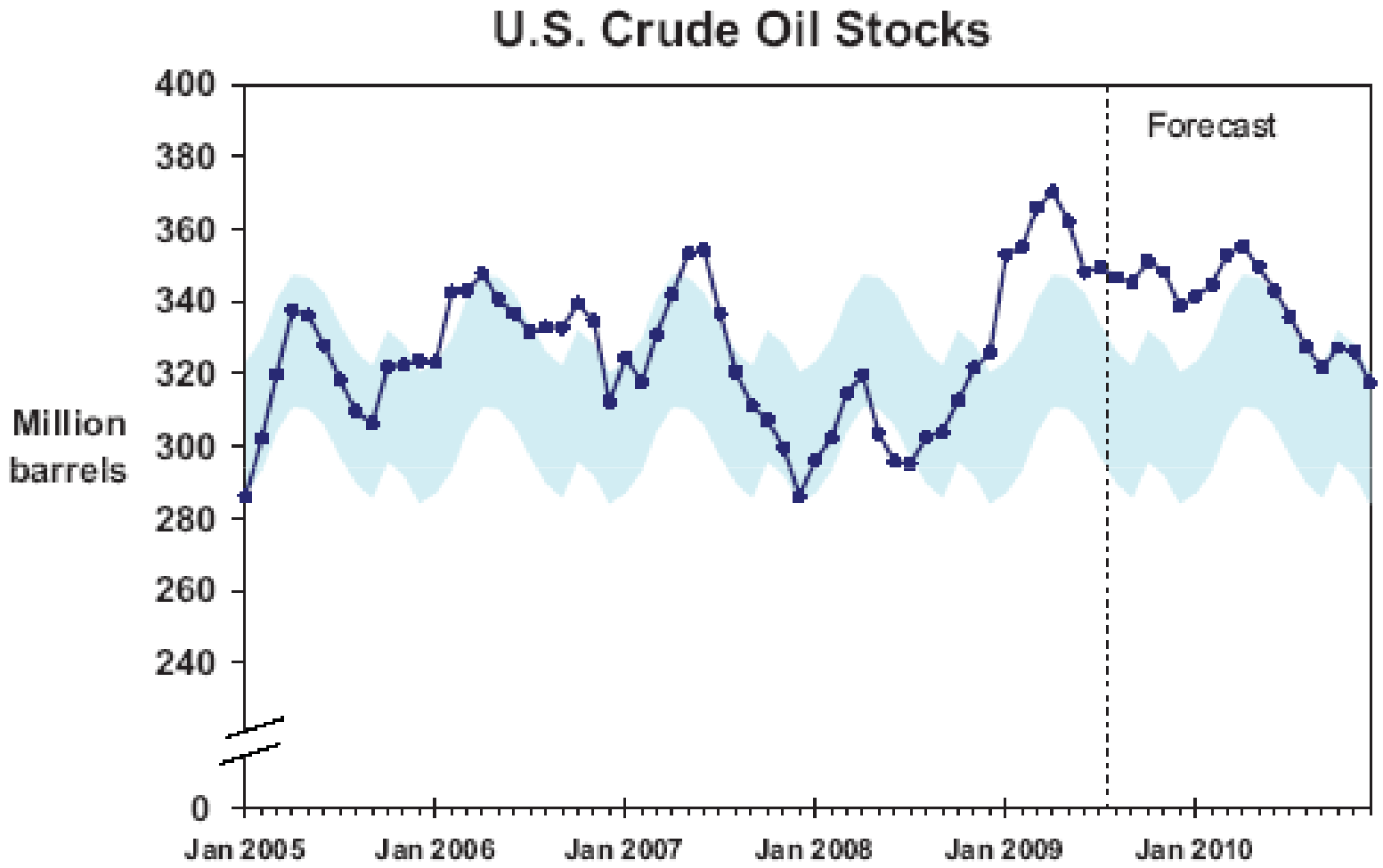


* *Countries belonging to Organization for Economic Cooperation and Development*
** *Former Soviet Union*

Short-Term Energy Outlook, August 2009



Short-Term Energy Outlook, August 2009



NOTE: Colored band represents "normal" range published in EIA Weekly Petroleum Status Report, Appendix A.

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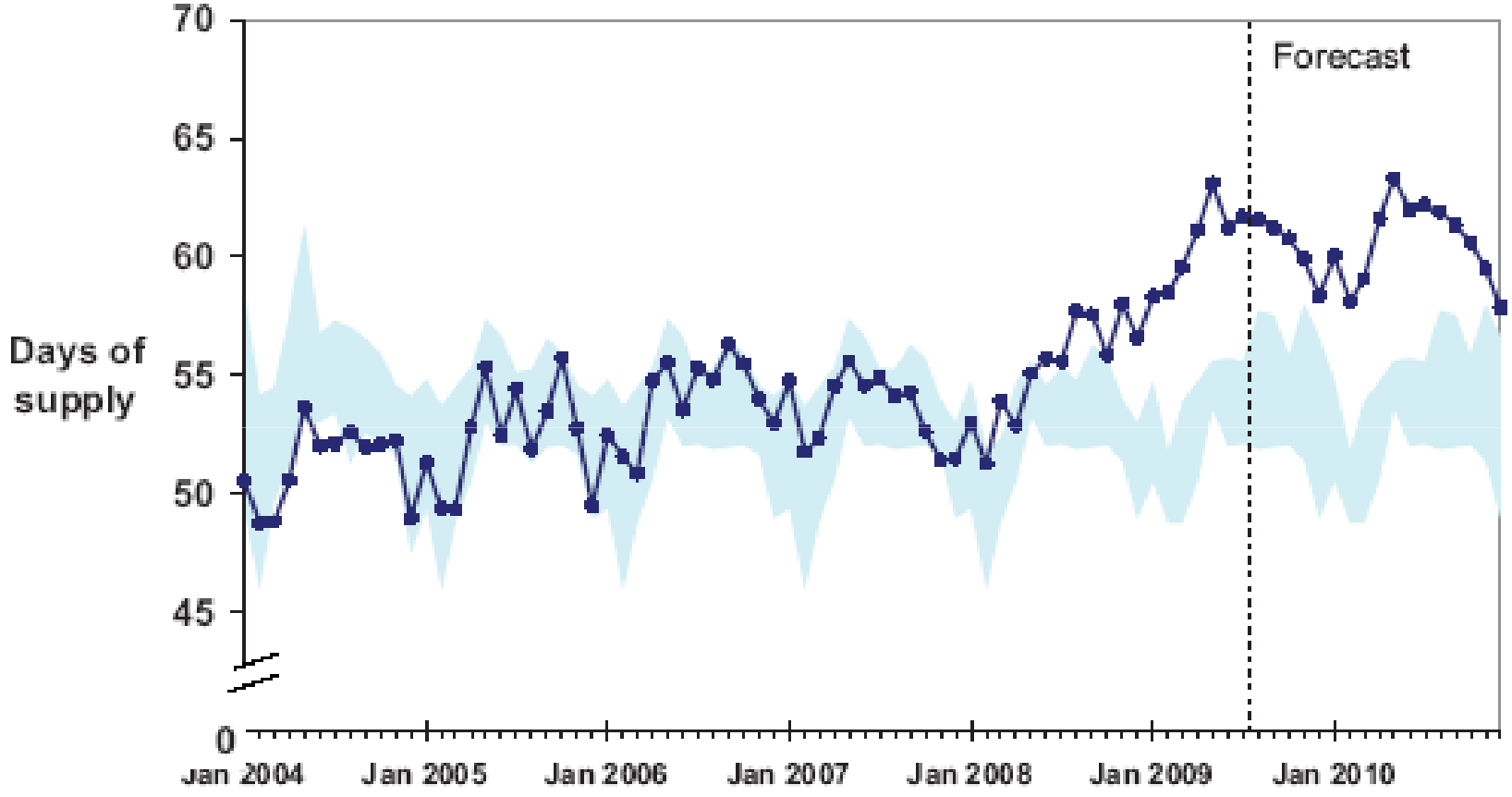
Days of Supply of OECD Commercial Oil Stocks



NOTE: Colored band represents the 5-year minimum/maximum range for each month.

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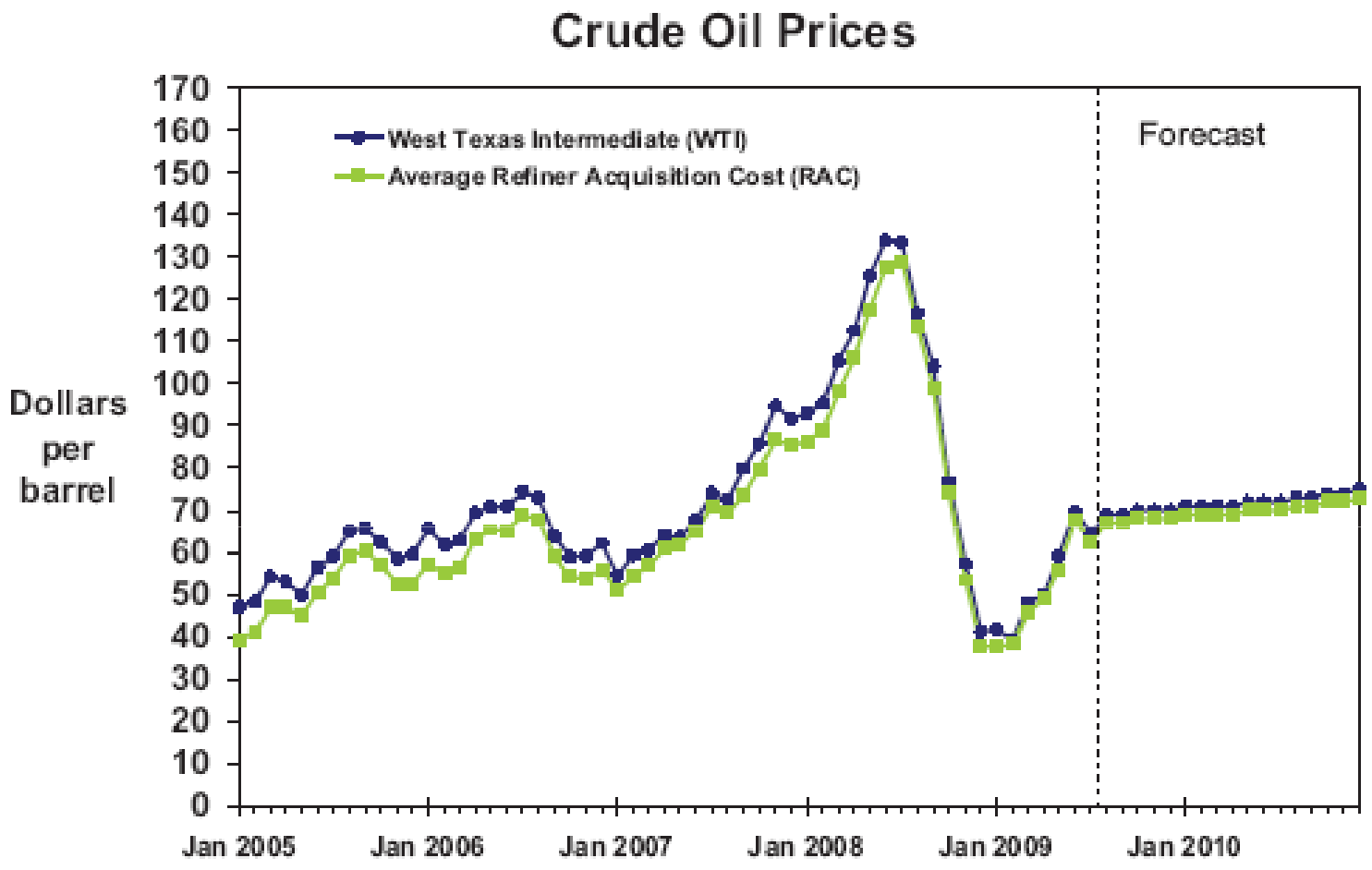
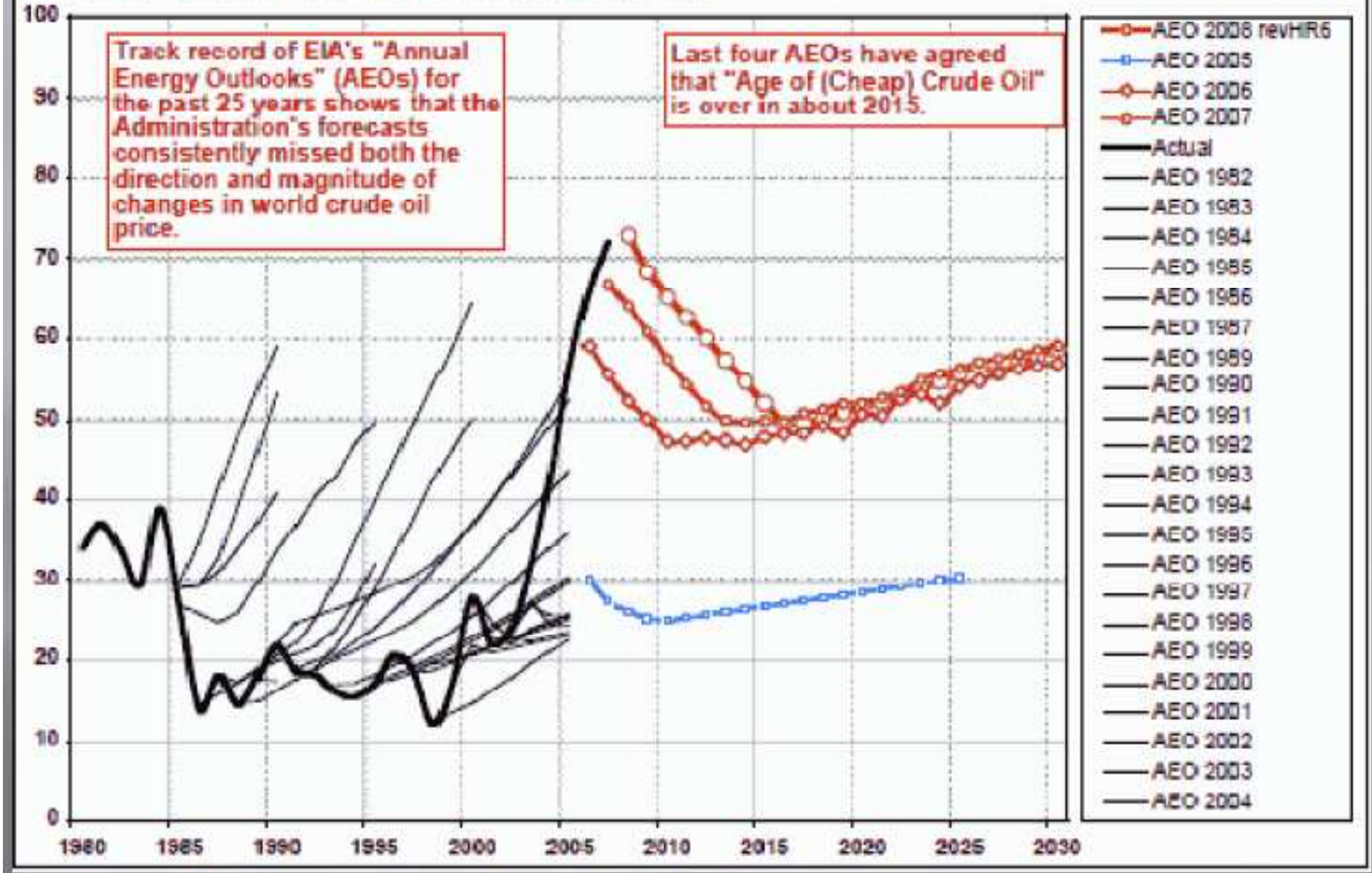


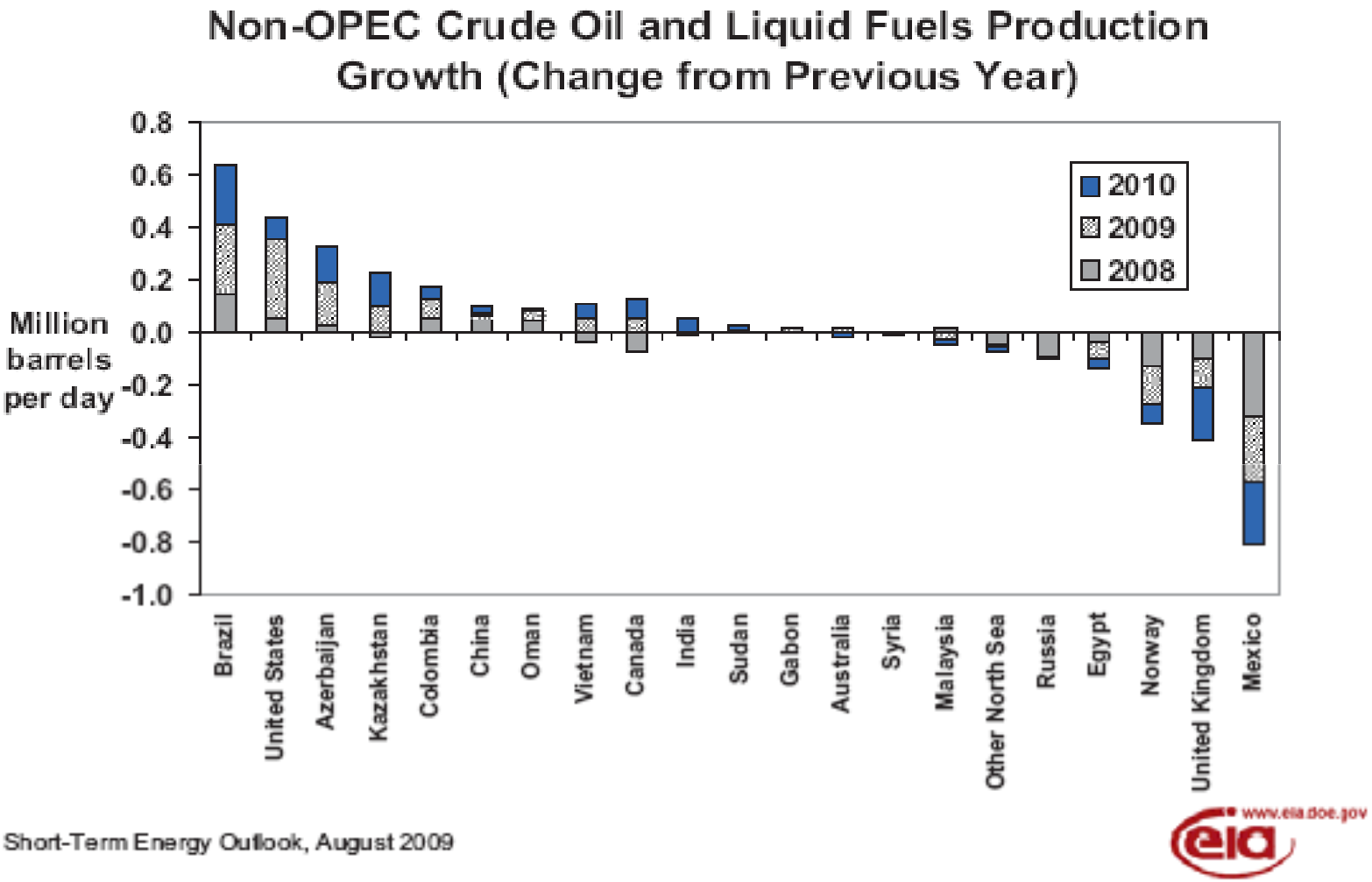
Short-Term Energy Outlook, August 2009

EIA CRUDE OIL PRICE FORECAST HISTORY, 1982-2008

Energy Information Administration (EIA), US DOE, Annual Energy Outlook (AEO)

Dollars per barrel, not inflation adjusted, except 2006-2008, set to 2006.




Non-OPEC Crude Oil and Liquid Fuels Production Growth (Change from Previous Year)
Million barrels per day
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
2010
2009
2008
Brazil
United States
Azerbaijan
Kazakhstan
Colombia
China
Oman
Vietnam
Canada
India
Sudan
Gabon
Australia
Syria
Malaysia
Other North Sea
Russia
Egypt
Norway
United Kingdom
Mexico
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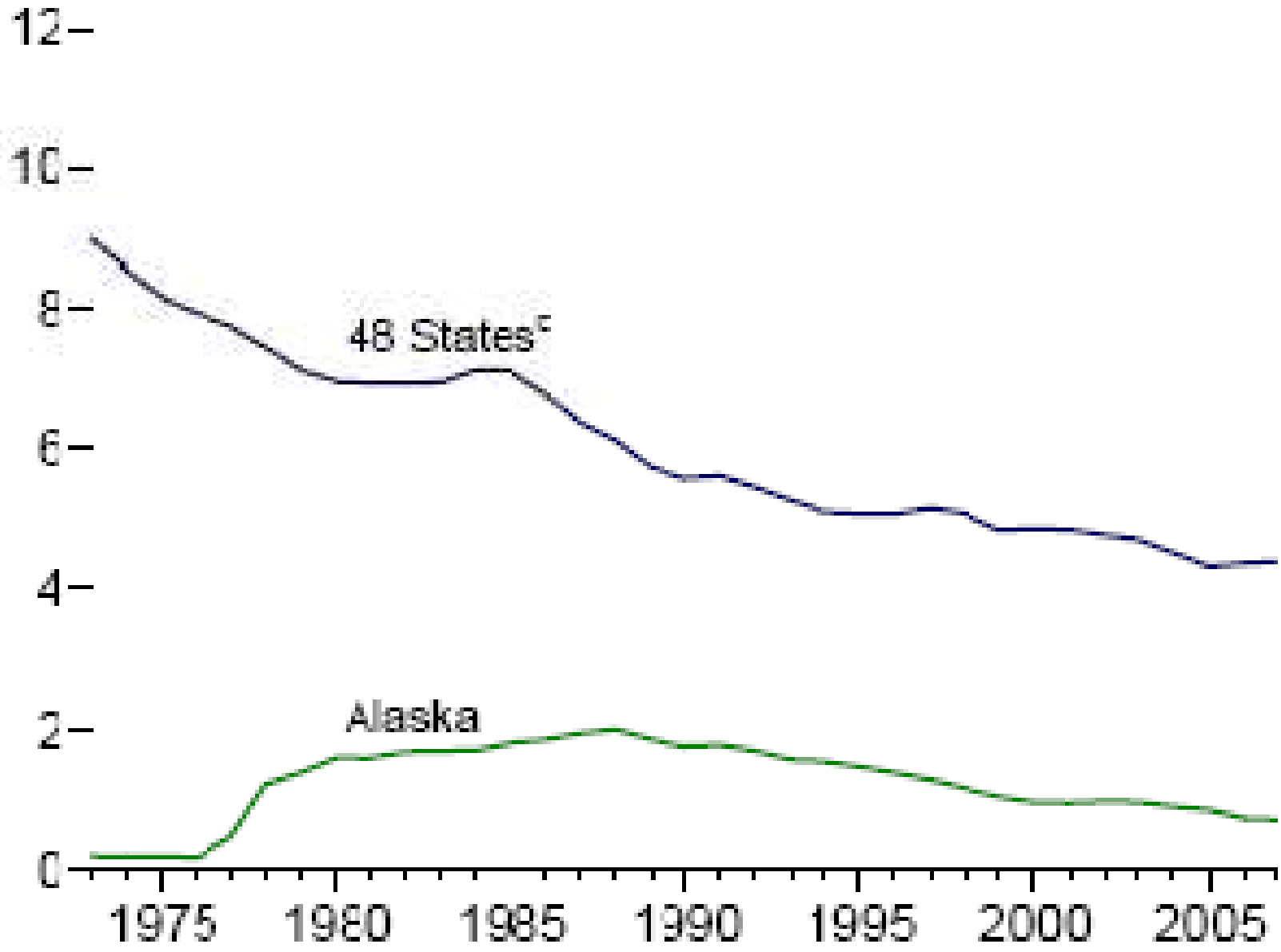
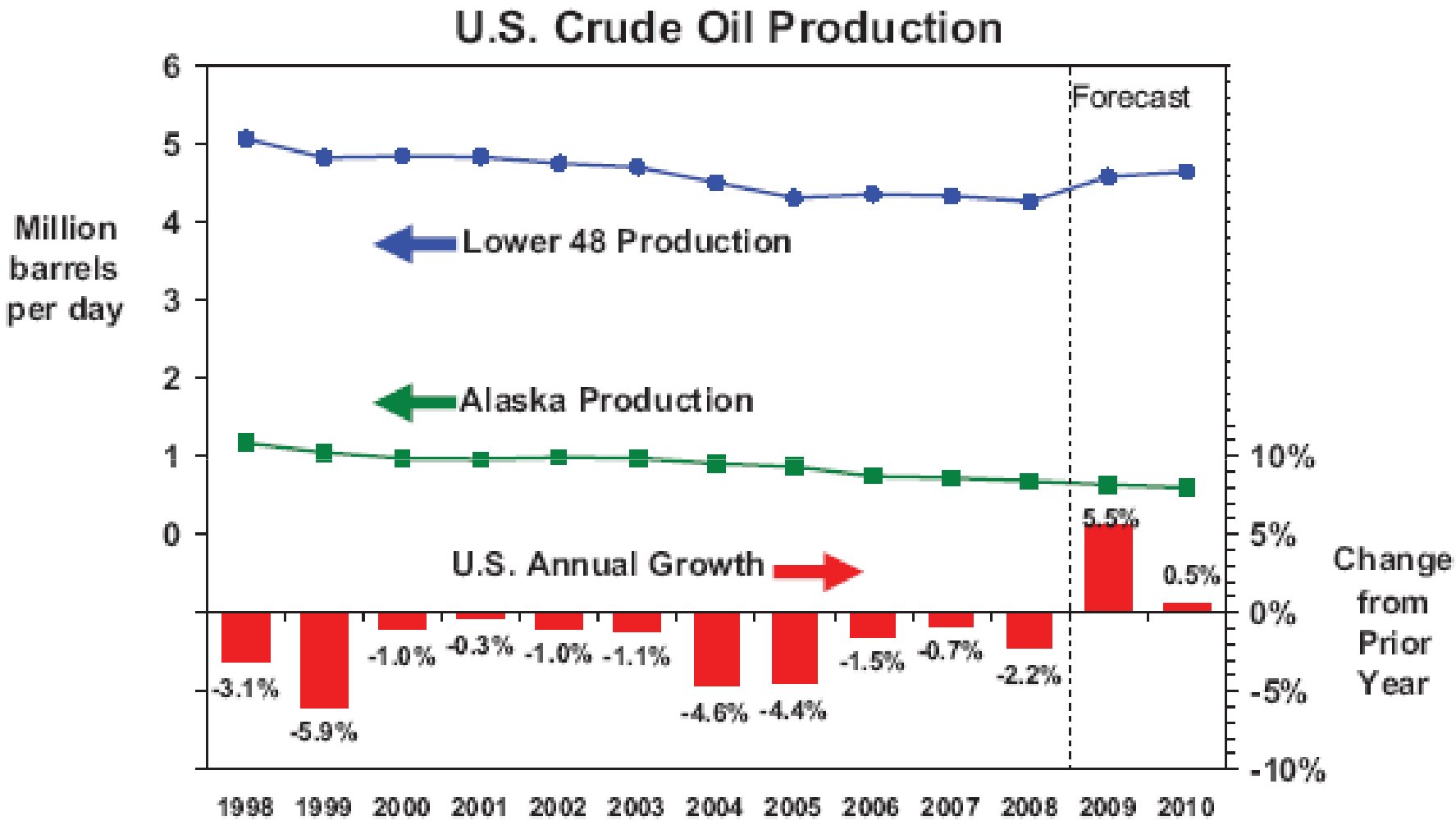
Crude Oil[b] Field Production, 1973-2007





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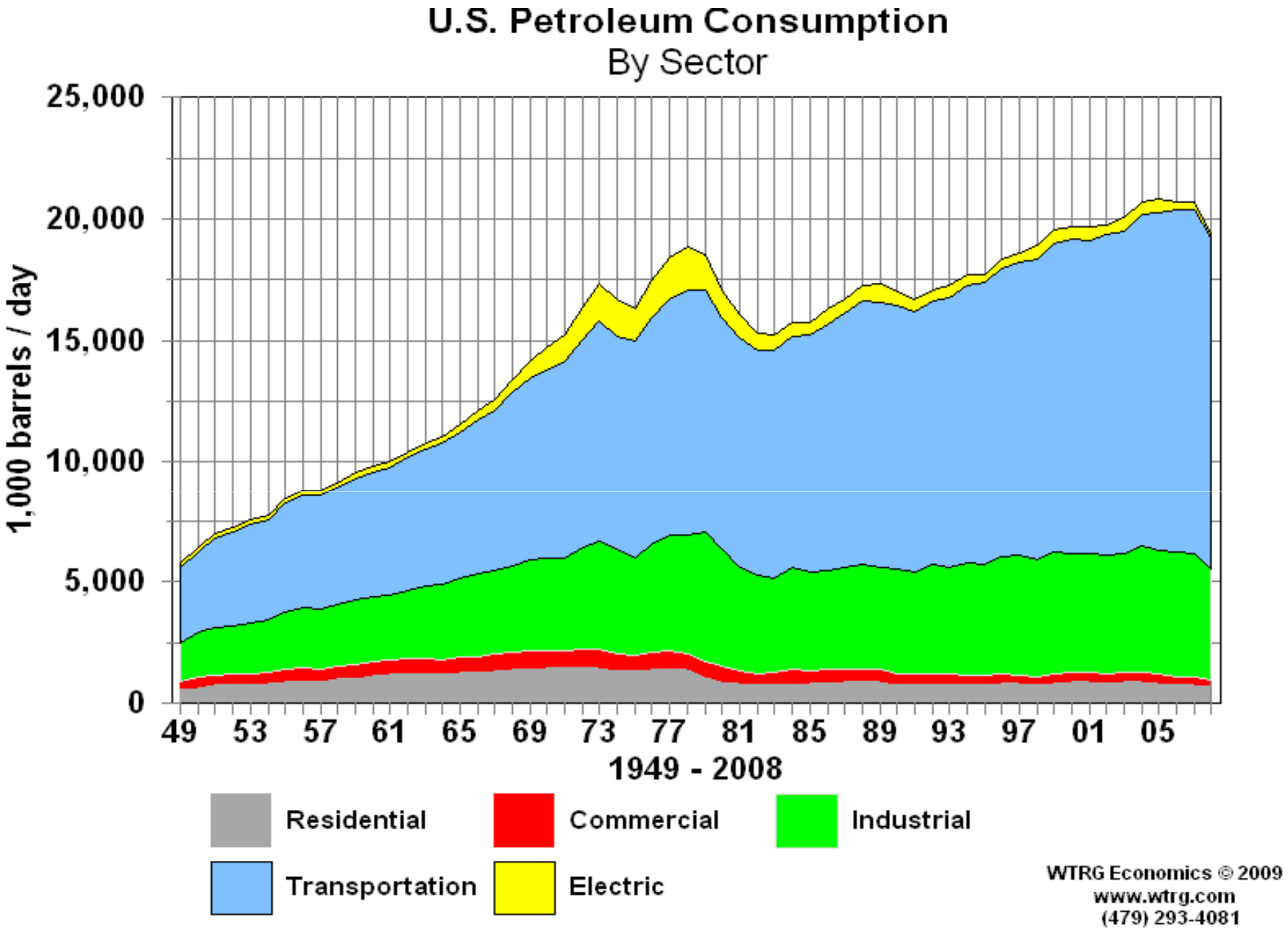
U.S. Petroleum Consumption
By Sector
25,000
20,000
15,000
10,000
5,000
0
1,000 barrels / day
49
53
57
61
65
69
73
77
81
85
89
93
97
01
05
1949 - 2008
Residential
Commercial
Industrial
Transportation
Electric
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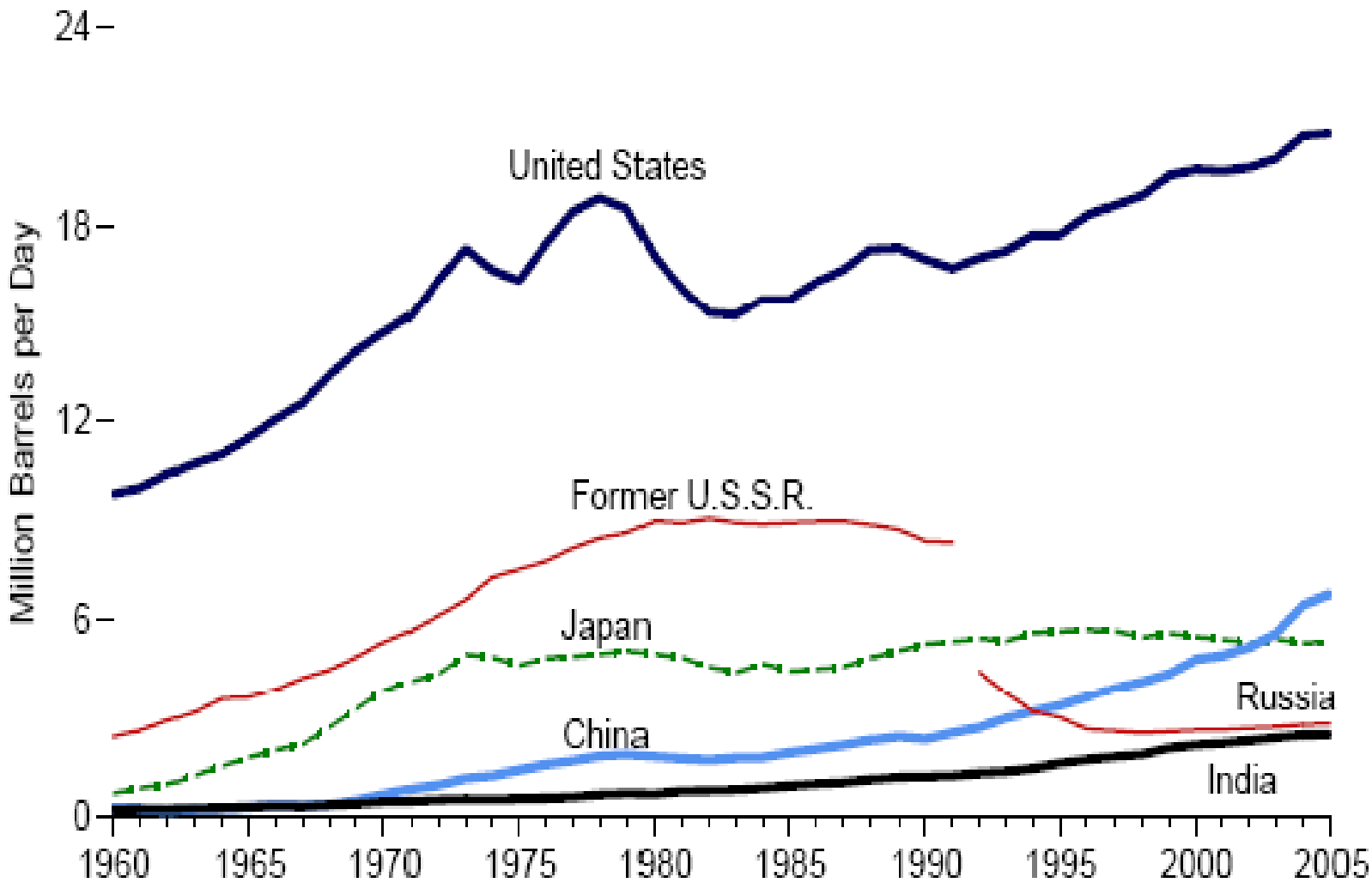
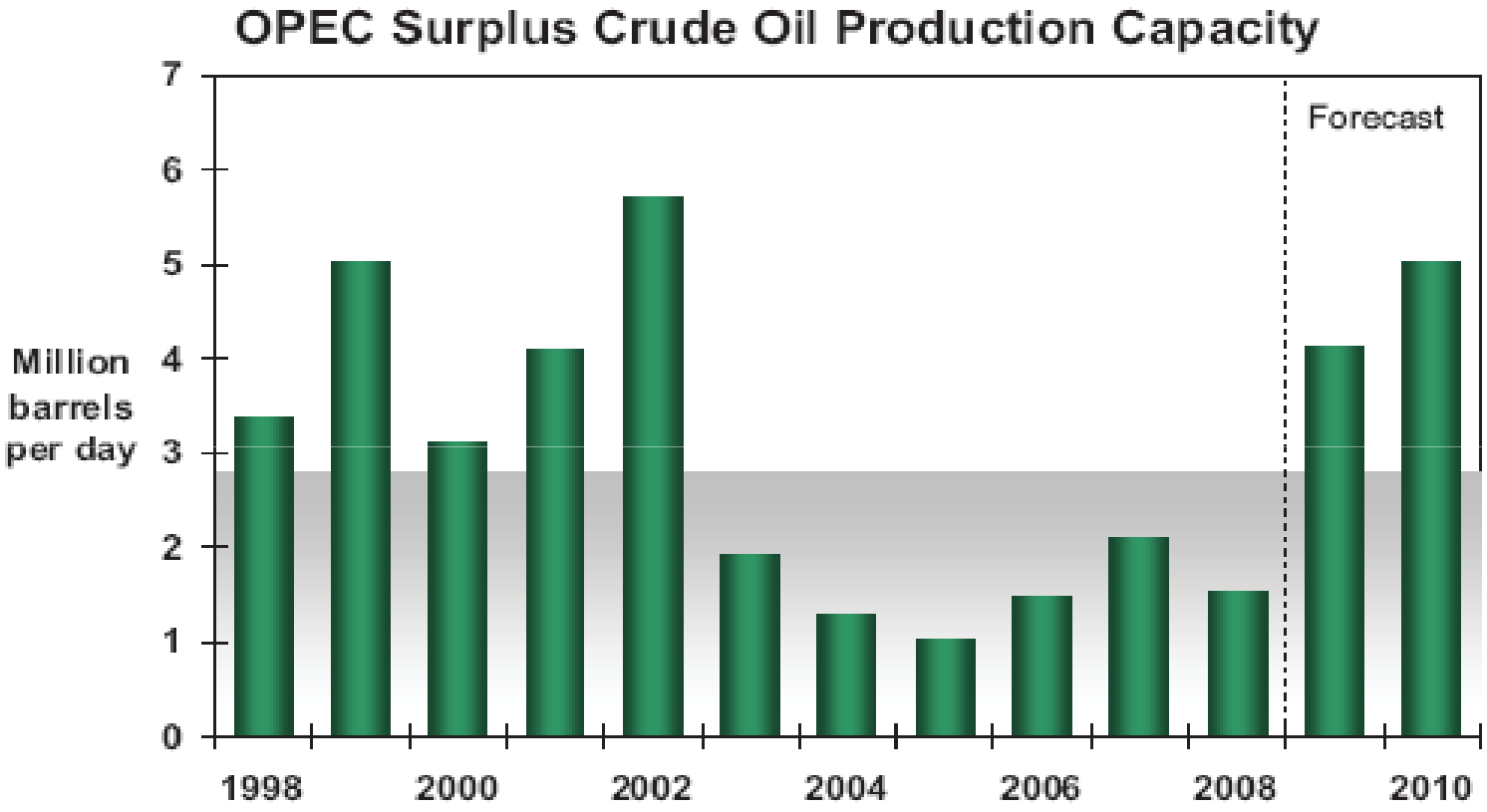
Top Consuming Countries, 1960-2005





Note: Shaded area represents 1998-2008 average (2.8 million barrels per day)

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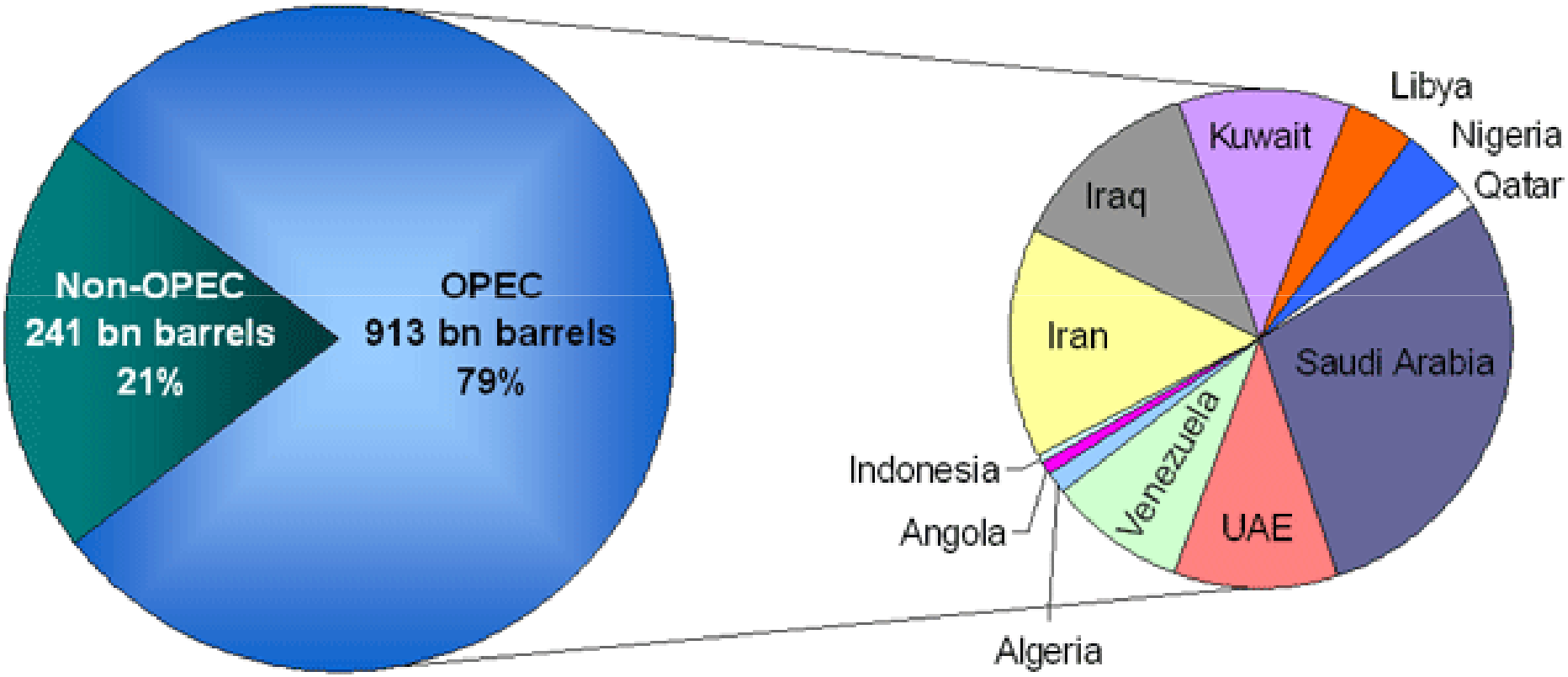
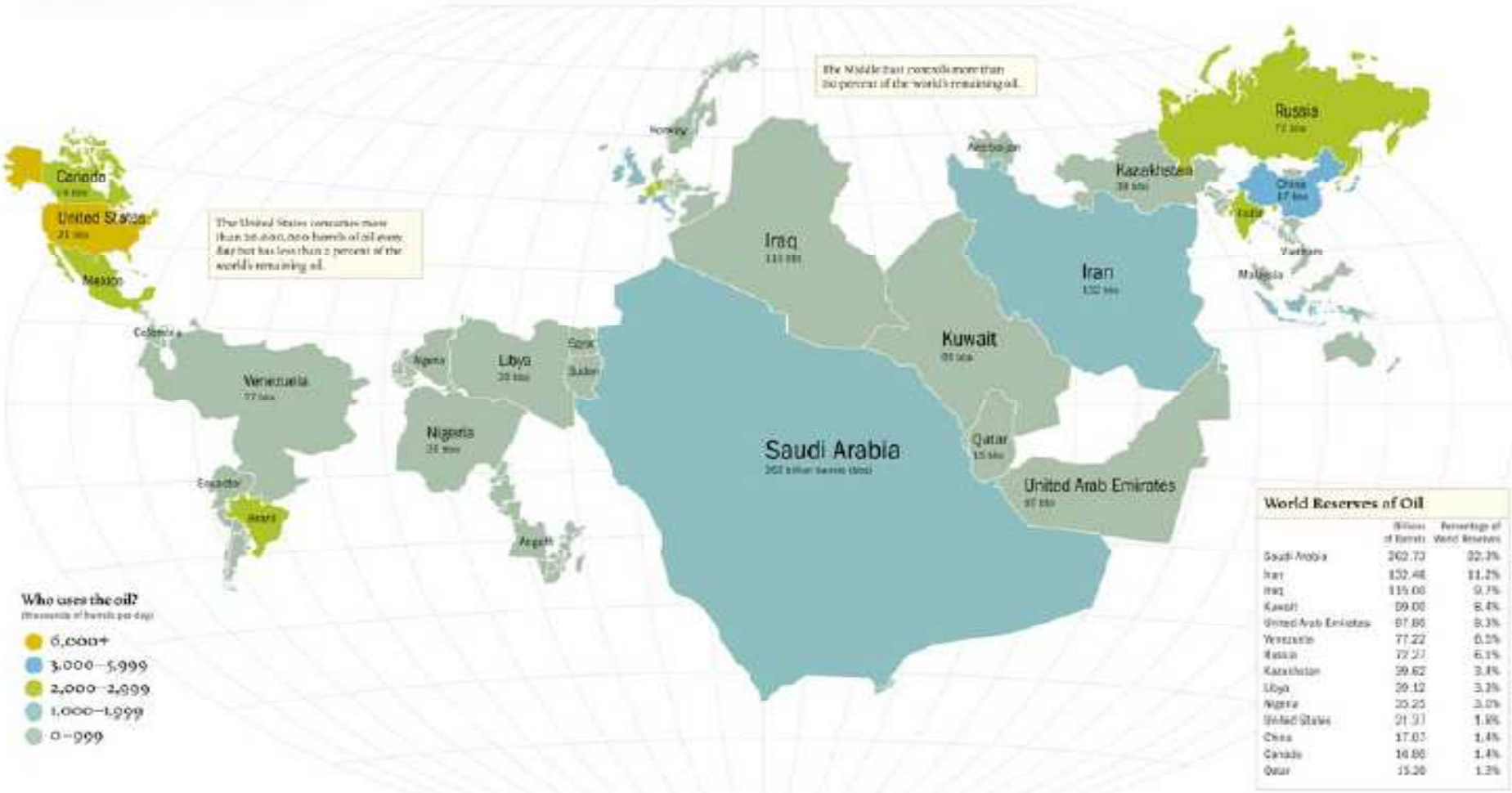
OPEC Share of World Crude Oil Reserves (2005)

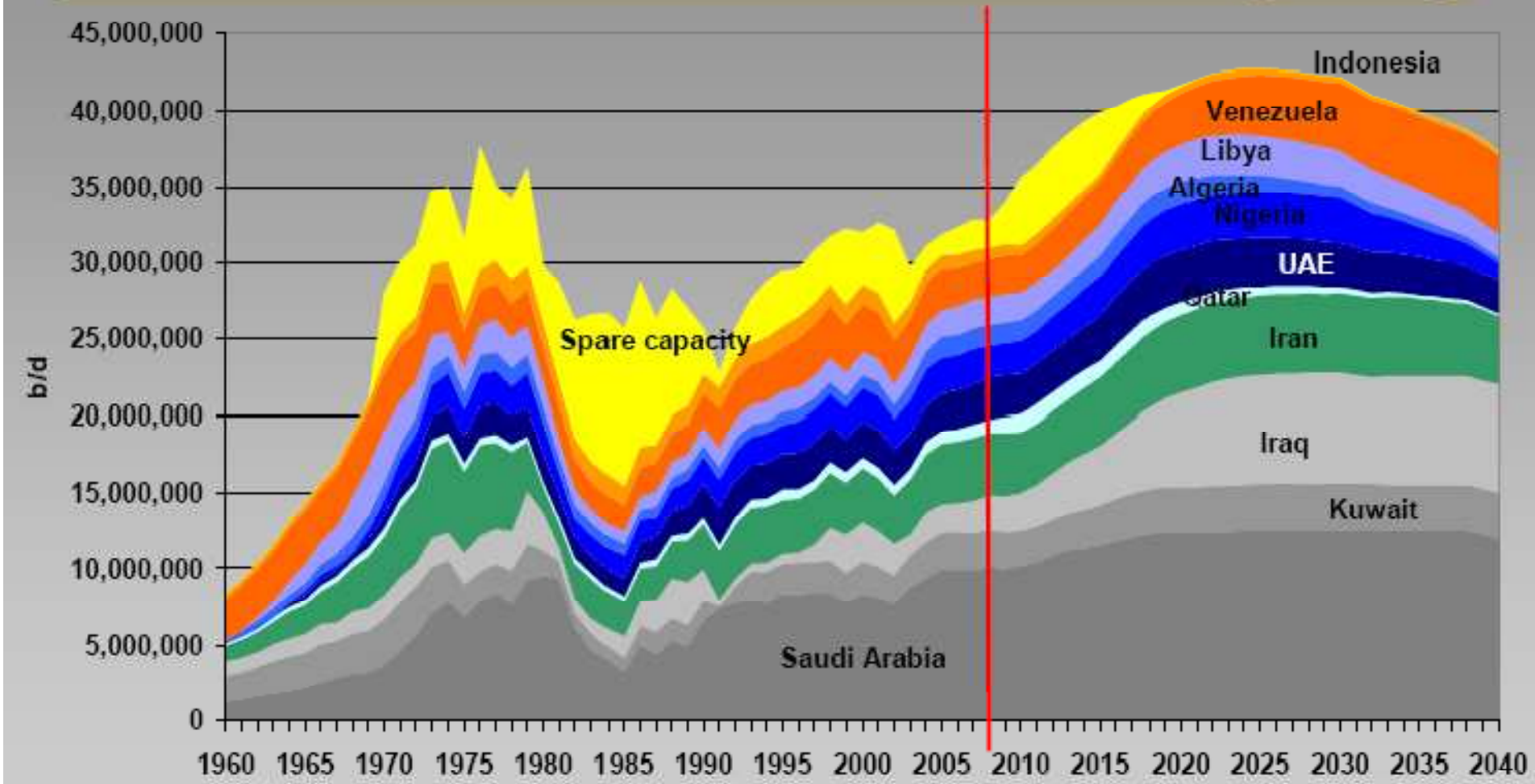


… from those who have lots

Who has the oil?



OPEC – Forecast Production Capacity



Raw historical data and most primary and secondary recovery reserves from IHS and forecast from Neftex

Includes data provided by Petroconsultants S.A. (data copyright 2008 Petroconsultants S.A.)

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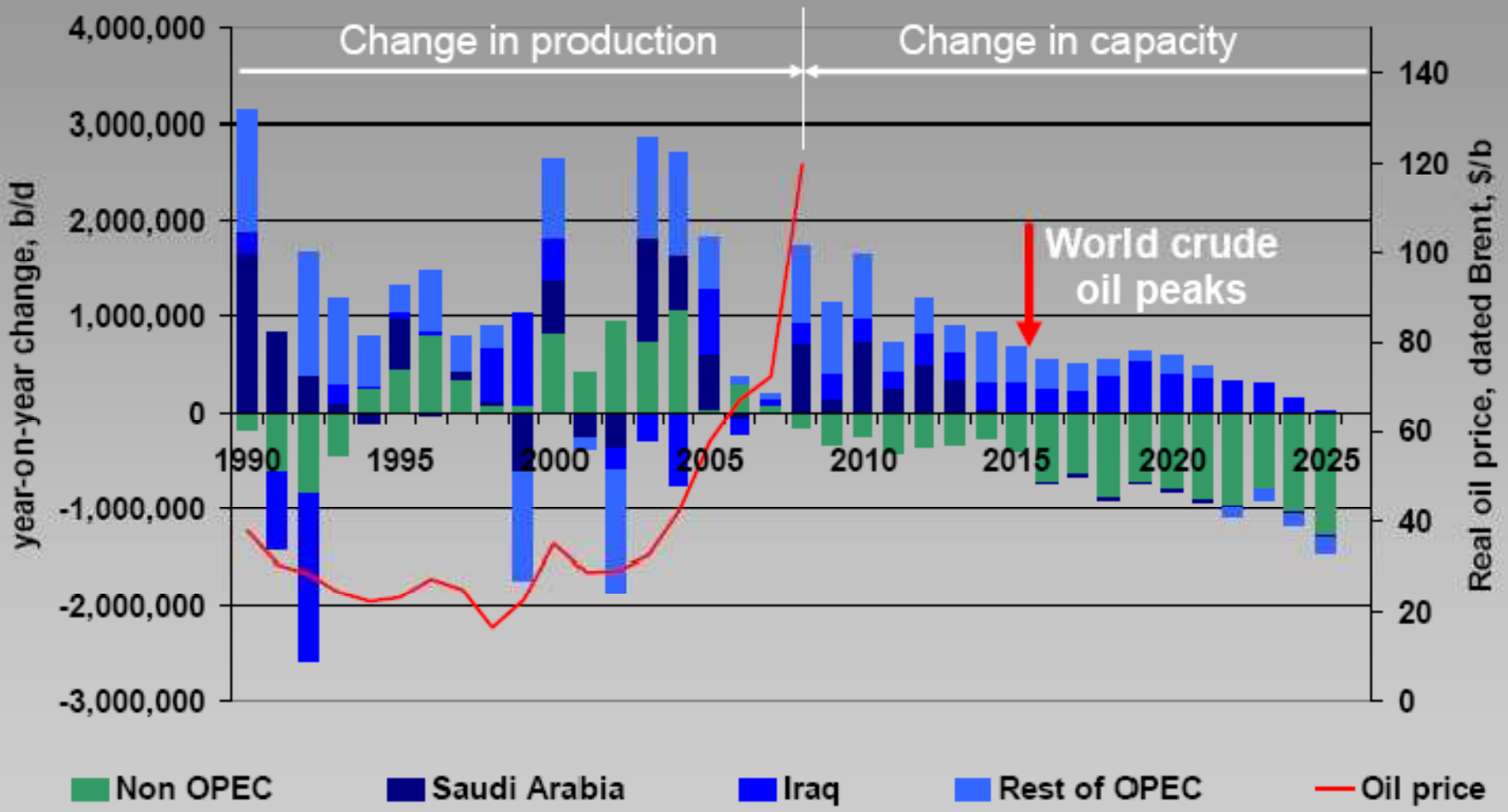
OPEC - Crude Oil



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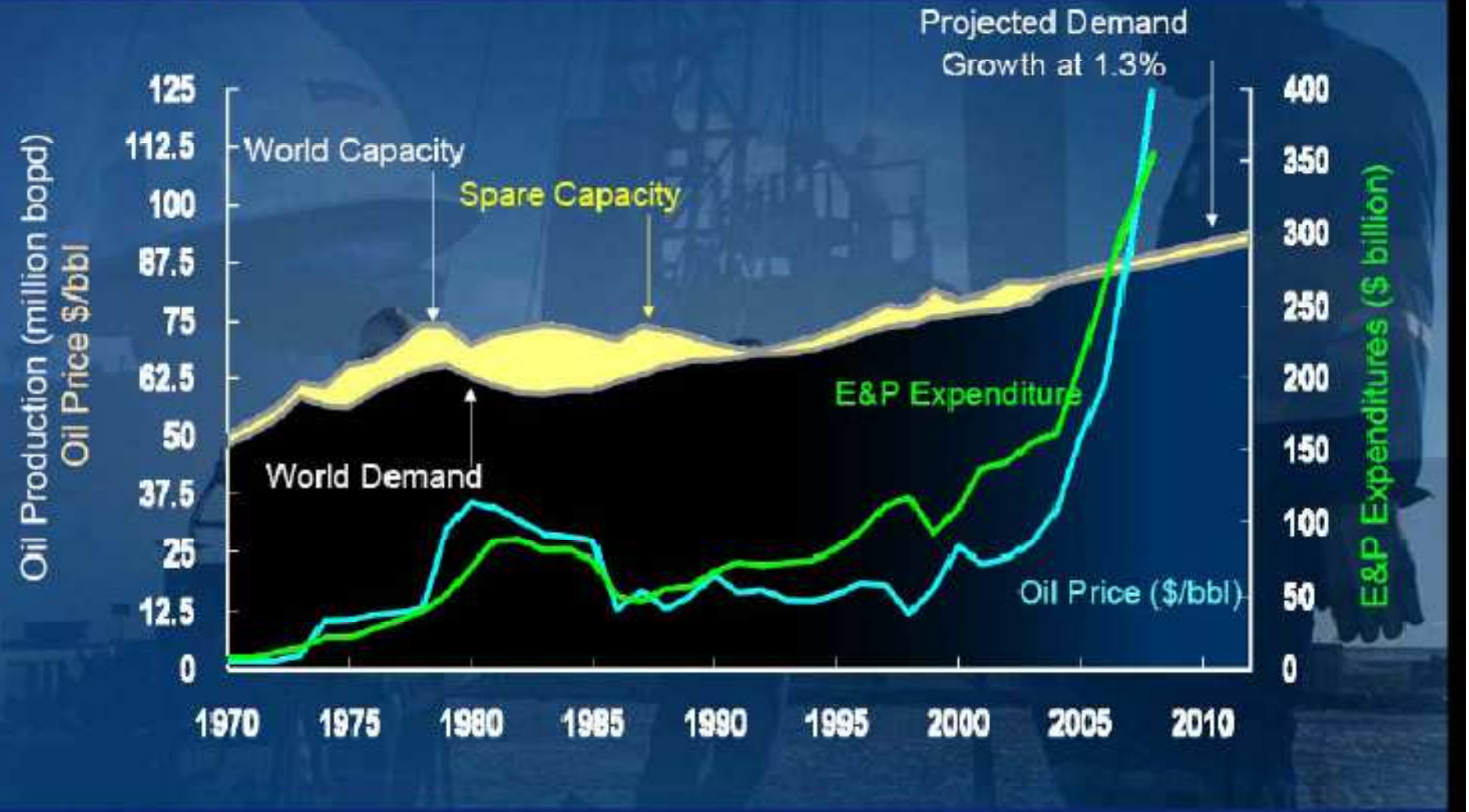
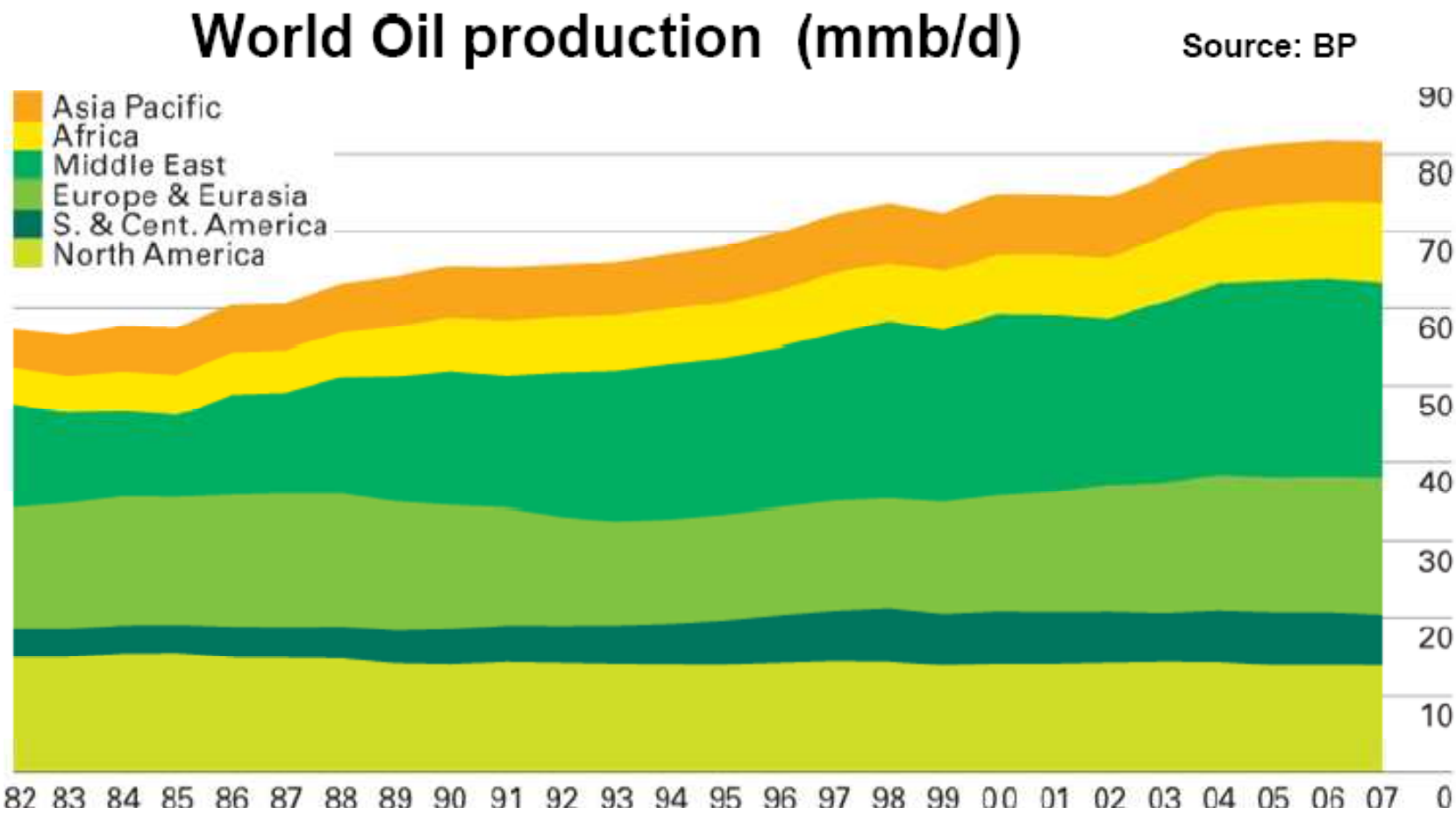
Oil Supply and Demand—The Macro View



Source: BP Statistical Review, IEA Oil Annual Summary, Monthly Oil Market Report, Medium-Term Oil Market Report, Citigroup. Revised June 2008

Schlumberger

If it looks like a peak – and it feels like a peak – then ….!



Long-term oil demand and supply outlook
Reference case (mb/d)

	2005	2010	2015	2020	2025
World demand	83.2	90.7	98.0	105.6	113.1
Non-OPEC supply	50.1	55.8	58.3	59.4	58.9
OPEC supply*	33.1	34.9	39.7	46.2	54.3

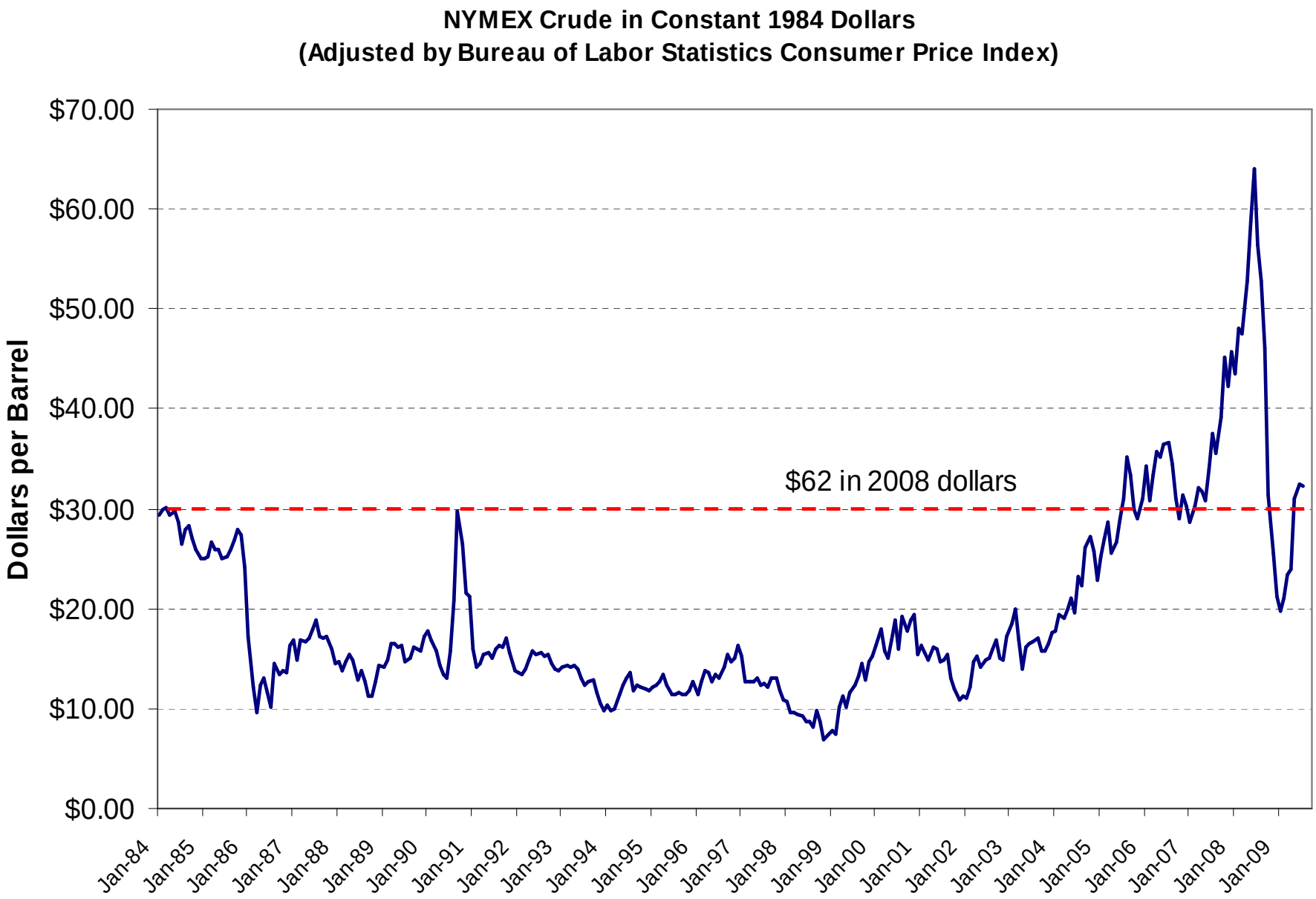
* incl. NGLs

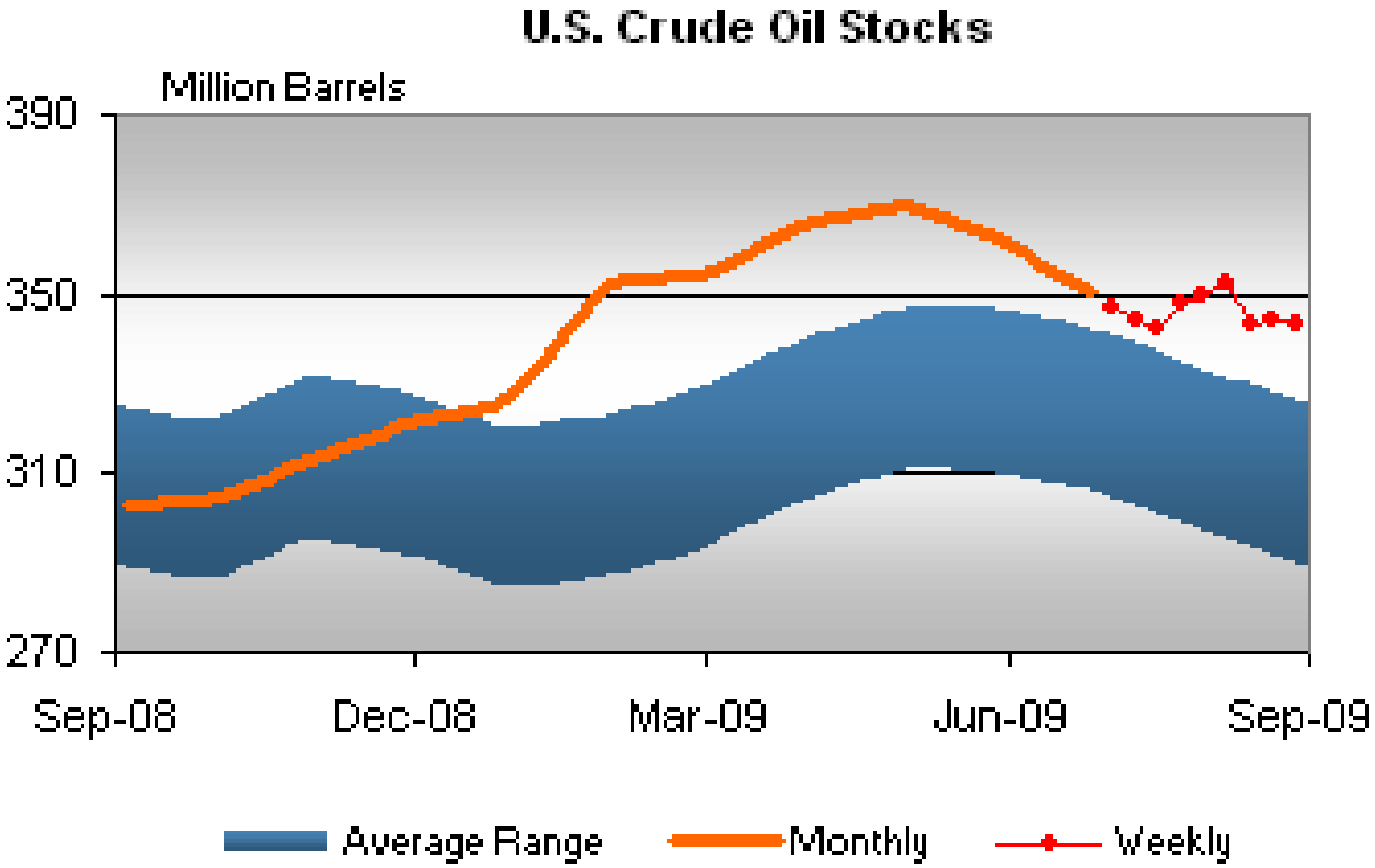
The Big Questions

- Can the world increase crude production by 30 mbd over the next 20 years?
- How will the supply be rationed?
- Can transportation demand for petroleum be reduced?
- If crude can’t meet the demand for more energy, what will?

Long Term Crude Oil Outlook

- Global crude production is peaking, if not already past the peak.
- Within OPEC, only Saudi Arabia has the capacity to increase production and even that is in question.
- Consumption will have to fall by about 2% per year when the peak passes (to match production).
- As oil exporters develop their economies, they will use more and export less.
- Higher prices will ration supplies and reduce consumption.
- Current forward crude prices don’t provide an incentive for investing in alternative energy sources.

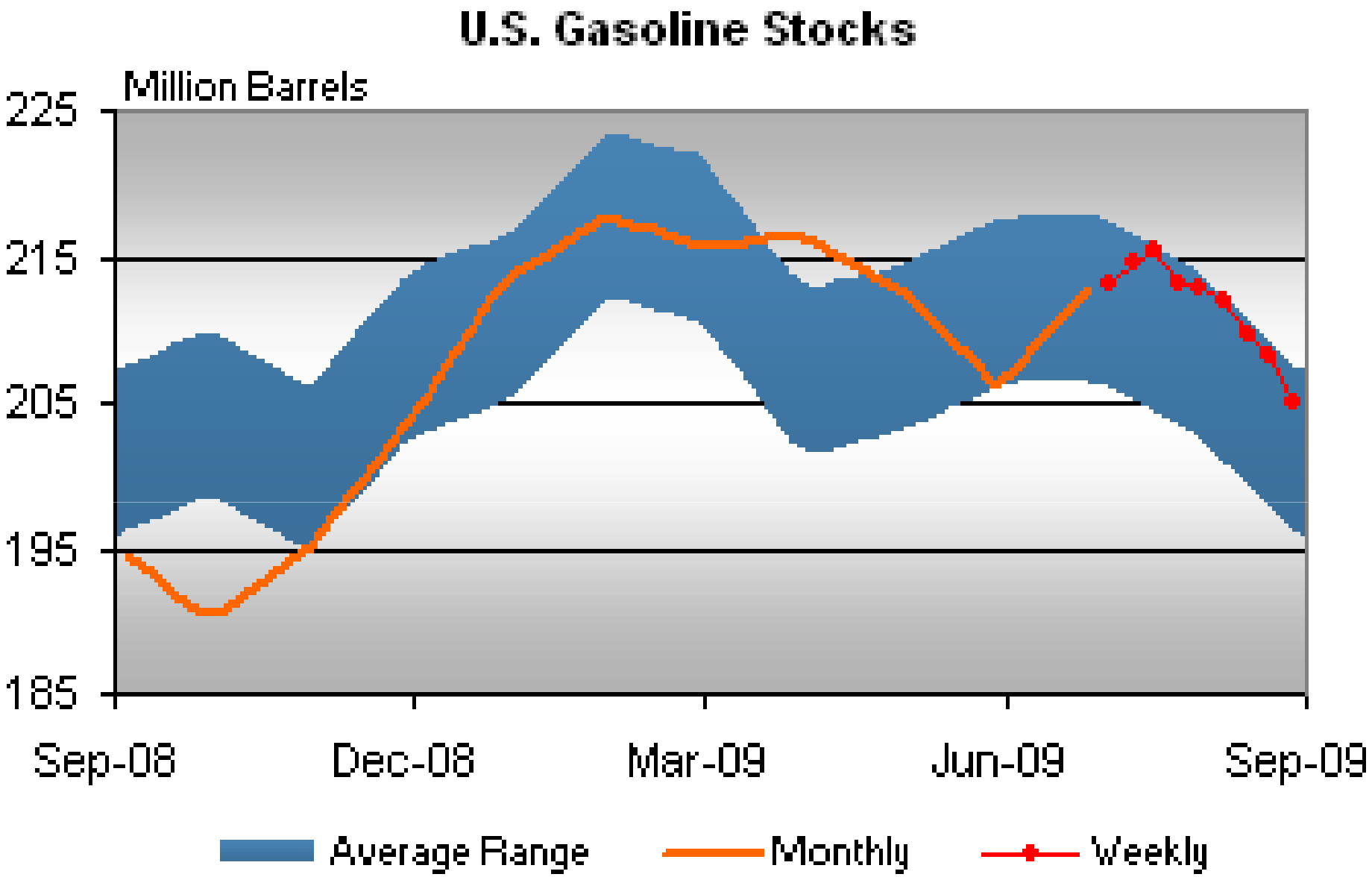

NYMEX Crude in Constant 1984 Dollars
(Adjusted by Bureau of Labor Statistics Consumer Price Index)
Dollars per Barrel
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$0.00
$62 in 2008 dollars
Jan-84
Jan-85
Jan-86
Jan-87
Jan-88
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09

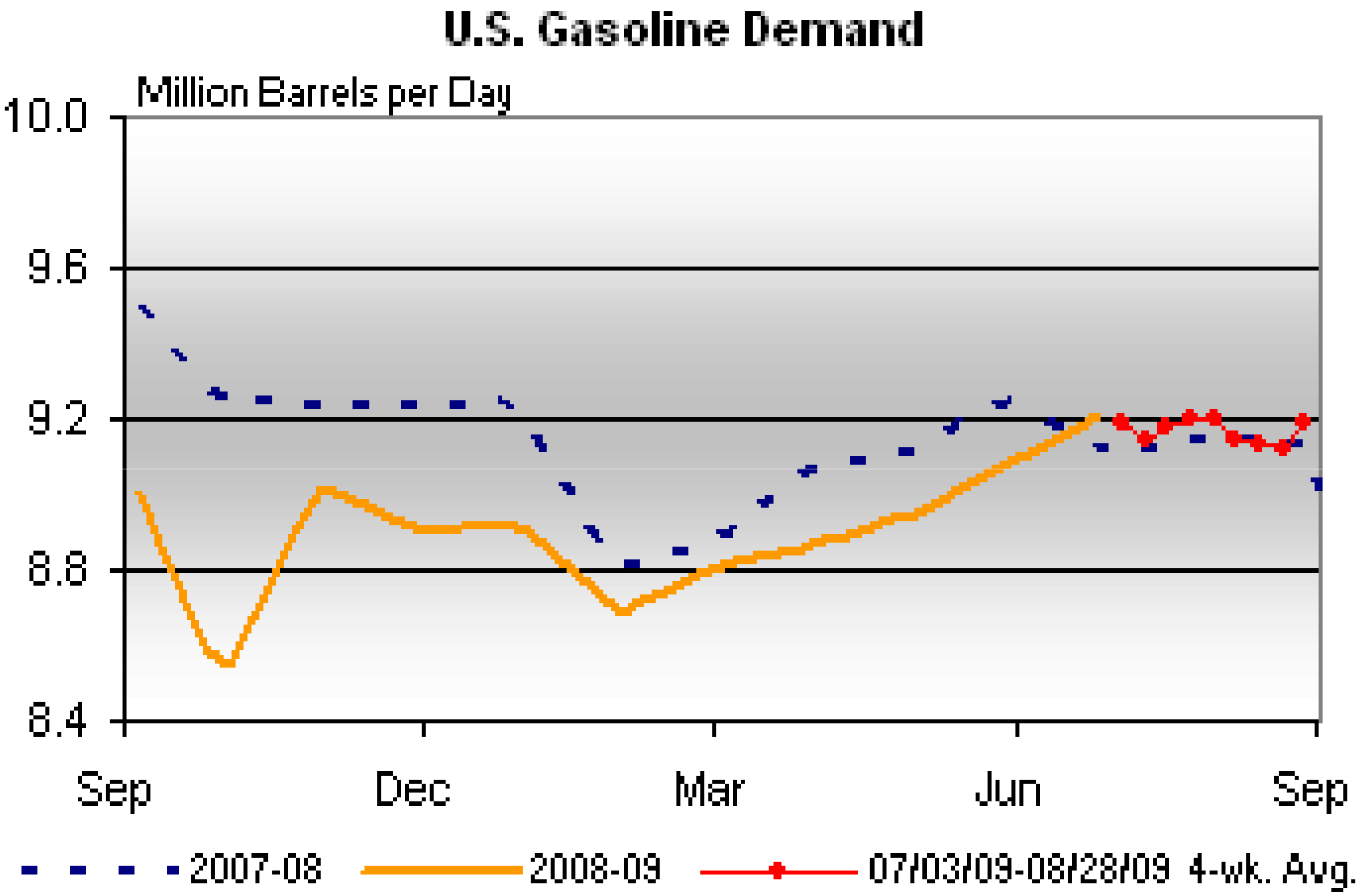

U.S. Crude Oil Stocks
Million Barrels
390
350
310
270
Sep-08
Dec-08
Mar-09
Jun-09
Sep-09
Average Range
Monthly
Weekly

Short-Term Crude Outlook

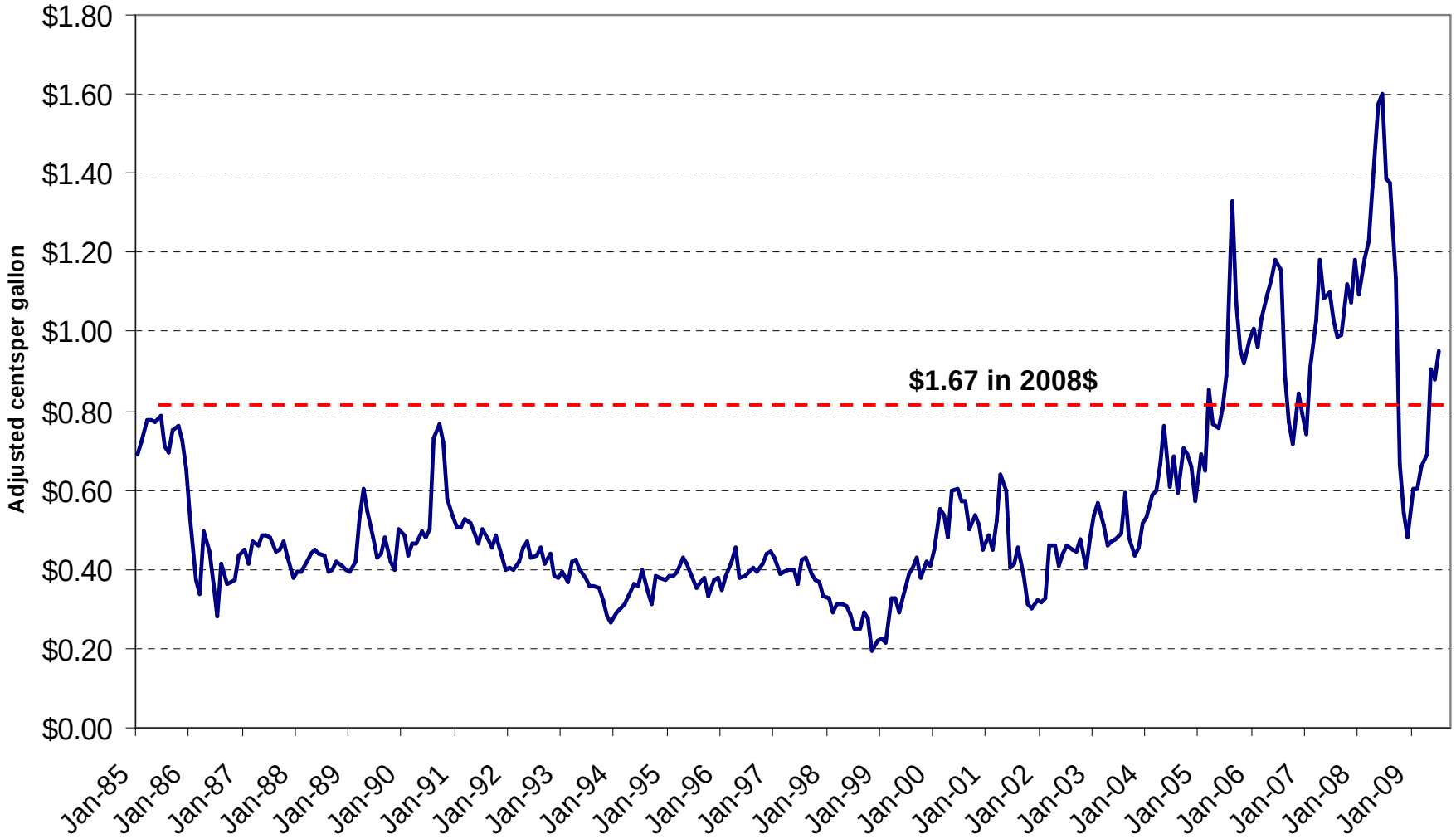
- US inventories of crude and products are much higher than average, demand is off.
- Hedge funds have largely liquidated positions.
- Index funds are under regulatory attack.
- Supply/demand balance is getting tighter due to OPEC production cuts.
- World recession has created surplus capacity, but it won’t last long.
- Market is less nervous about Iran.
- Crude being used as a dollar hedge.
- Expect crude to be $65-85 during this winter.

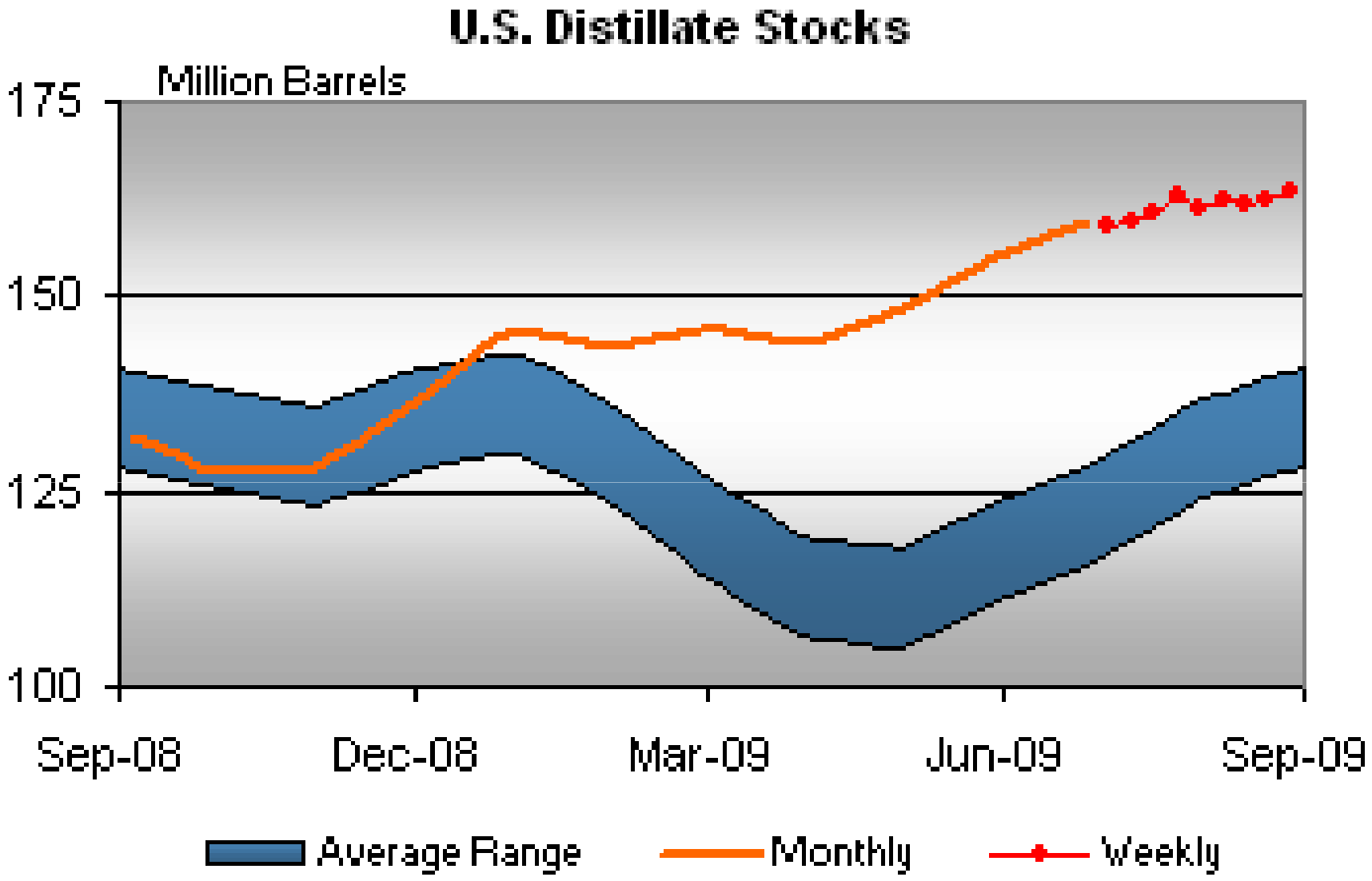
The Products

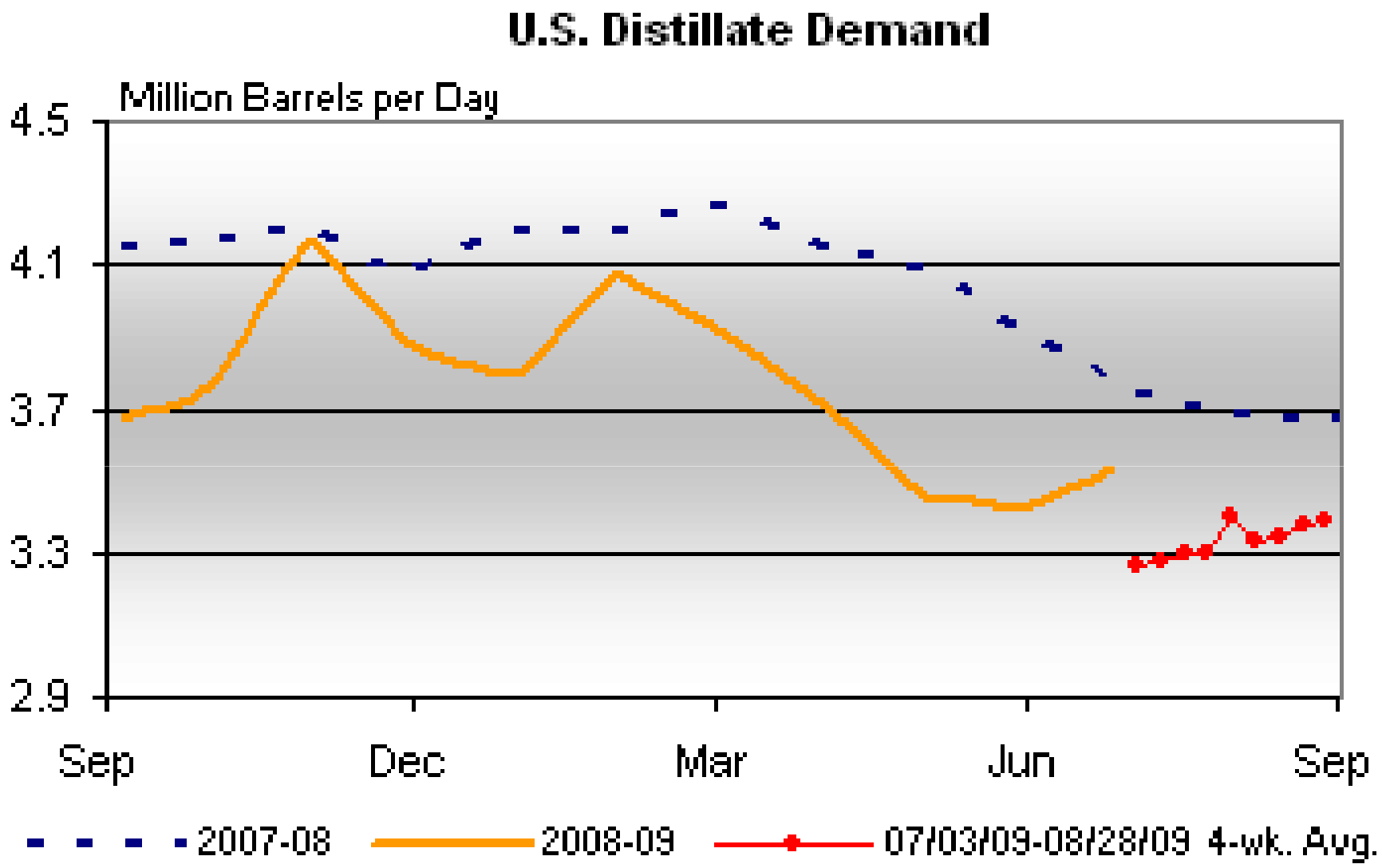

U.S. Gasoline Stocks
Million Barrels
225
215
205
195
185
Sep-08
Dec-08
Mar-09
Jun-09
Sep-09
Average Range
Monthly
Weekly

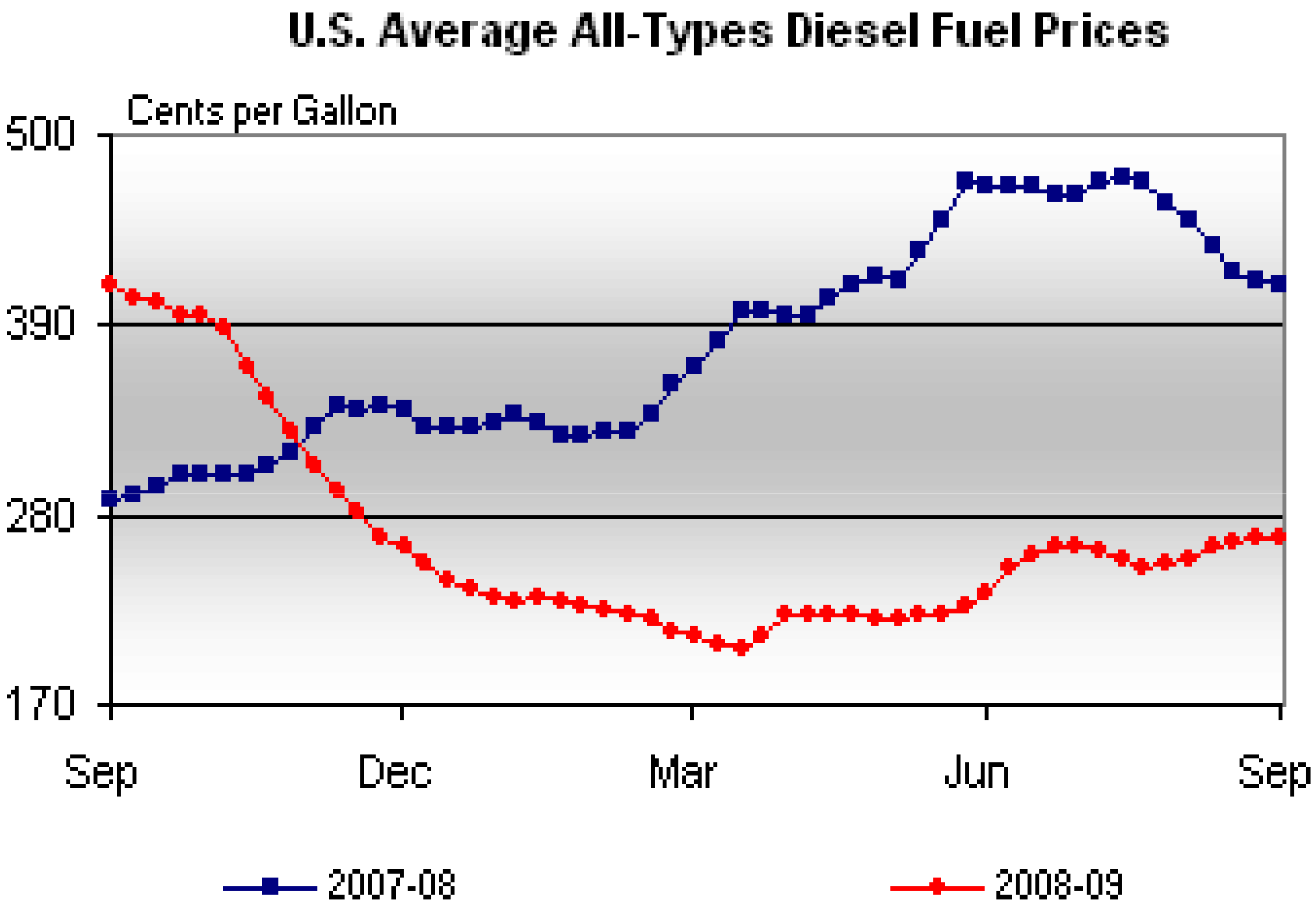

U.S. Gasoline Demand
Million Barrels per Day
10.0
9.6
9.2
8.8
8.4
Sep
Dec
Mar
Jun
Sep
2007-08
2008-09
07/03/09-08/28/09 4-wk. Avg.

NYMEX Gasoline in Constant 1984 Dollars
(Adjusted by Bureau of Labor Statistics Consumer Price Index)

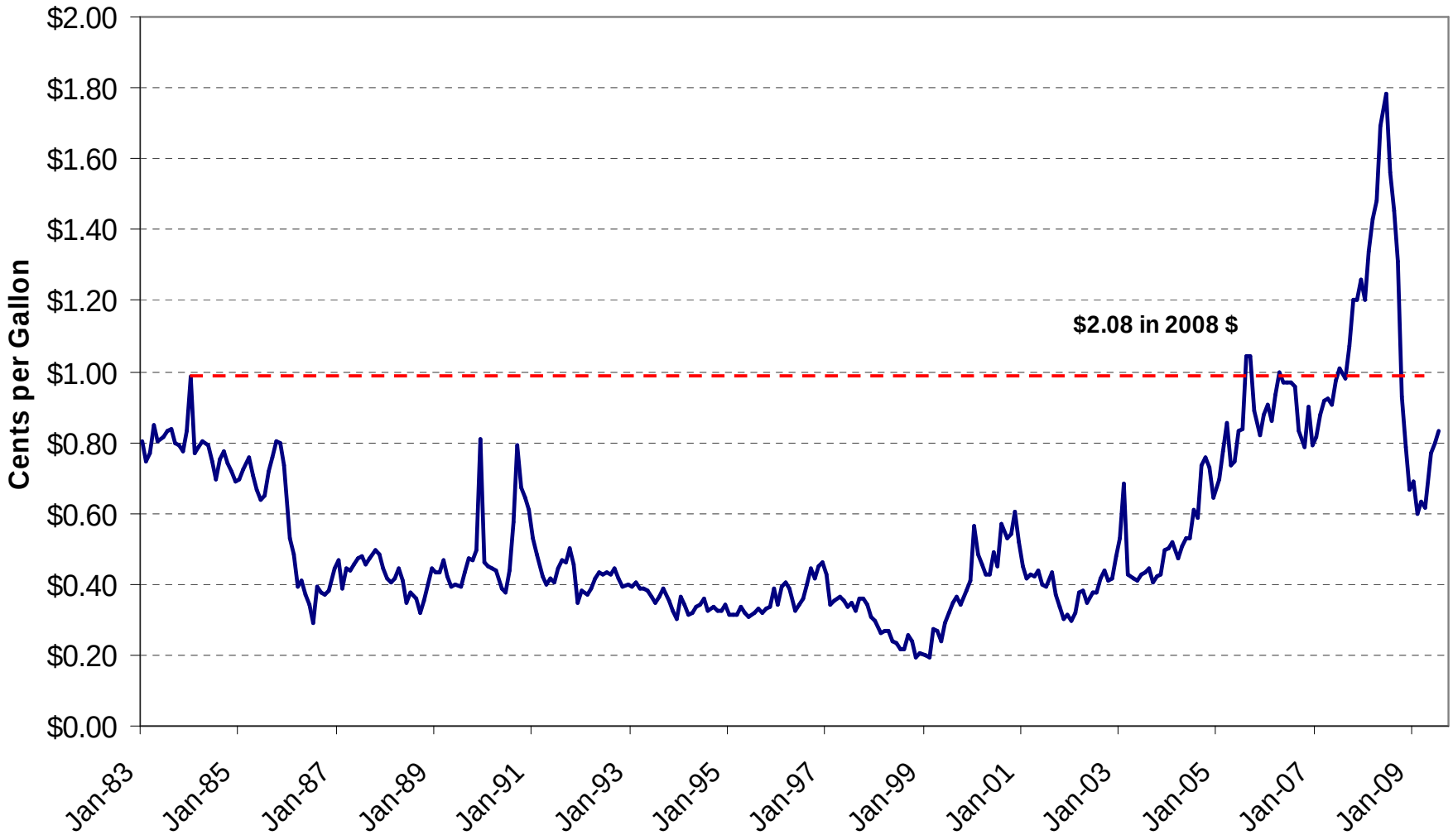


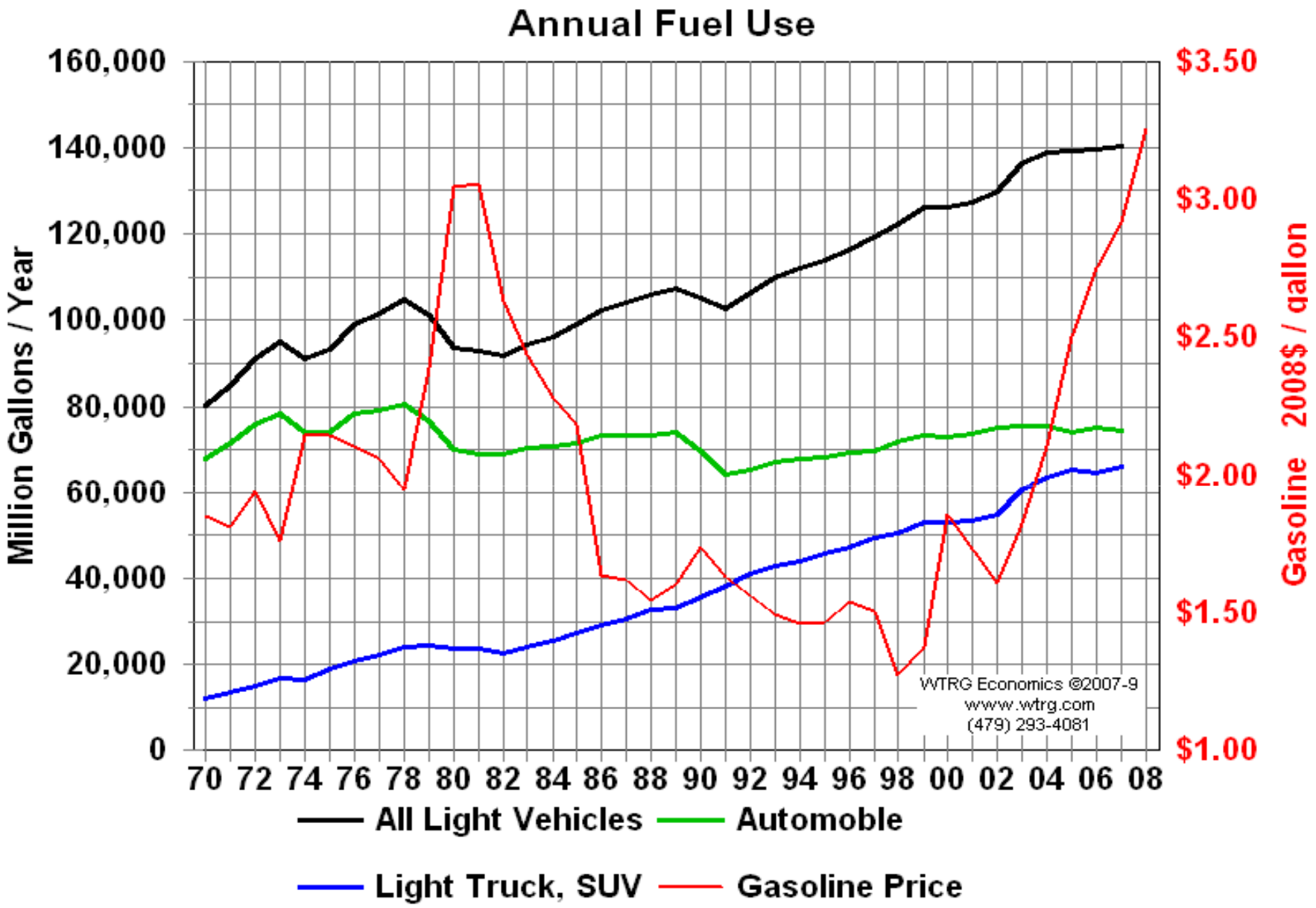

U.S. Distillate Stocks
Million Barrels
175
150
125
100
Sep-08
Dec-08
Mar-09
Jun-09
Sep-09
Average Range
Monthly
Weekly


U.S. Distillate Demand
Million Barrels per Day
4.5
4.1
3.7
3.3
2.9
Sep
Dec
Mar
Jun
Sep
2007-08
2008-09
07/03/09-08/28/09 4-wk. Avg.


U.S. Average All-Types Diesel Fuel Prices
Cents per Gallon
500
390
280
170
Sep
Dec
Mar
Jun
Sep
2007-08
2008-09

NYMEX Heating Oil in Constant 1984 Dollars
(Adjusted by Bureau of Labor Statistics Consumer Price Index)




Annual Fuel Use
Million Gallons / Year
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
$3.50
$3.00
$2.50
$2.00
$1.50
$1.00
Gasoline 2008$ / gallon
70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08
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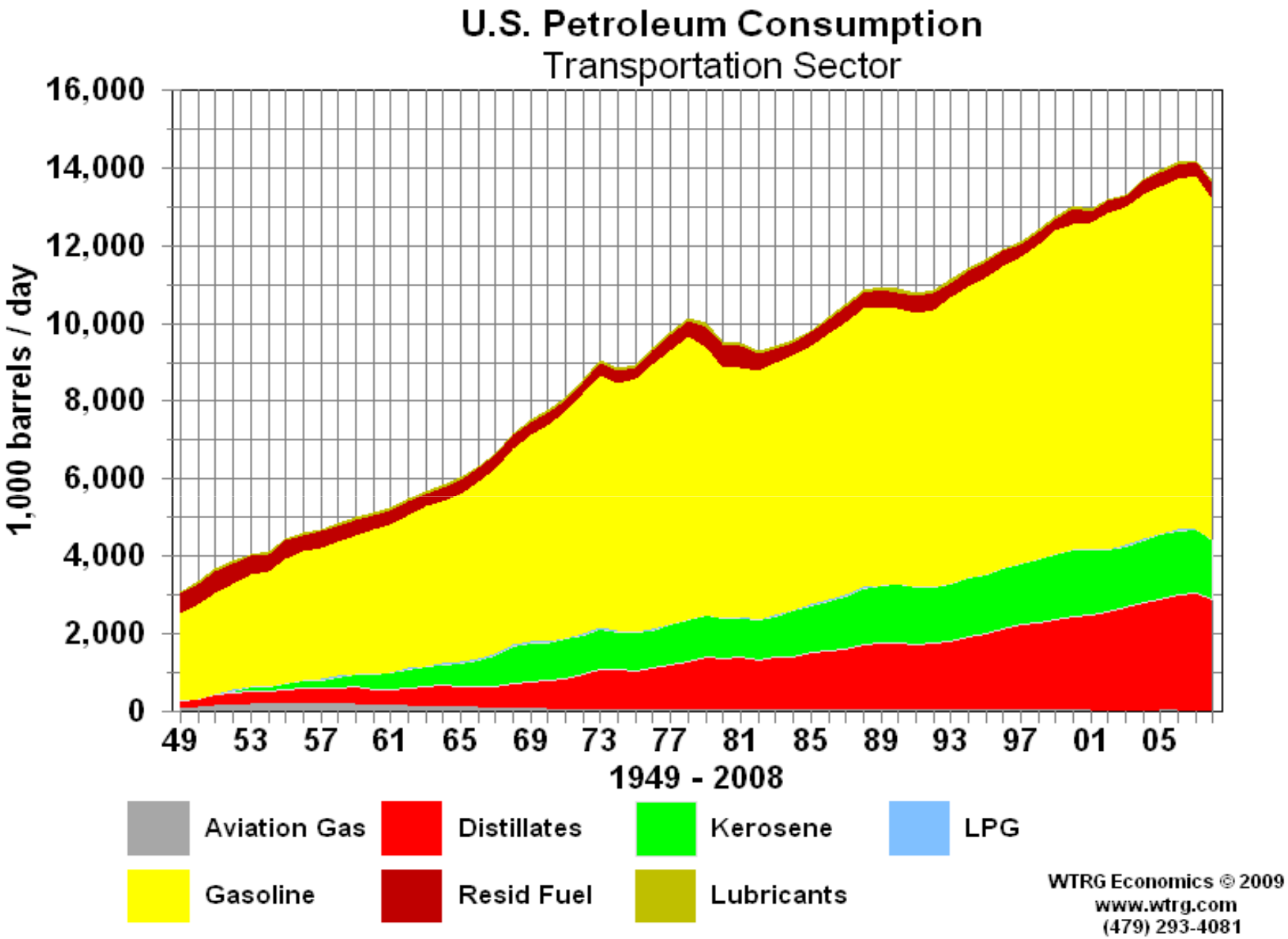
All Light Vehicles
Automoble
Light Truck, SUV
Gasoline Price


U.S. Petroleum Consumption
Transportation Sector
1,000 barrels / day
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
49
53
57
61
65
69
73
77
81
85
89
93
97
01
05
1949 - 2008
Aviation Gas
Distillates
Kerosene
LPG
Gasoline
Resid Fuel
Lubricants
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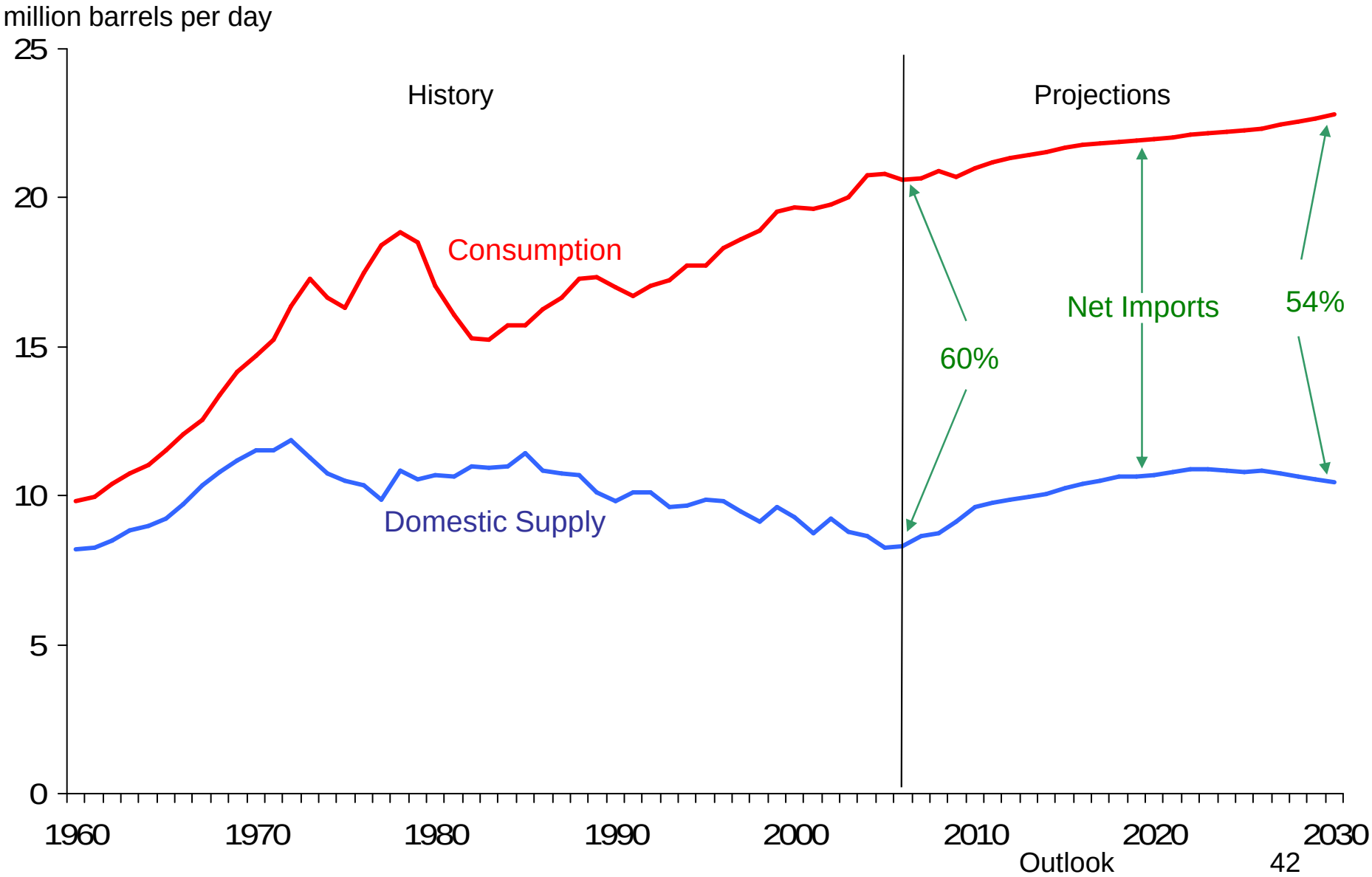
U.S. dependence on imports of liquid fuels and other petroleum declines by 2030

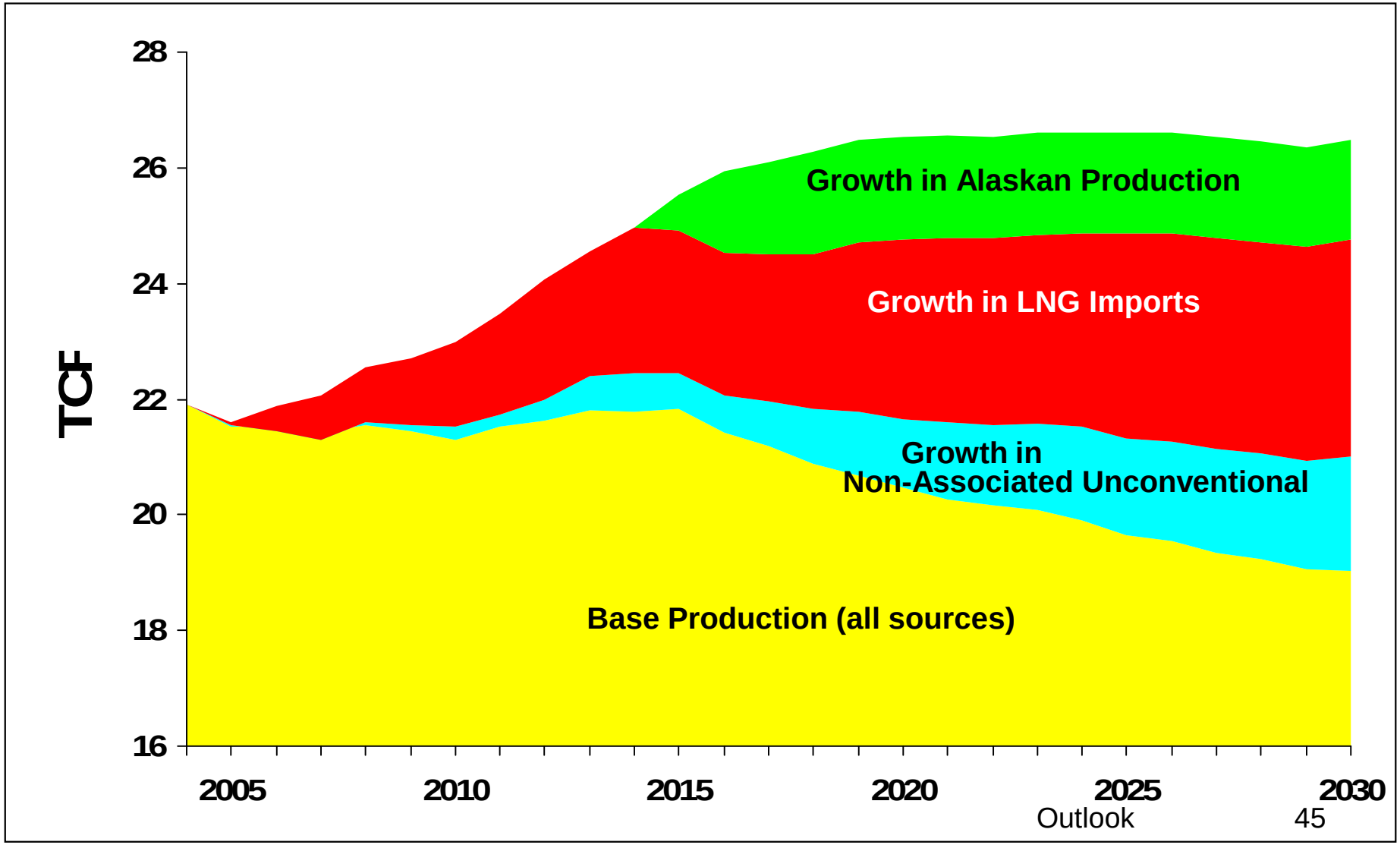


Products Outlook

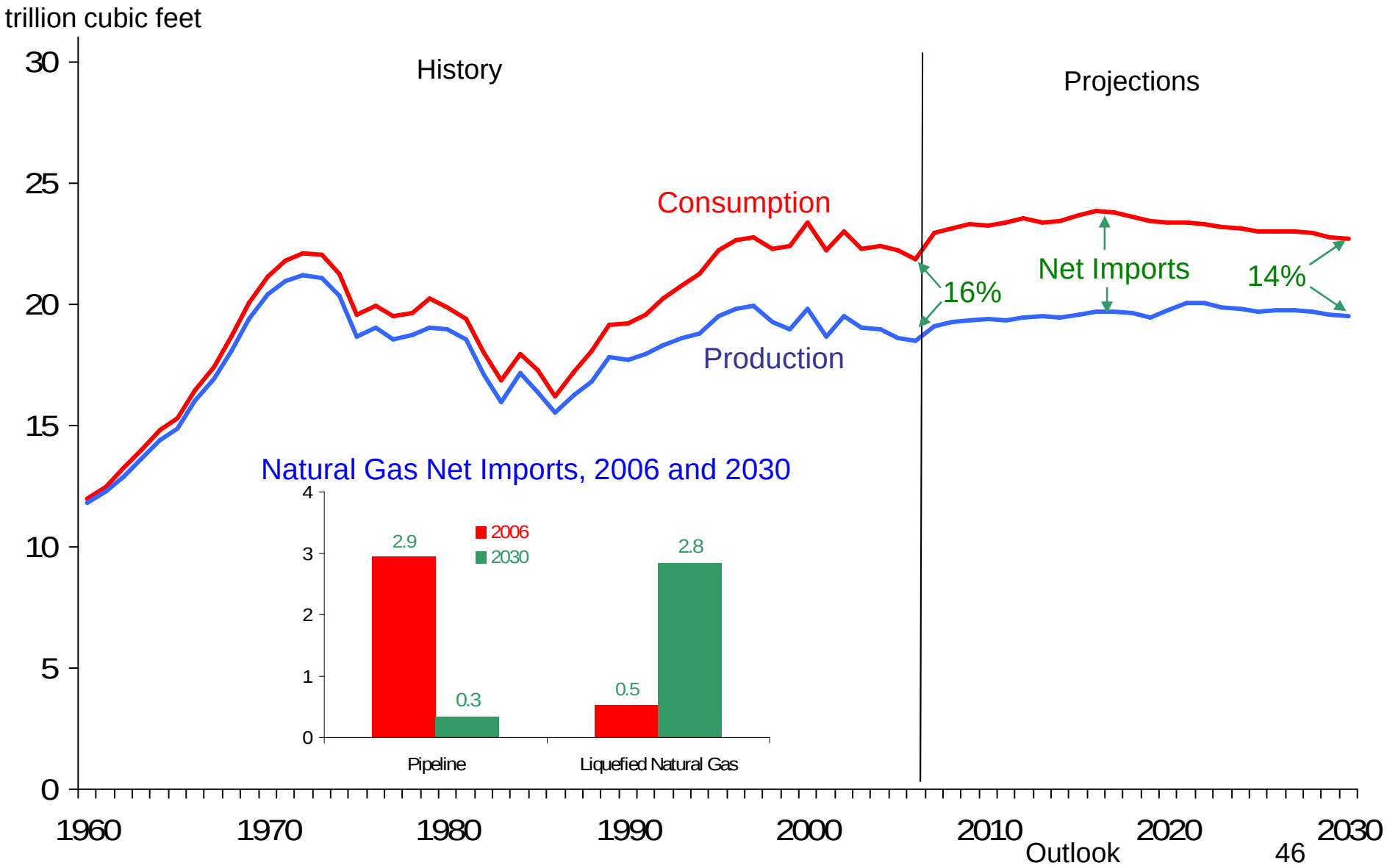
- Demand for both distillates and gasoline is down in response global slowdown.
- Distillate stocks have risen to above average.
- Gasoline stocks have risen to 5 year average due to stronger refining margins.
- Diesel may be premium to gasoline year-round due to greater demand overseas and efforts to reduce U.S. gasoline consumption.
- Prices are still cheap in “real” terms and will advance as economic growth resumes.

Natural Gas

Major Sources of Incremental U.S. Natural Gas Supply, 2004-2030 (trillion cubic feet)



U.S. dependence on natural gas net imports declines slightly



Annual Energy Outlook 2008

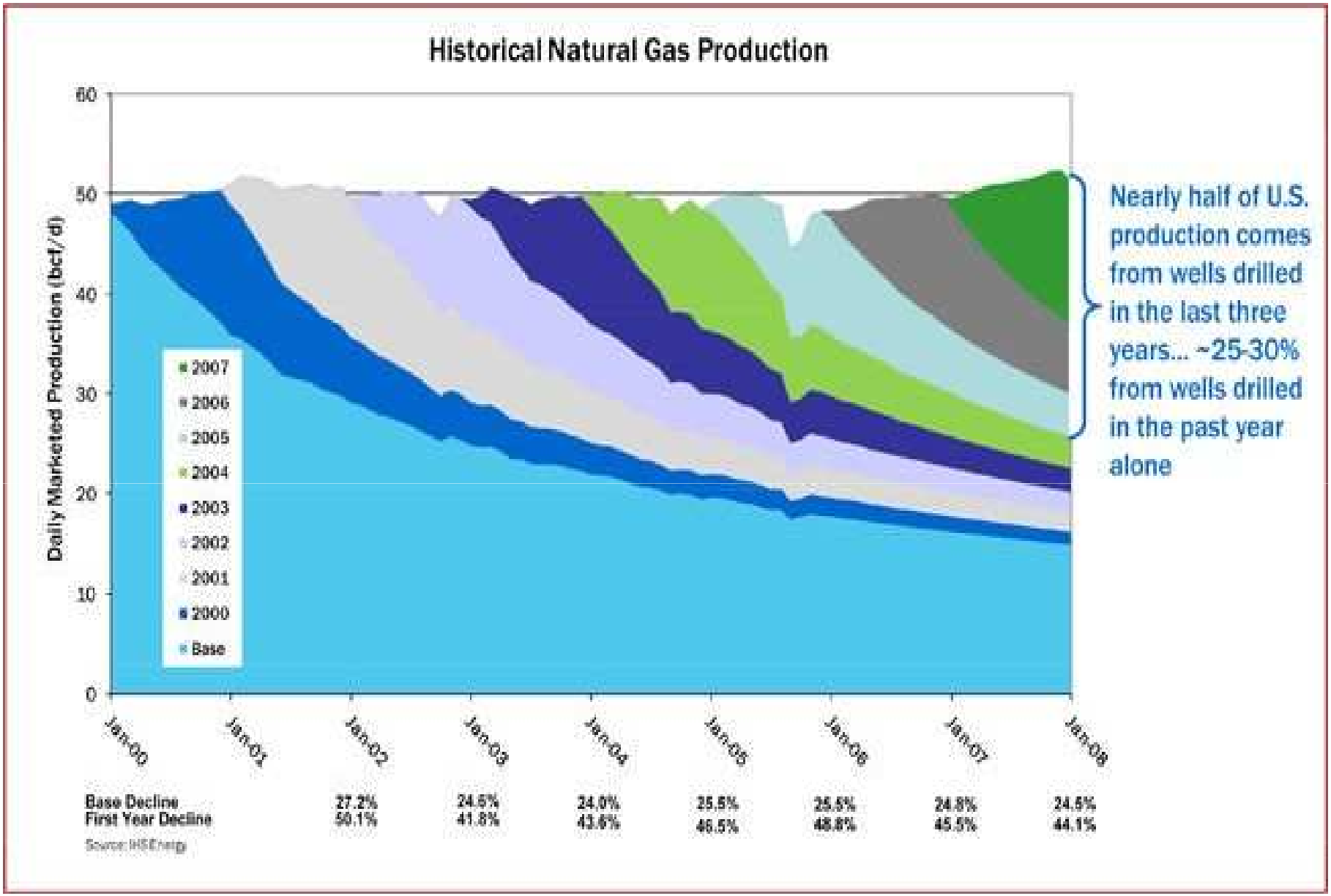
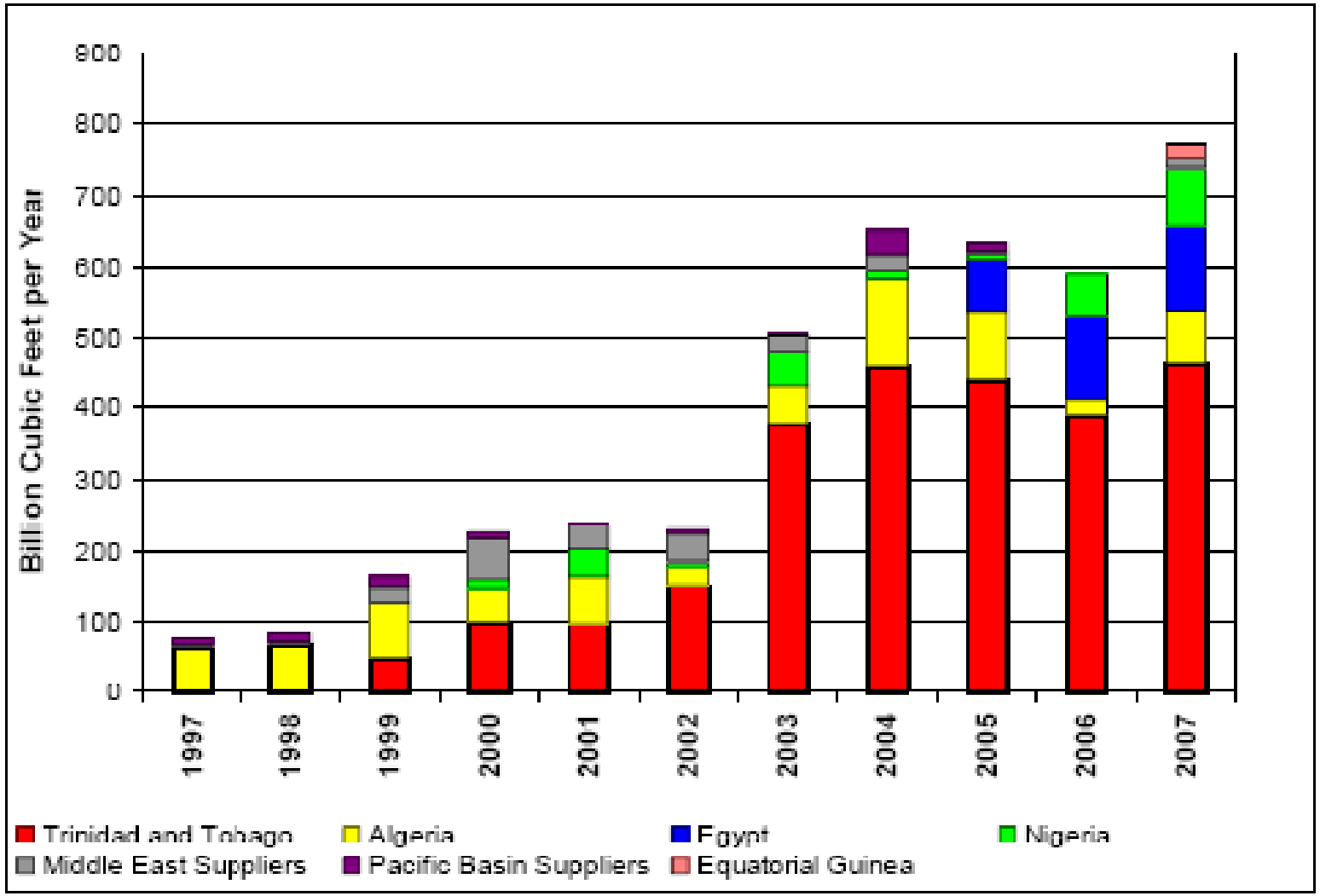
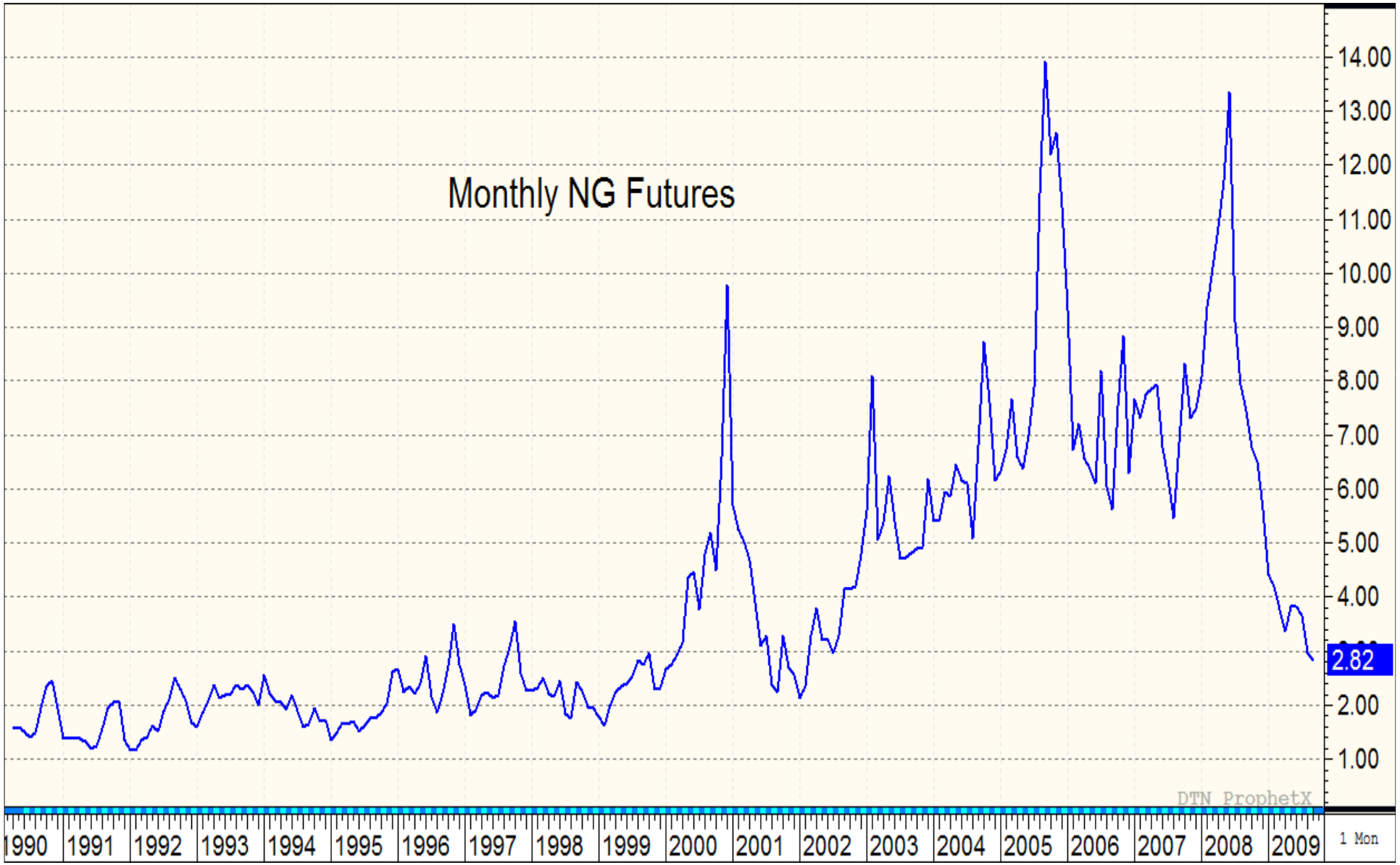

Historical Natural Gas Production
Daily Marketed Production (bcf/d)
60
50
40
30
20
10
0
2007
2006
2005
2004
2003
2002
2001
2000
Base
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Base Decline
First Year Decline
27.2%
50.1%
24.6%
41.8%
24.0%
43.6%
25.5%
46.5%
25.5%
48.8%
24.8%
45.5%
24.5%
44.1%
Source: IHS Energy
Nearly half of U.S. production comes from wells drilled in the last three years... ~25-30% from wells drilled in the past year alone

Figure 5. U.S. Receipts of LNG Reached Record High Volumes

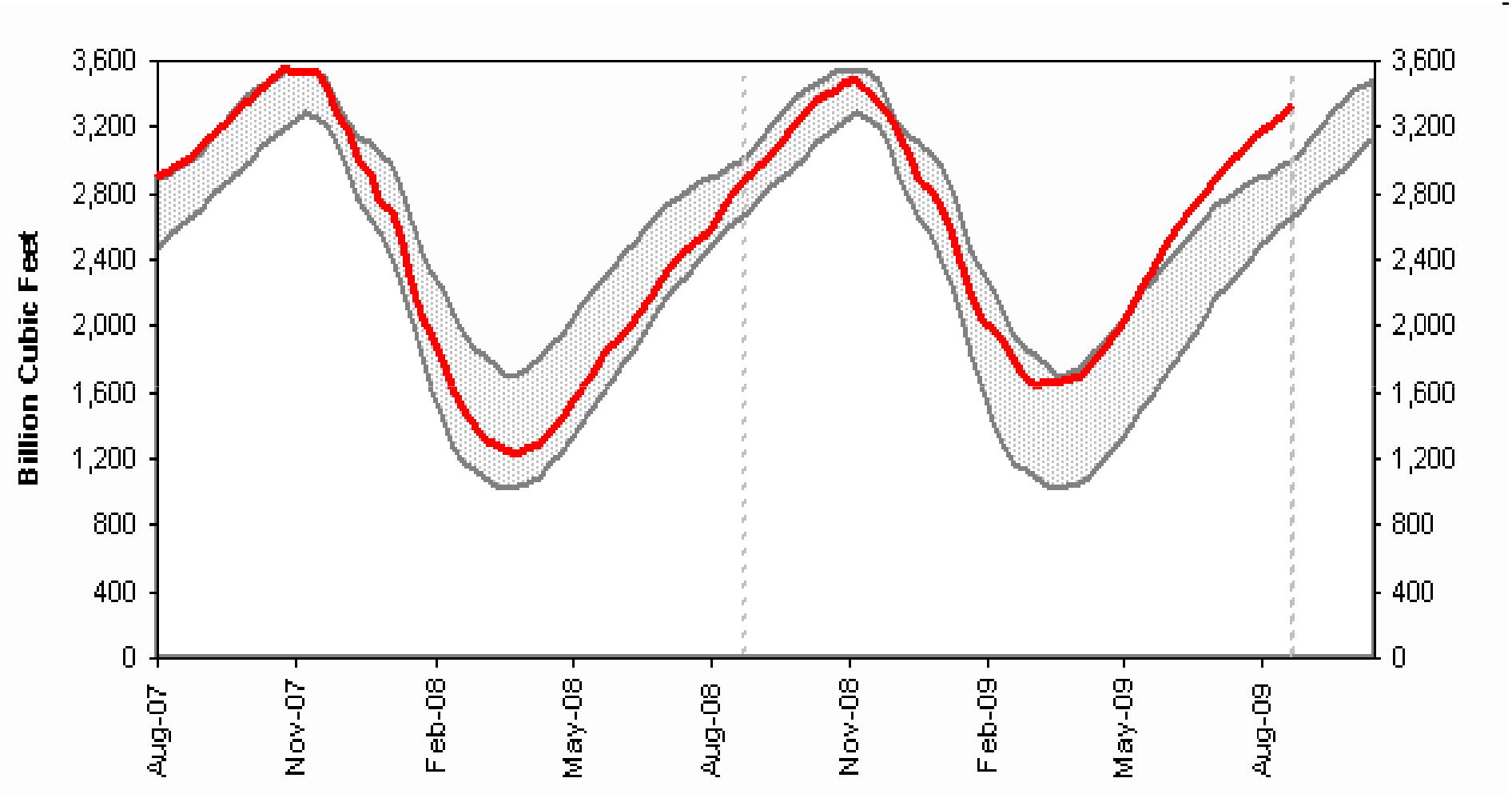


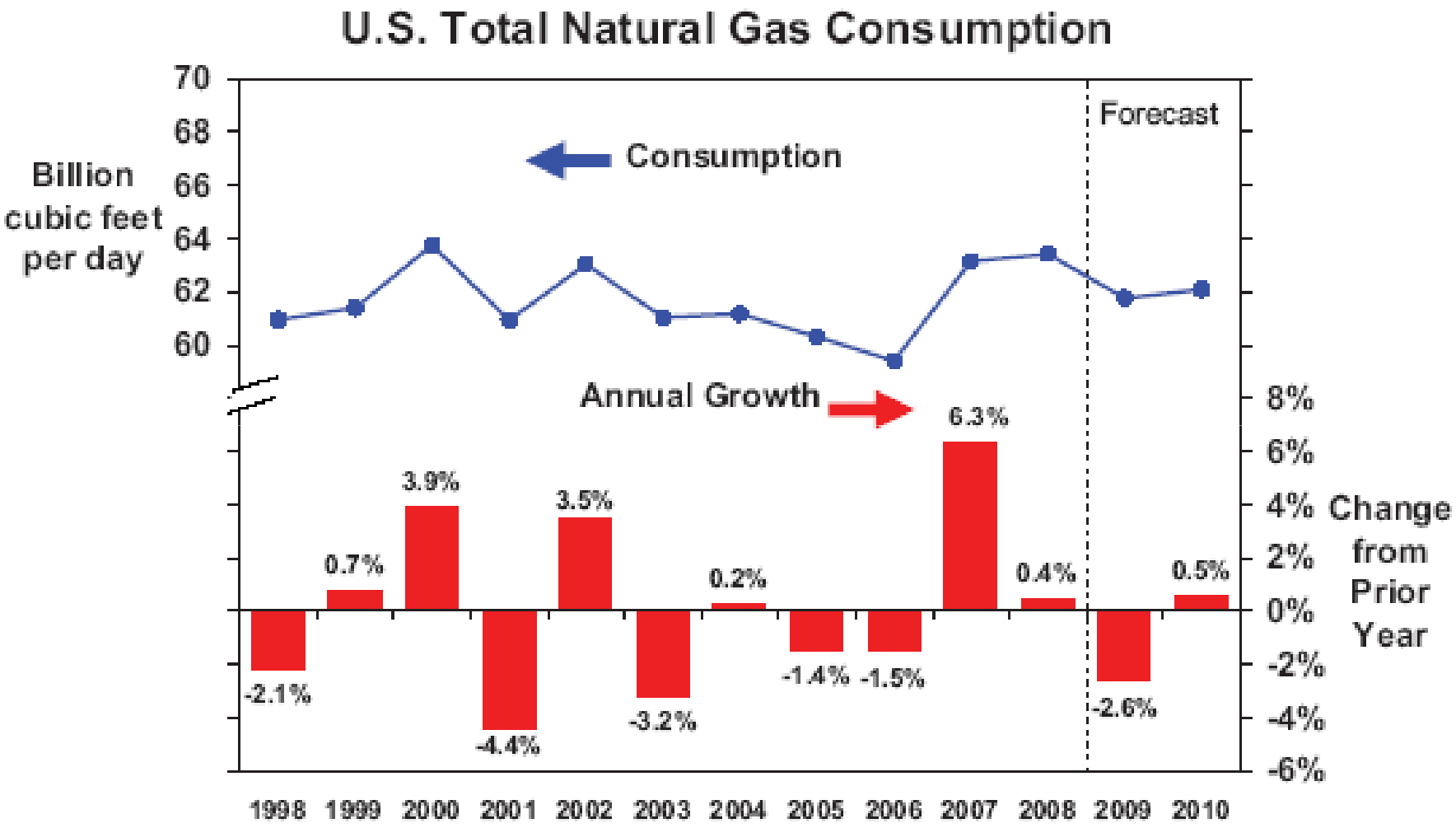
Source: Department of Energy, Office of Fossil Energy.

Natural Gas Futures Prices



NG Stocks


Billion Cubic Feet
3,600
3,200
2,800
2,400
2,000
1,600
1,200
800
400
0
Aug-07
Nov-07
Feb-08
May-08
Aug-08
Nov-08
Feb-09
May-09
Aug-09

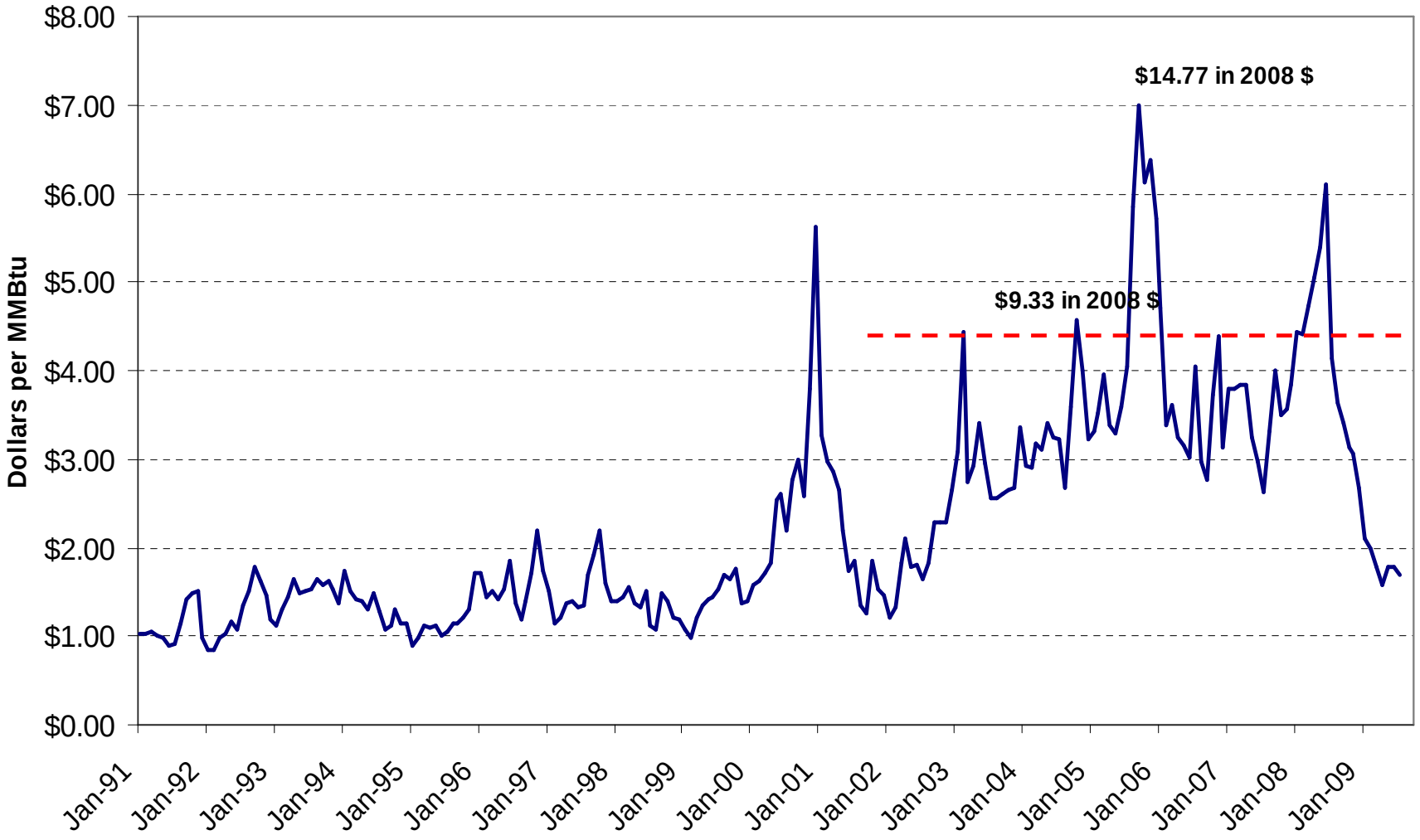


Short-Term Energy Outlook, August 2009

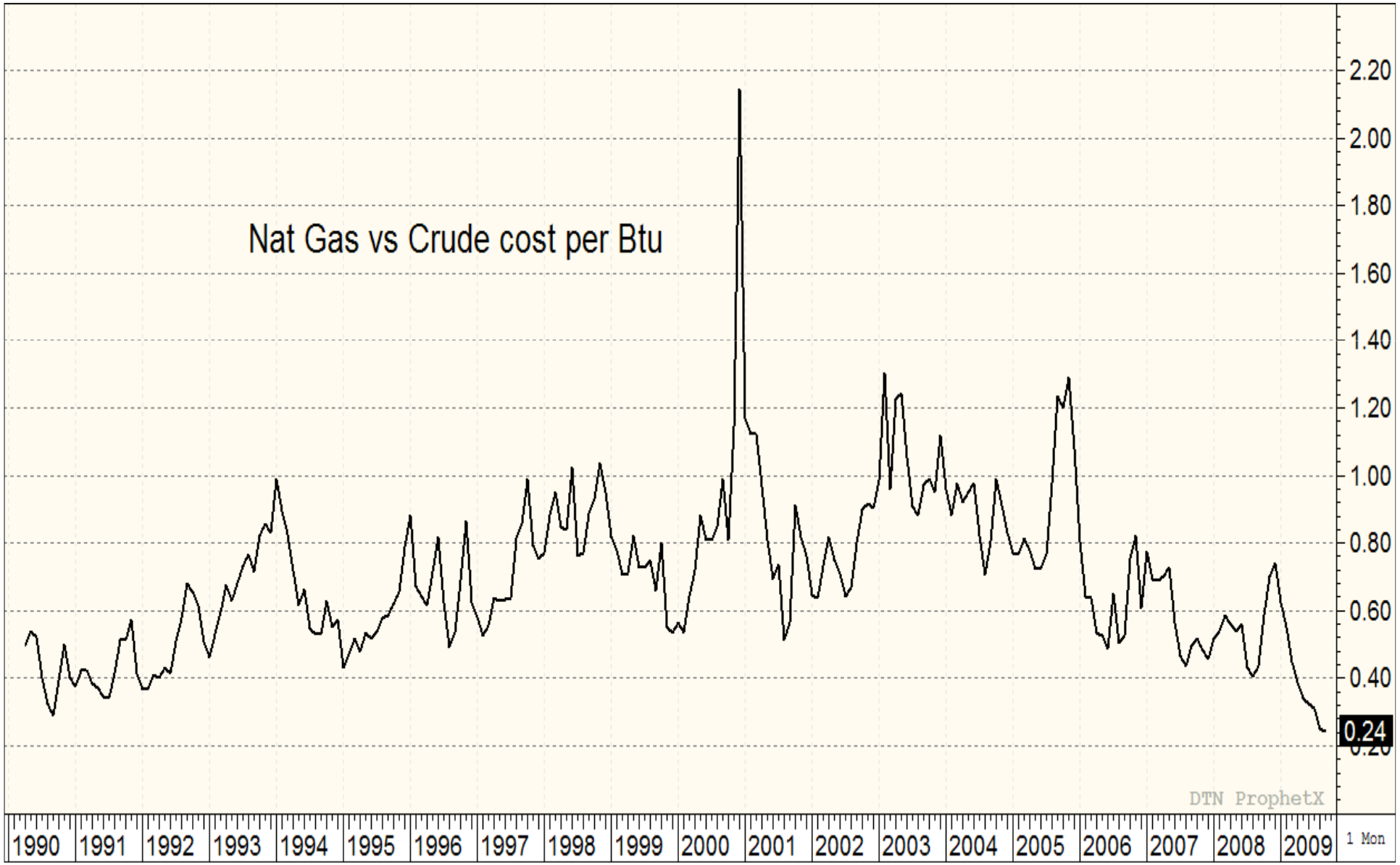
www.eia.doe.gov

NYMEX Natural Gas in Constant 1984 Dollars

(Adjusted by Consumer Price Index)



NG vs Crude, cost/mmbtu



Natural Gas Outlook

- Stocks are approaching a record high for Nov. 1
- Production is up, weather is mild, industrial demand is down.
- Rising demand for summer power generation has dampened seasonal price swings.
- Hurricane threats have not materialized this summer.
- Low prices are discouraging drilling and exploration – NG is record low compared to crude.
- Forward prices are much higher than spot.

The Propane Market

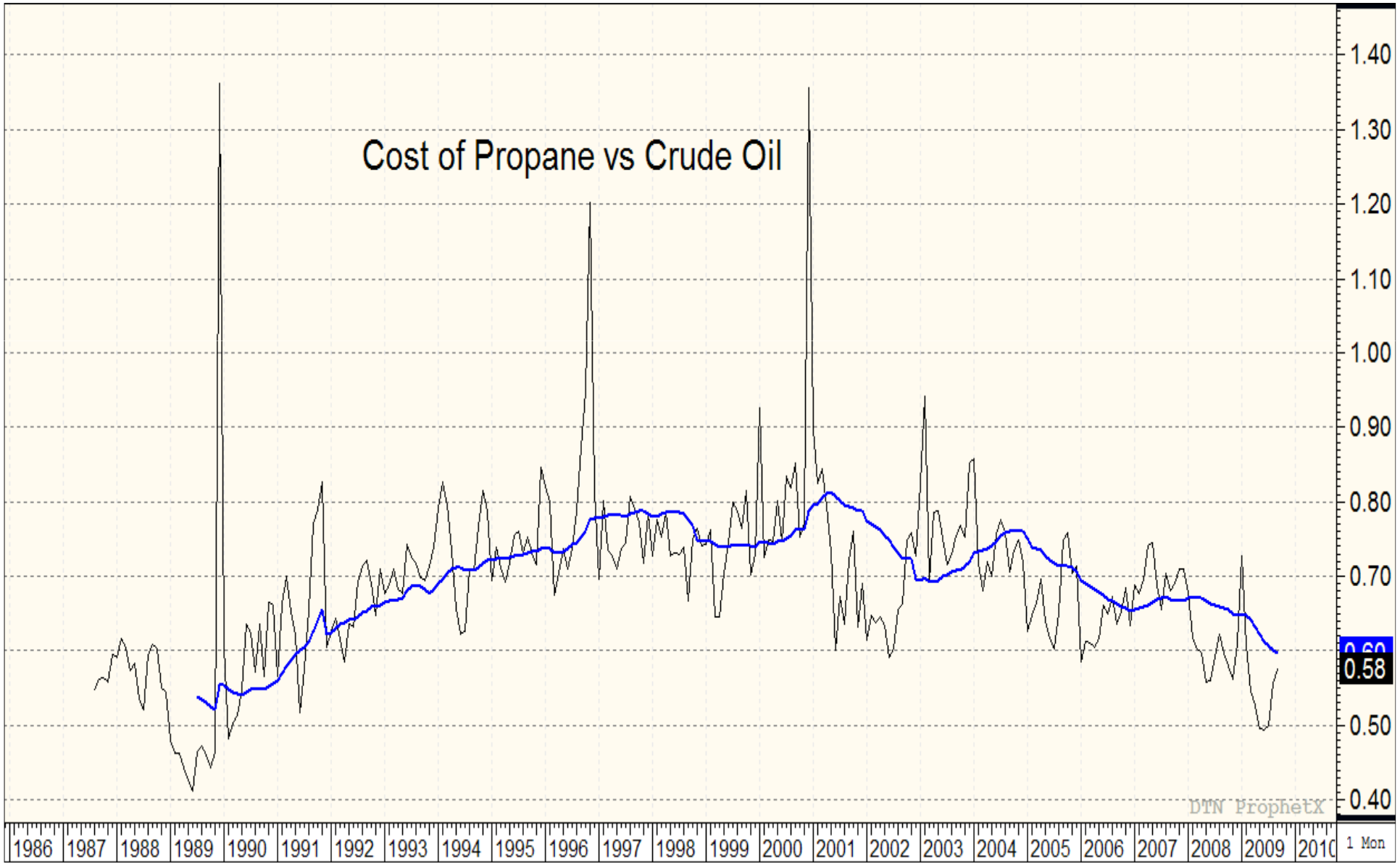
Propane Price Factors

- crude and natural gas prices
- inventories
- refinery & gas plant production
- weather
- petrochemical demand
- imports

Propane vs. Crude Pricing

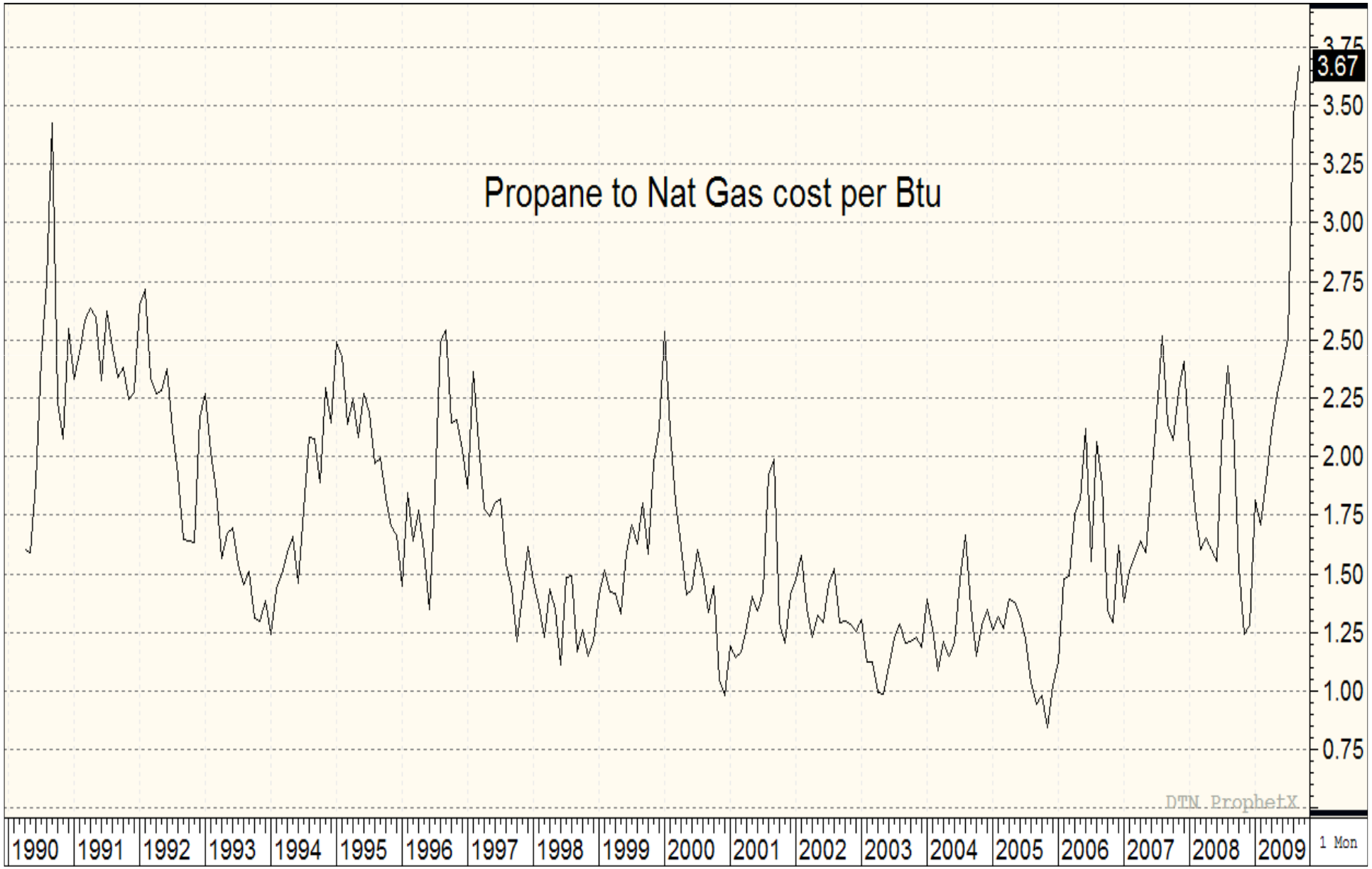
	Ratio of Propane to Crude				
		50%	**60%**	**70%**	**80%**
		Propane cpg			
	$50	59.5	71.4	83.3	95.2
	$55	65.5	78.6	91.7	104.8
	$60	71.4	85.7	100.0	114.3
Crude price	**$65**	77.4	92.9	108.3	123.8
	$70	83.3	100.0	116.7	133.3
	$75	89.3	107.1	125.0	142.9
	$80	95.2	114.3	133.3	152.4
	$85	101.2	121.4	141.7	161.9
	$90	107.1	128.6	150.0	171.4

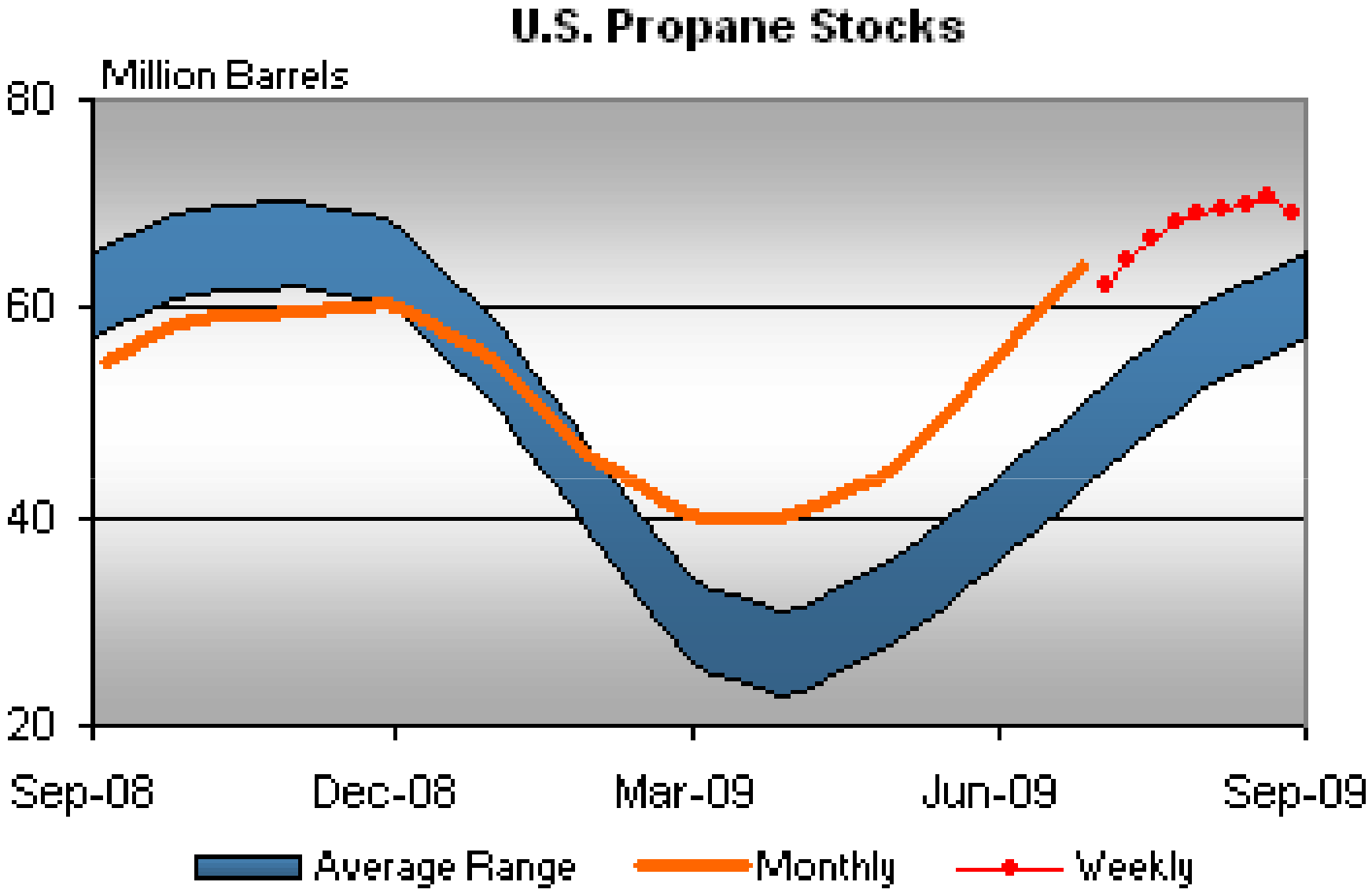
PN as % of Crude

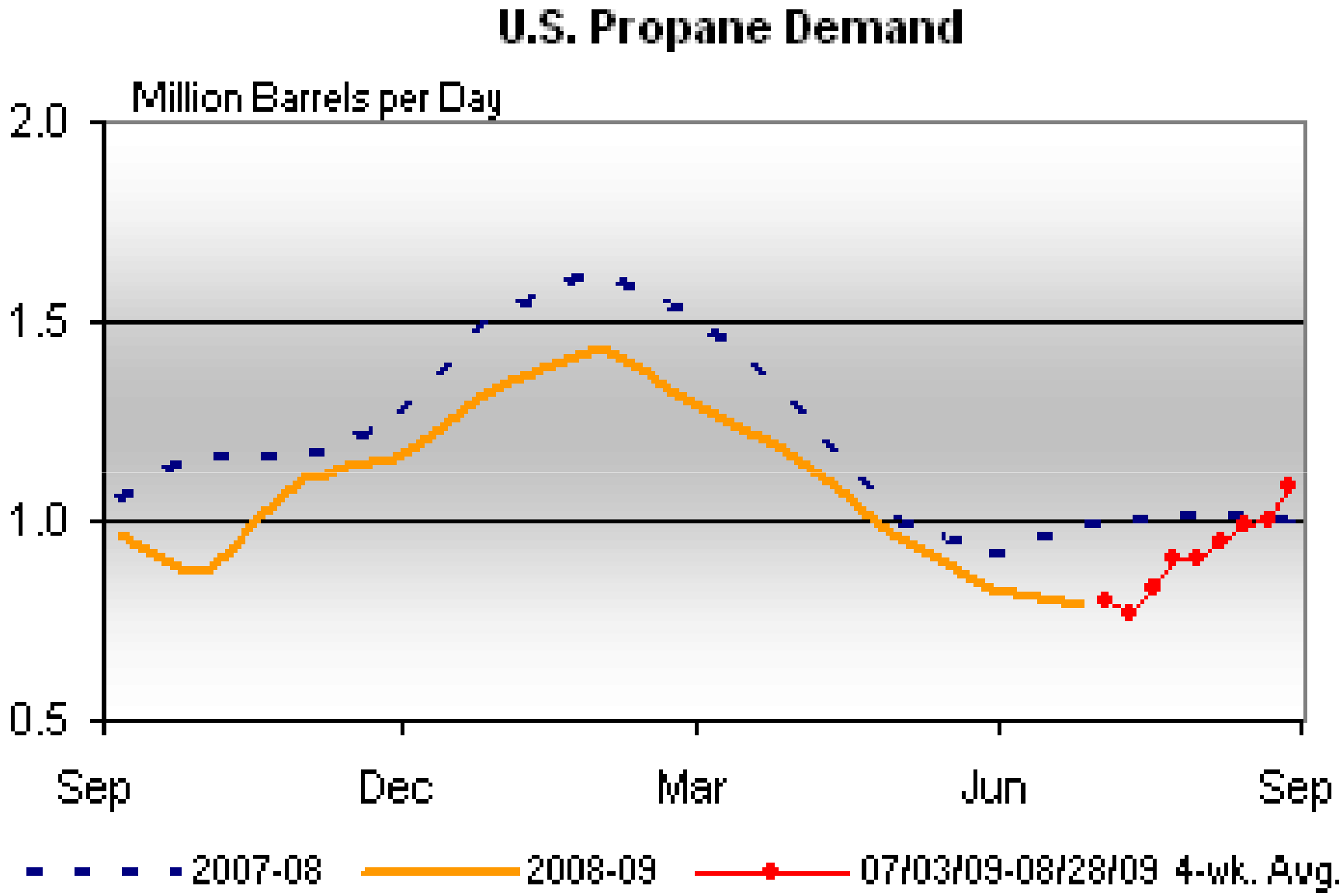


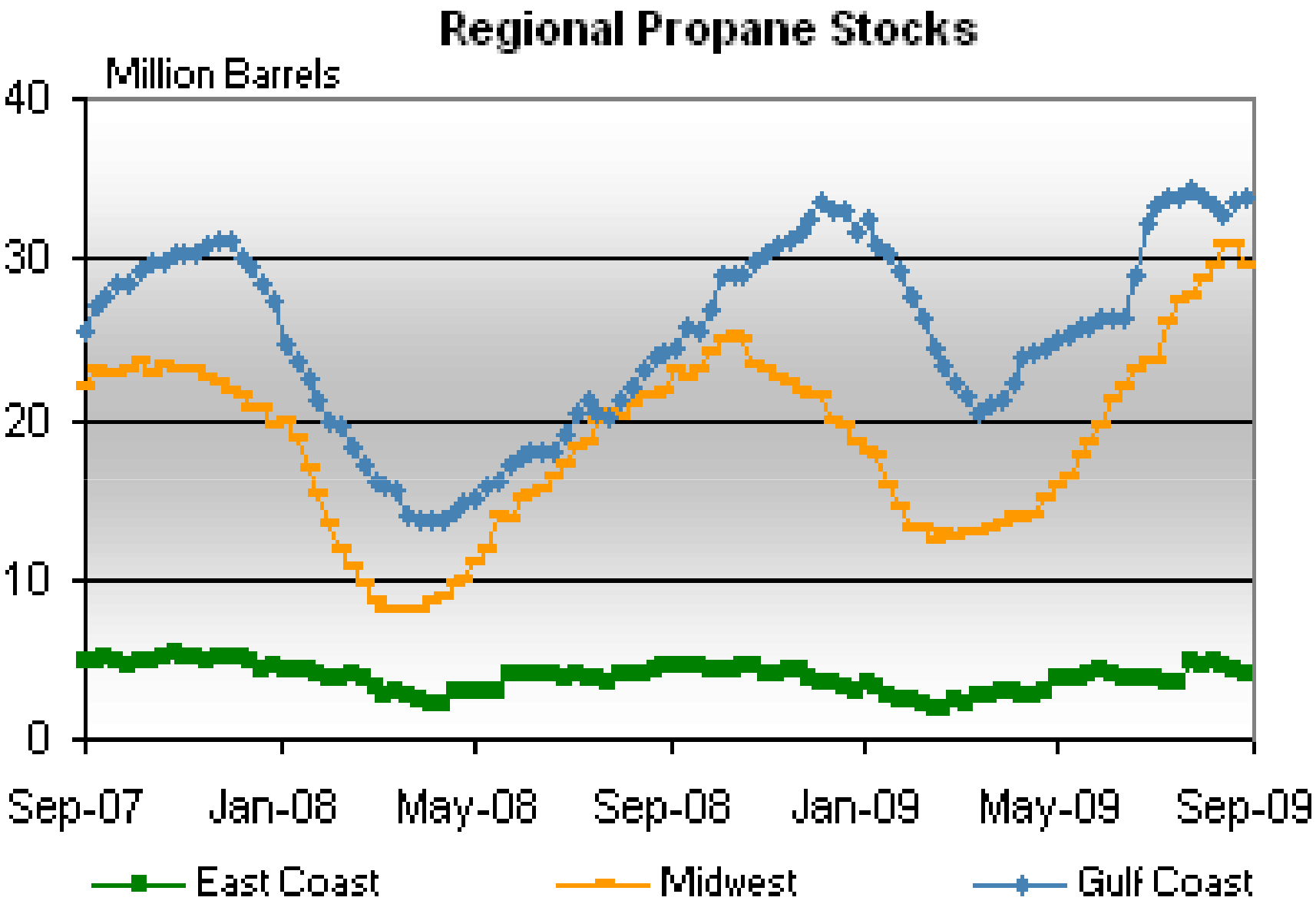
Propane value vs. Natural Gas			
		margin/gal	
NG Price	$ -	$ 0.10	$ 0.20
$ 2.50	$ 0.225	$ 0.325	$ 0.425
$ 3.00	$ 0.270	$ 0.370	$ 0.470
$ 3.50	$ 0.315	$ 0.415	$ 0.515
$ 4.00	$ 0.360	$ 0.460	$ 0.560
$ 4.50	$ 0.405	$ 0.505	$ 0.605
$ 5.00	$ 0.450	$ 0.550	$ 0.650
$ 5.50	$ 0.495	$ 0.595	$ 0.695
$ 6.00	$ 0.541	$ 0.641	$ 0.741

PN as % of NG

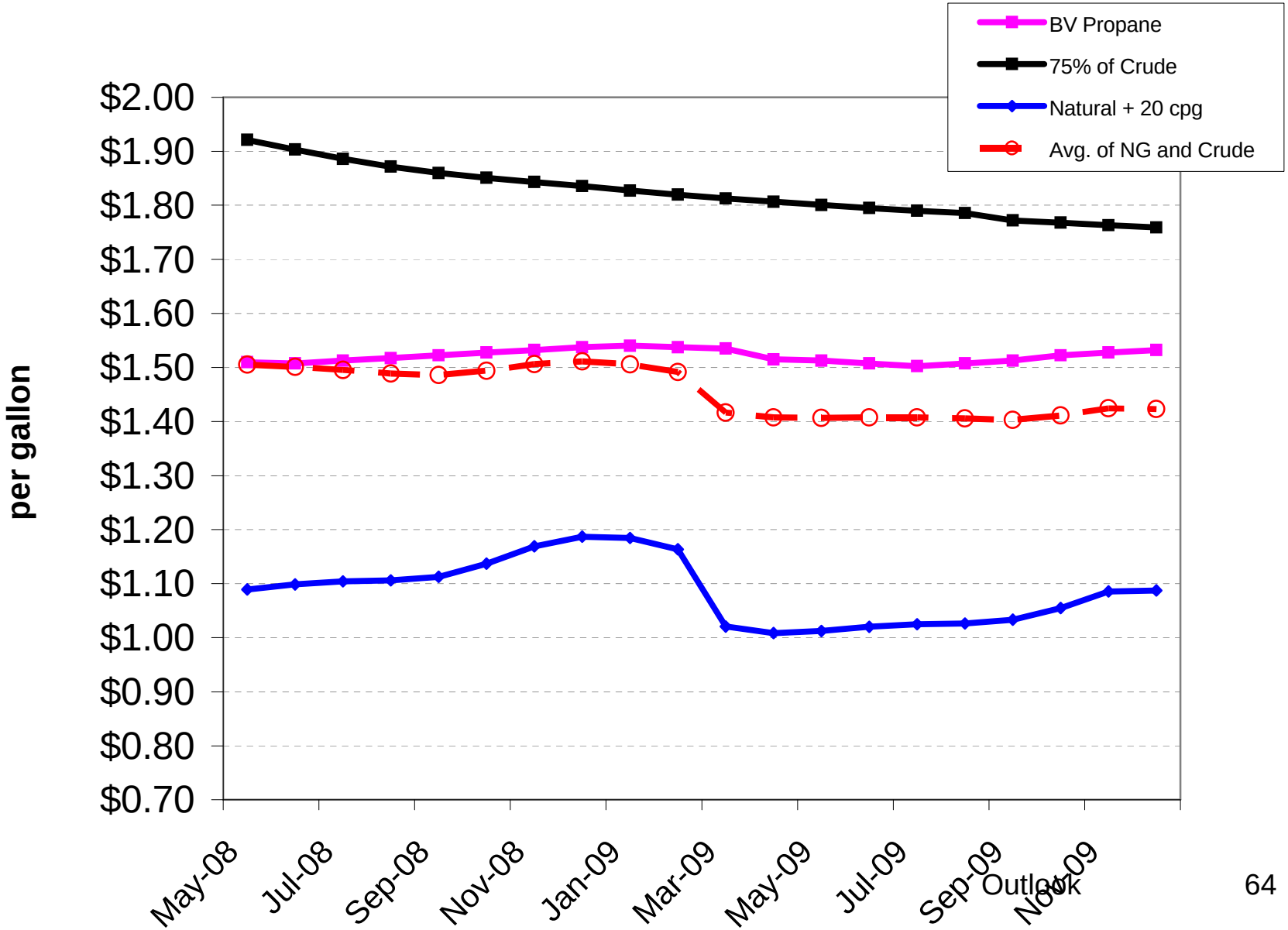

Propane to Nat Gas cost per Btu
3.67
3.50
3.25
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
DTN ProphetX
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
1 Mon


U.S. Propane Stocks
Million Barrels
80
60
40
20
Sep-08
Dec-08
Mar-09
Jun-09
Sep-09
Average Range
Monthly
Weekly

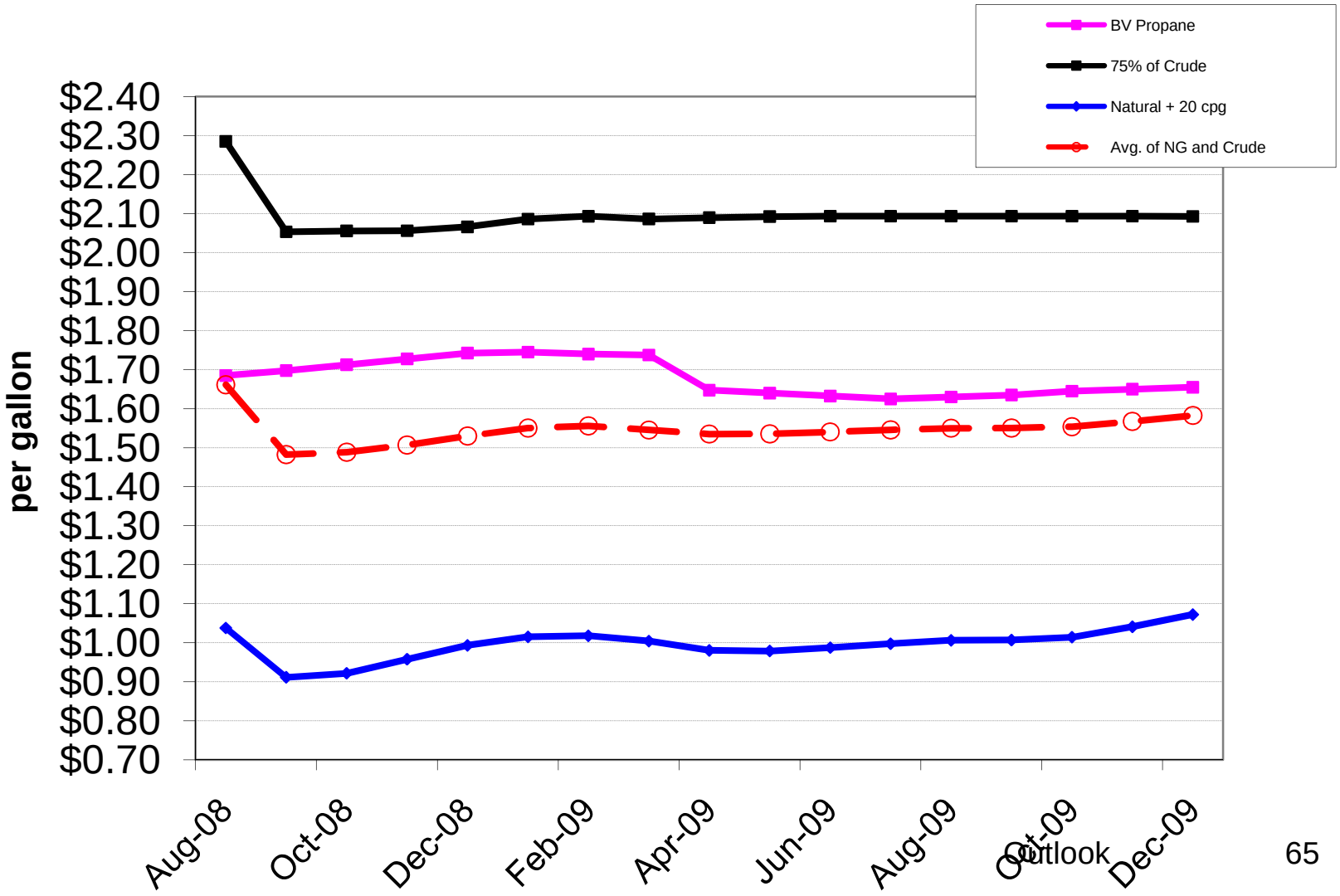

U.S. Propane Demand
Million Barrels per Day
2.0
1.5
1.0
0.5
Sep
Dec
Mar
Jun
Sep
2007-08
2008-09
07/03/09-08/28/09 4-wk. Avg.


Regional Propane Stocks
Million Barrels
40
30
20
10
0
Sep-07
Jan-08
May-08
Sep-08
Jan-09
May-09
Sep-09
East Coast
Midwest
Gulf Coast

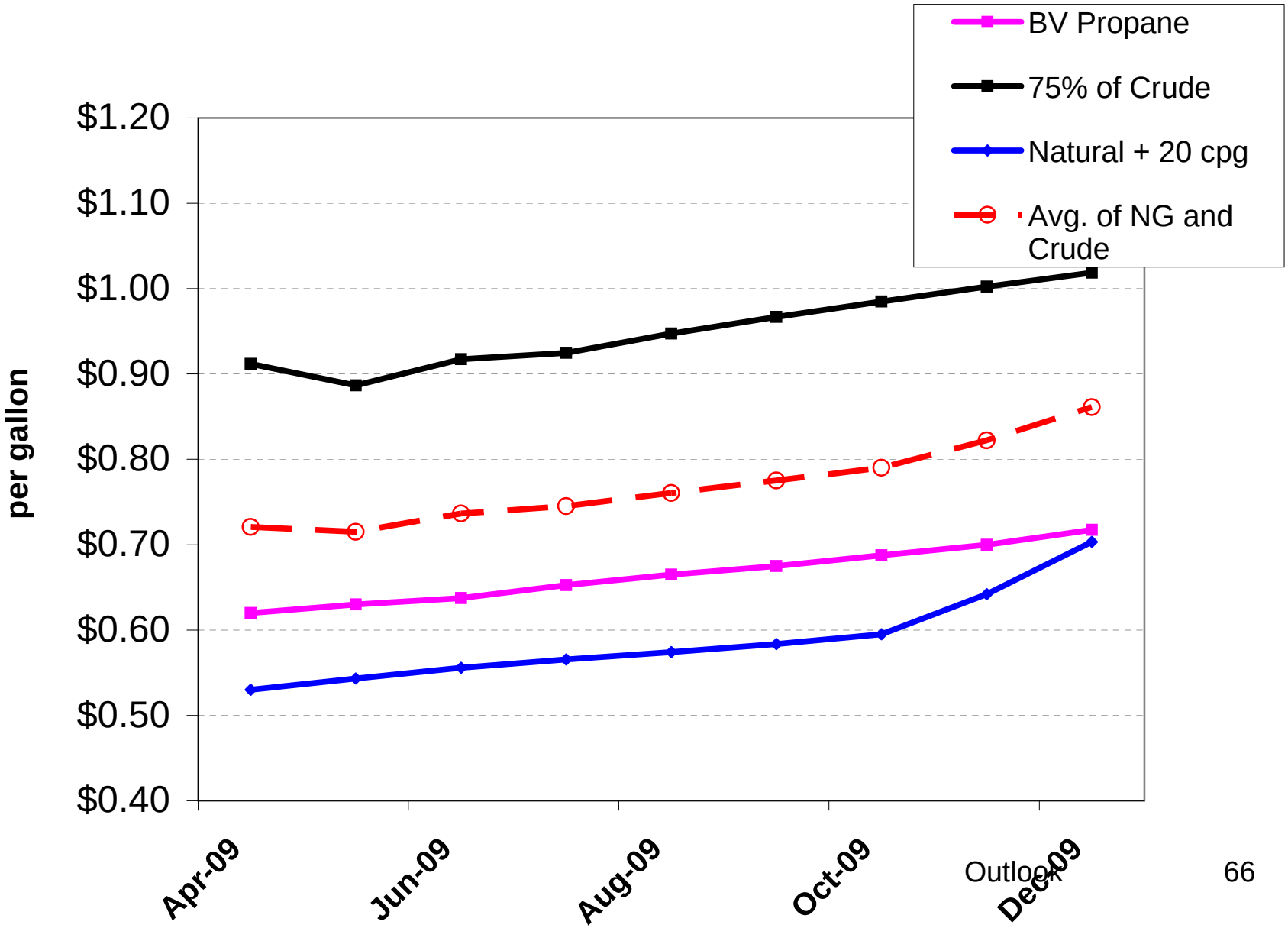
Forward Price Curves Apr 08

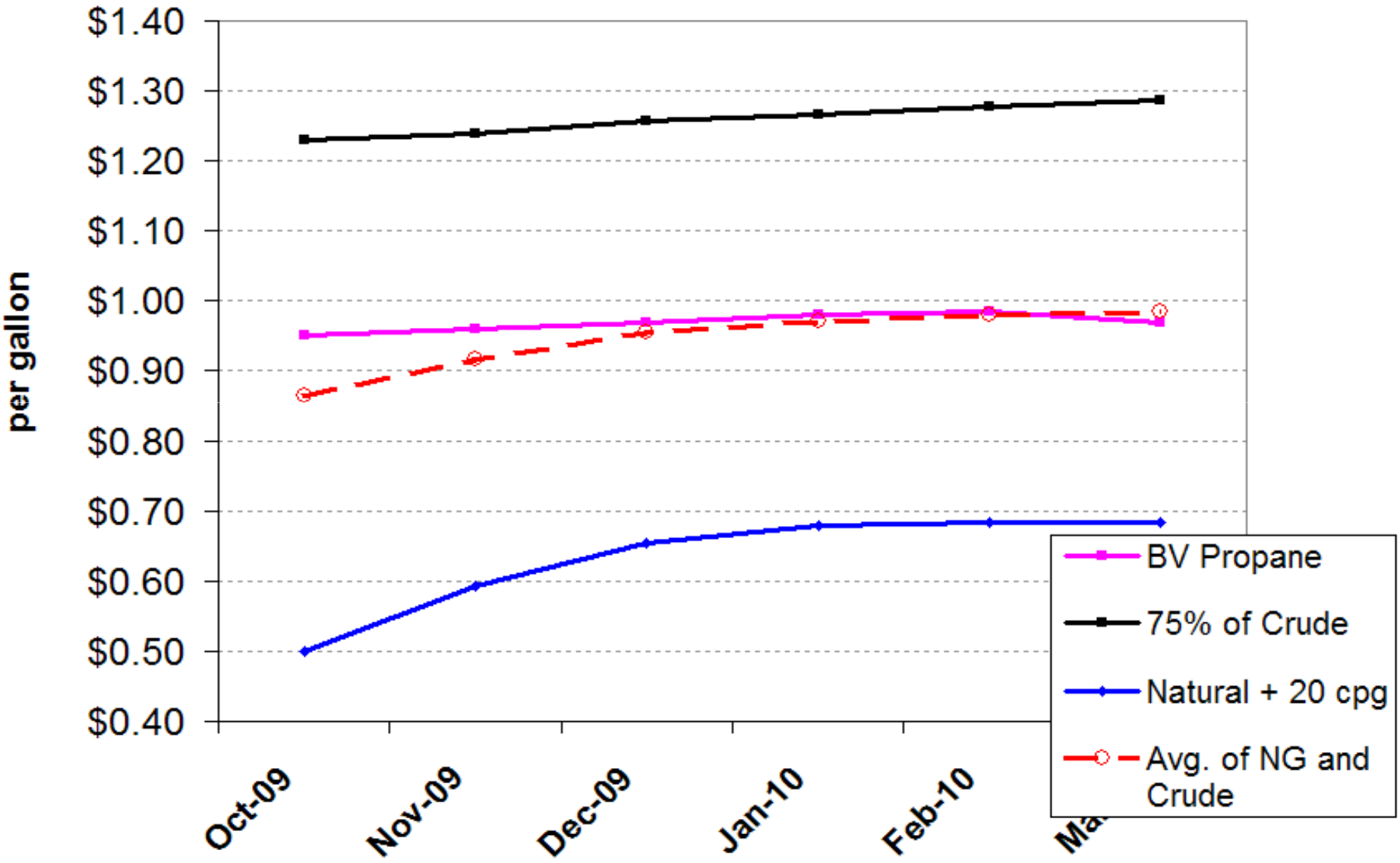


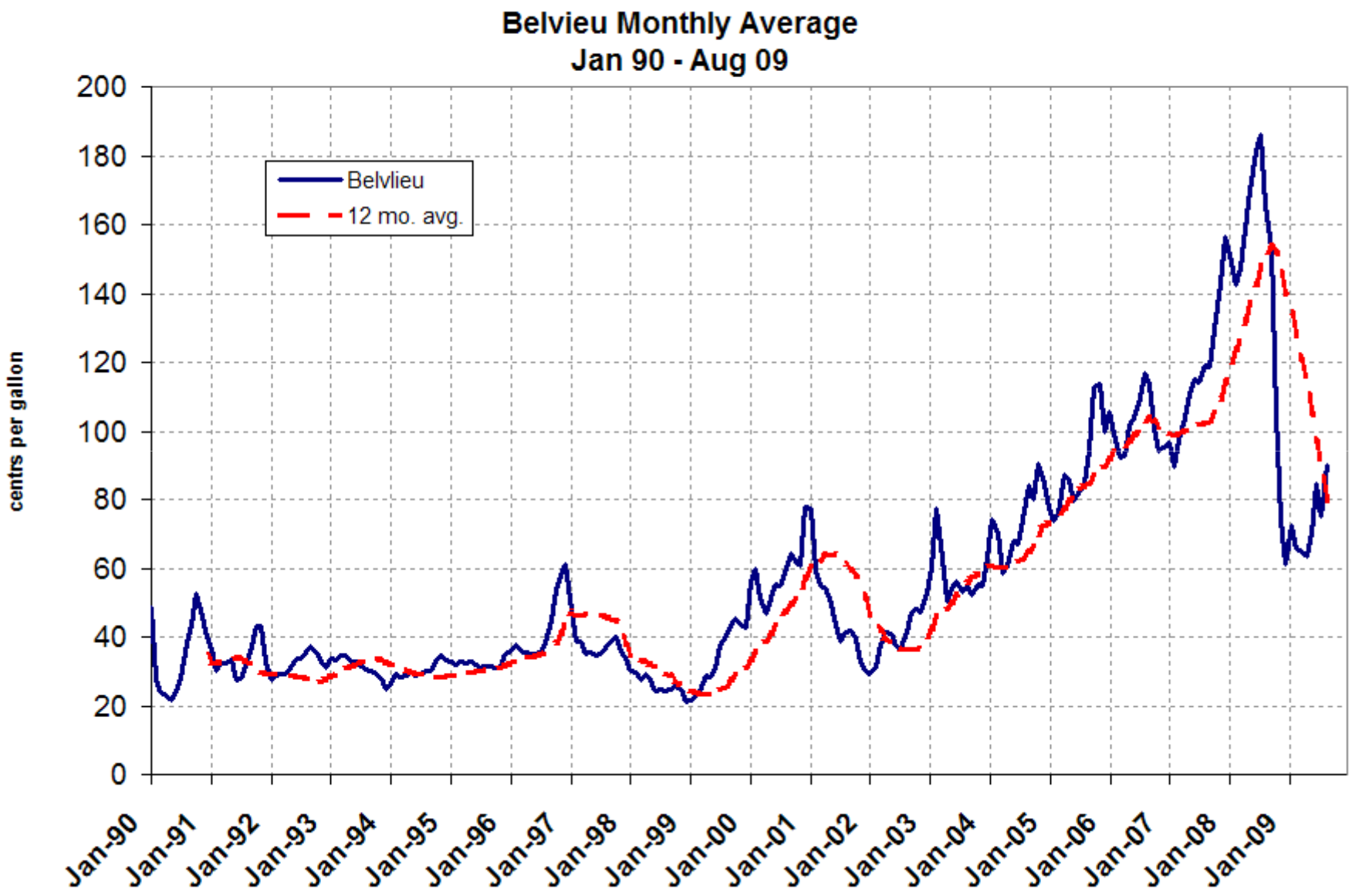
Forward Price Curves Aug 08

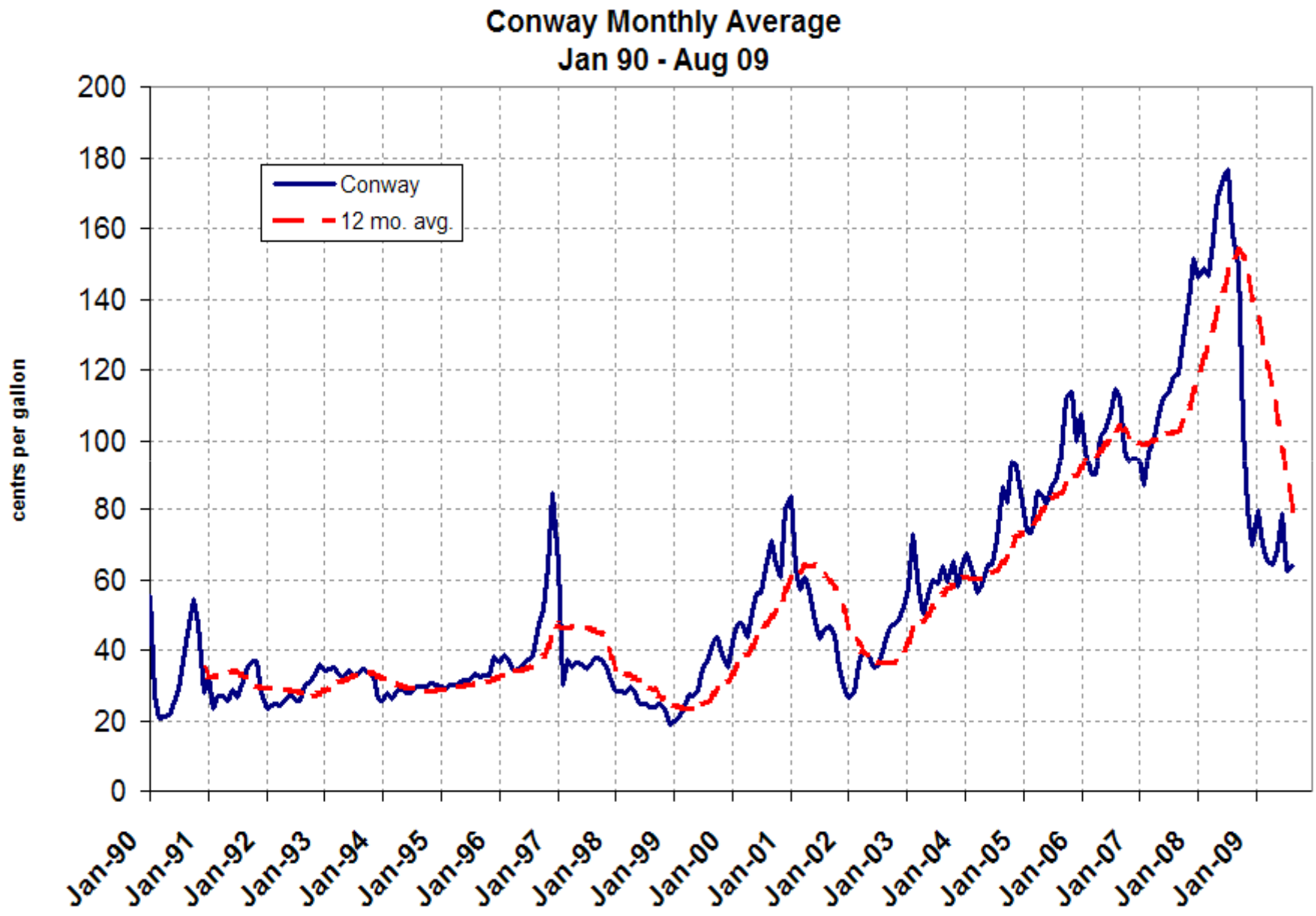


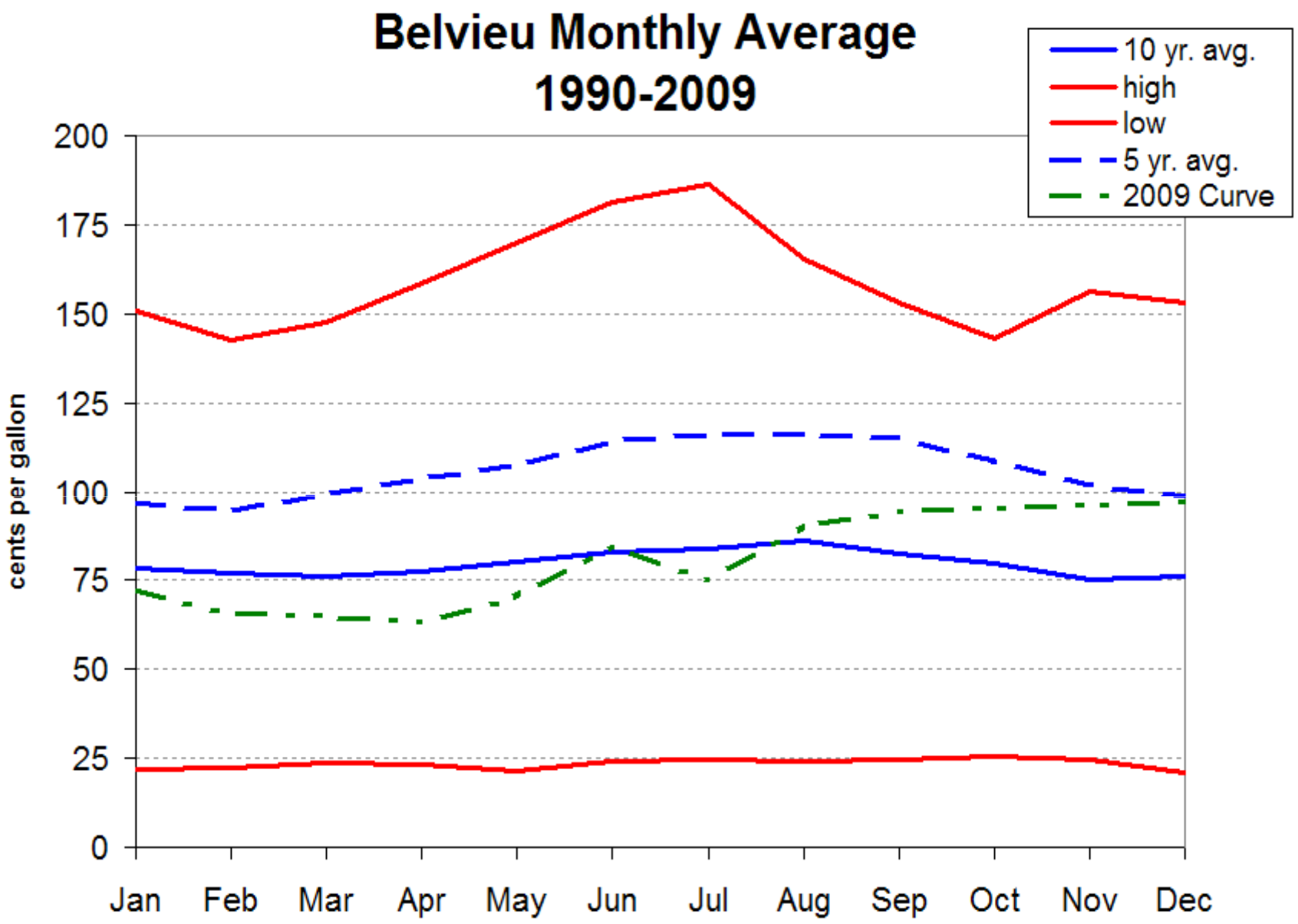
Forward Price Curves Apr 09

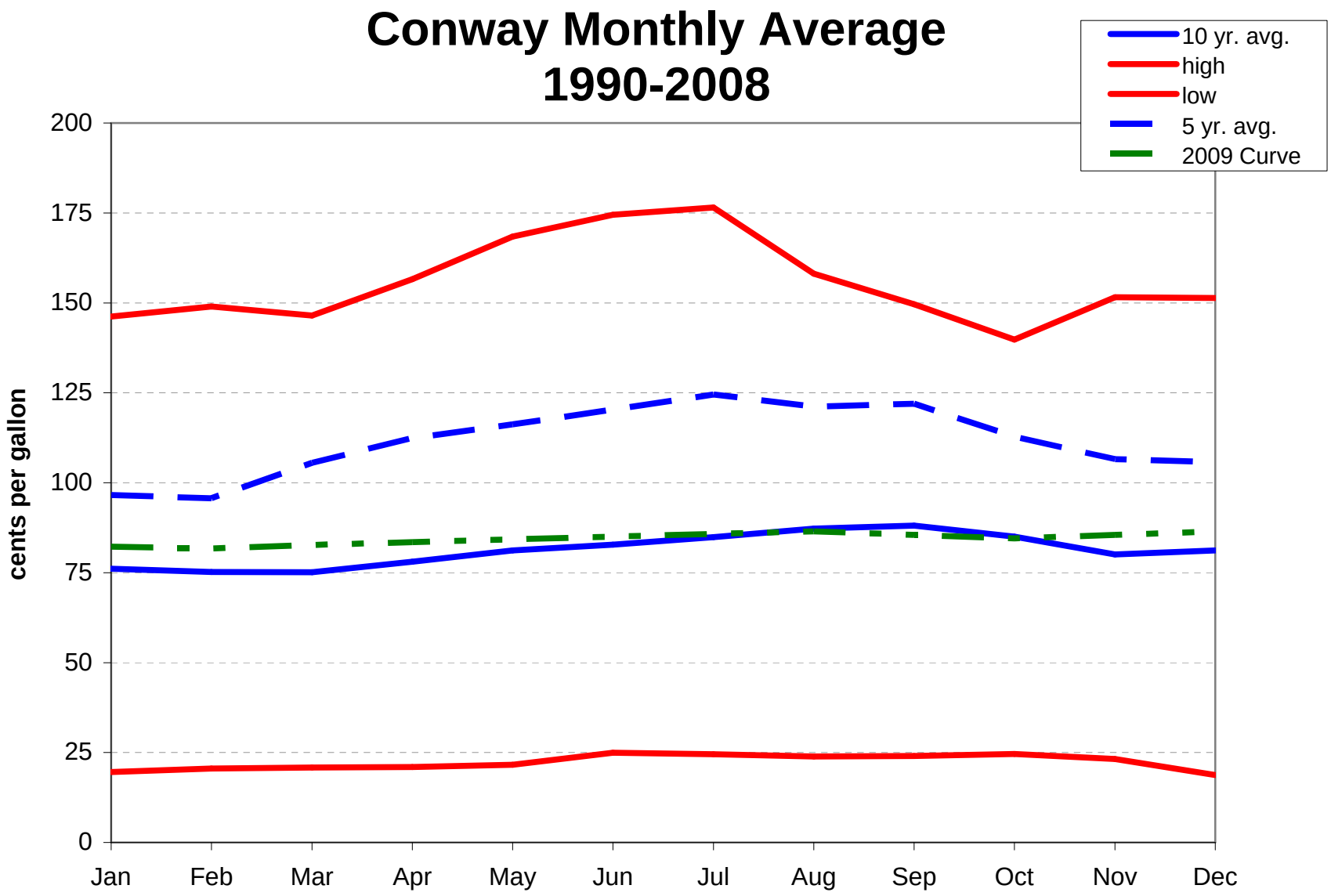


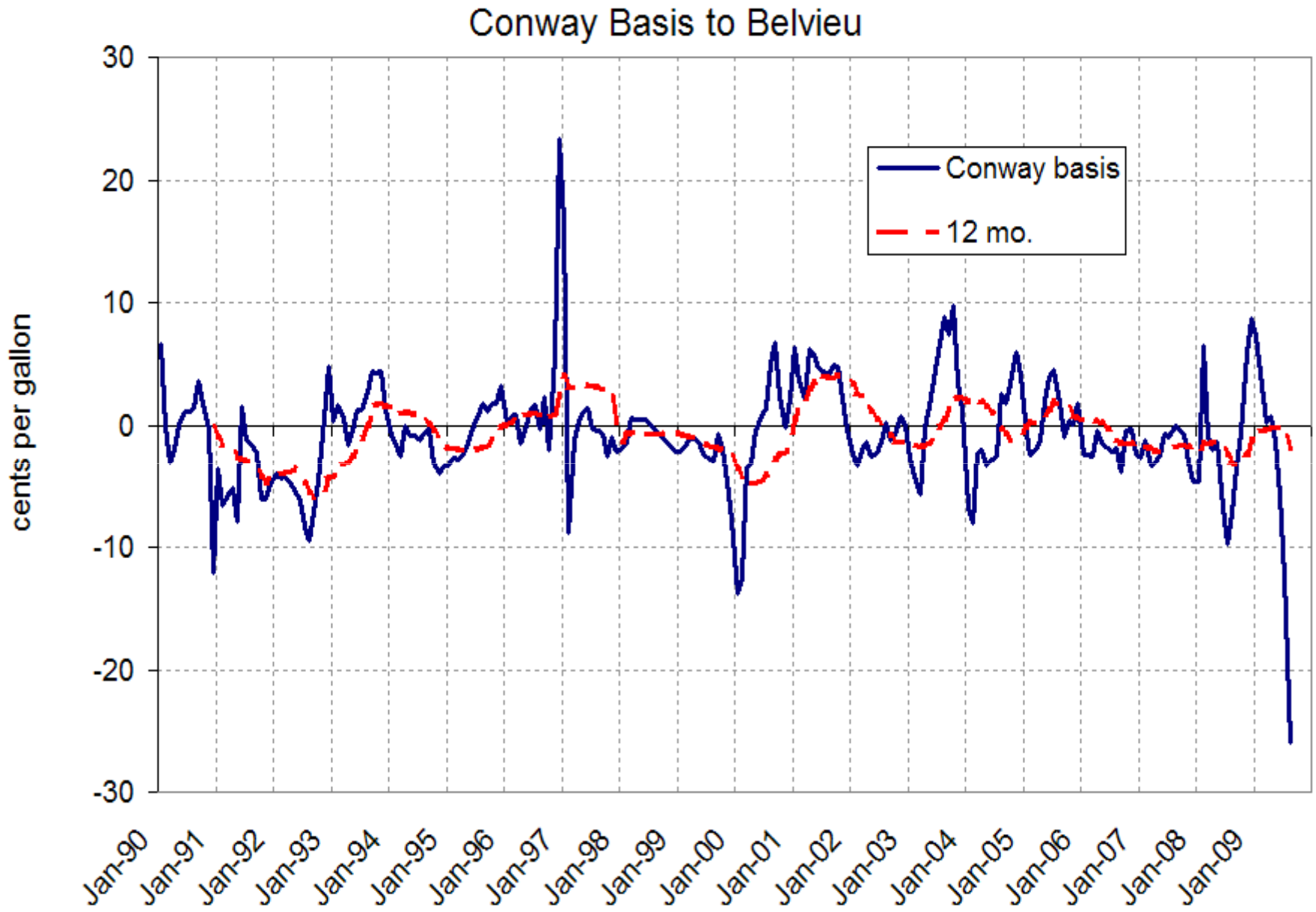

$1.40
$1.30
$1.20
$1.10
$1.00
$0.90
$0.80
$0.70
$0.60
$0.50
$0.40
per gallon
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
BV Propane
75% of Crude
Natural + 20 cpg
Avg. of NG and Crude


Belvieu Monthly Average
Jan 90 - Aug 09
centrs per gallon
200
180
160
140
120
100
80
60
40
20
0
Belvlieu
12 mo. avg.
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09

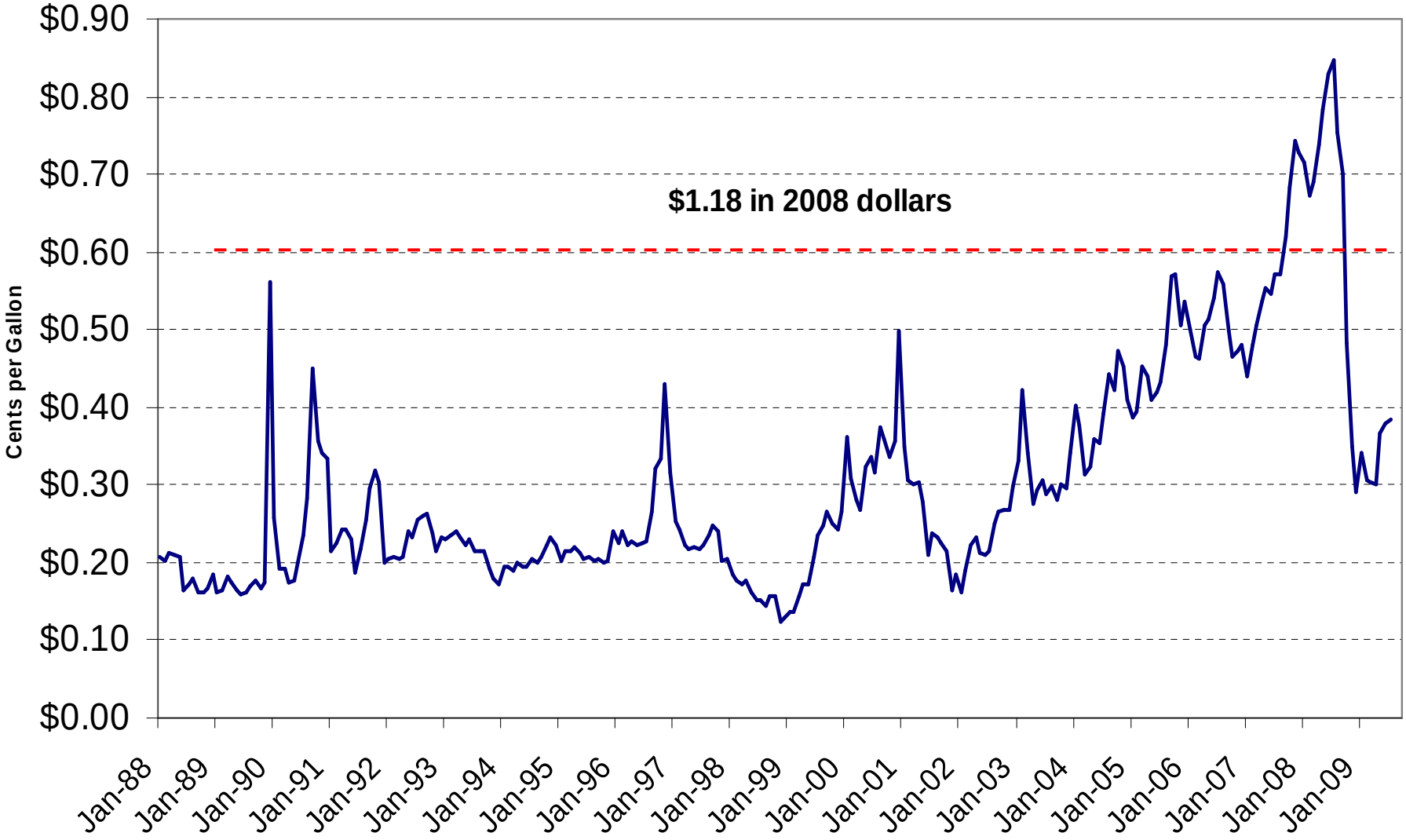

Conway Monthly Average
Jan 90 - Aug 09
centrs per gallon
200
180
160
140
120
100
80
60
40
20
0
Conway
12 mo. avg.
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09


Belvieu Monthly Average
1990-2009
10 yr. avg.
high
low
5 yr. avg.
2009 Curve
cents per gallon
200
175
150
125
100
75
50
25
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

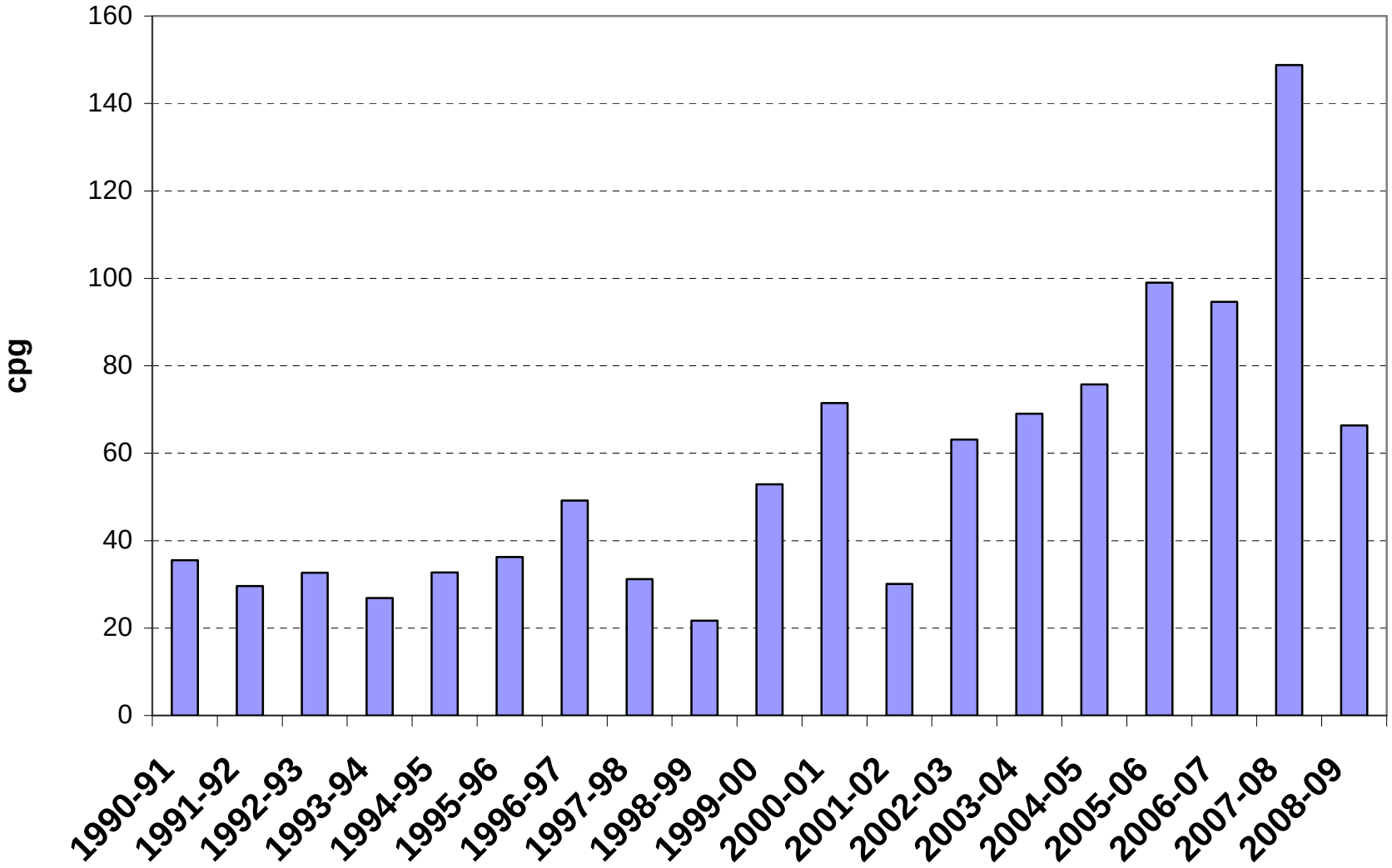

Conway Monthly Average
1990-2008
10 yr. avg.
high
low
5 yr. avg.
2009 Curve
cents per gallon
200
175
150
125
100
75
50
25
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

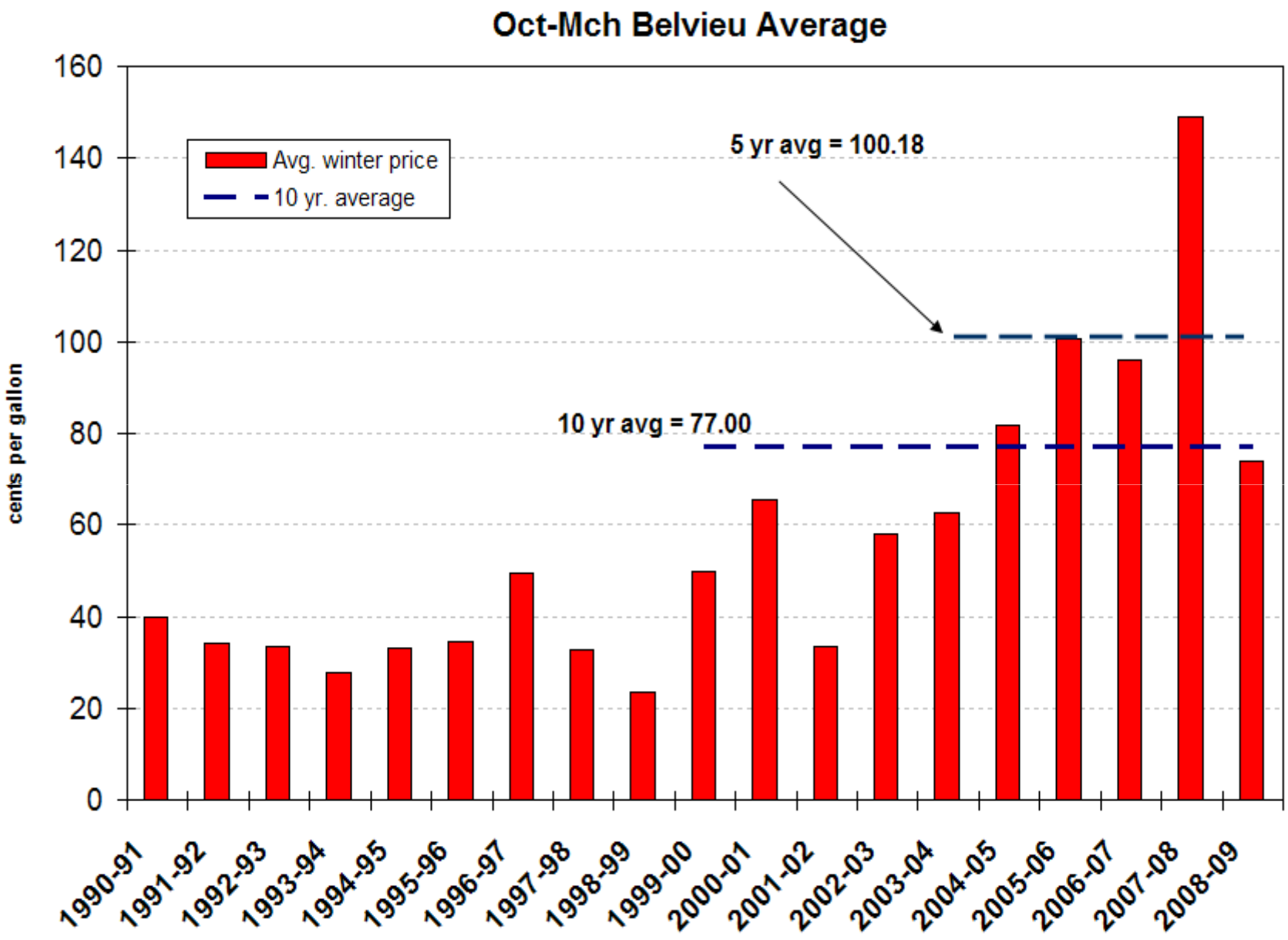

Conway Basis to Belvieu
cents per gallon
30
20
10
0
-10
-20
-30
Conway basis
12 mo.
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09

NYMEX Propane in Constant 1984 Dollars
(Adjusted by Bureau of Labor Statistics Consumer Price Index)



Belvieu DJF Average




Oct-Mch Belvieu Average
cents per gallon
160
140
120
100
80
60
40
20
0
Avg. winter price
10 yr. average
5 yr avg = 100.18
10 yr avg = 77.00
1990-91
1991-92
1992-93
1993-94
1994-95
1995-96
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09

Sep 09 – 09/10 Low Price Case

- global economy continues to slump
- weather is mild
- no “event shocks,” Mideast stabilizes
- dollar firms
- no crude supply interruptions
- crude is $50-$65
- diesel is $1.40-1.90 (pre-tax)
- gasoline is $1.40-1.90 (pre-tax)
- natural gas is $3-5/mmbtu
- **propane is $0.75-0.95**

Sep 09 – 09/10 High Price Case

- economy has a quick recovery
- severe weather in the U.S. and Europe
- Mideast conflicts intensify
- crude supply interruptions
- dollar weaker plus inflation
- crude is $85-120
- HO is $2.25-3.30
- gasoline is $2.25-3.30
- natural gas is $7-9/mmbtu
- **propane is $1.10-1.85**

Sep 09 – 09/10 Medium Price Case

- global economy is stable
- normal weather
- OPEC can maintain output cuts
- dollar is flat or higher
- Only mild event shock(s)
- crude is $65-85
- diesel is $1.80-2.40
- gasoline is $1.80-2.40
- natural gas is $5-7
- **propane is $.90-$1.30**

Propane Outlook – Apr 09

- Propane stocks are high at 37.7 million bbls, roughly 12 million bbls above last year.
- Propane is cheap relative to crude oil.
- Prices will continue to be driven primarily by crude and, to a lesser extent, natural gas.
- Crude remains the wild card – hinging on weather, product demand and geopolitics – but appears to have made a bottom.
- A weaker dollar and inflation fears will support crude prices.
- Belvieu at $0.75 for winter 09/10 is a good hedge opportunity.

Propane Outlook – Sep 09

- Propane stocks are high at 69 million bbls, roughly 16 million bbls above last year, and could set a new record.
- However, demand is trending higher.
- Propane prices will continue to be driven primarily by crude and, to a lesser extent, natural gas.
- A weaker dollar,inflation fears and signs of economic recovery will support crude prices.
- An expected crude range of $65-85 implies a propane range of 90-130 cpg at Belvieu, and slightly lower at Conway.