

Energy Supply and Demand: The Broad Picture

*Presentation before the National Conference of State
Legislatures*

*Energy Summit
Nashville, Tennessee
August 14, 2006*



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Significant uncertainty in energy markets.

- **Not all price movements are speculation (“profiteering”) driven.**
- **Speculation is not market manipulation.**
- **Big storage positions have been building all year.**
- **Strong domestic and global economy – strong demand.**
- **Continued production challenges**
 - **Domestically and internationally**
 - **Short run and long run**

This summer will be a significant transition period.

- **Weather will be significant determinant**
 - **Heat will drive power which will drive natural gas**
 - **Tropical activity will drive everything**

Geopolitical strife is unparalleled: in short run will trump all fundamentals.



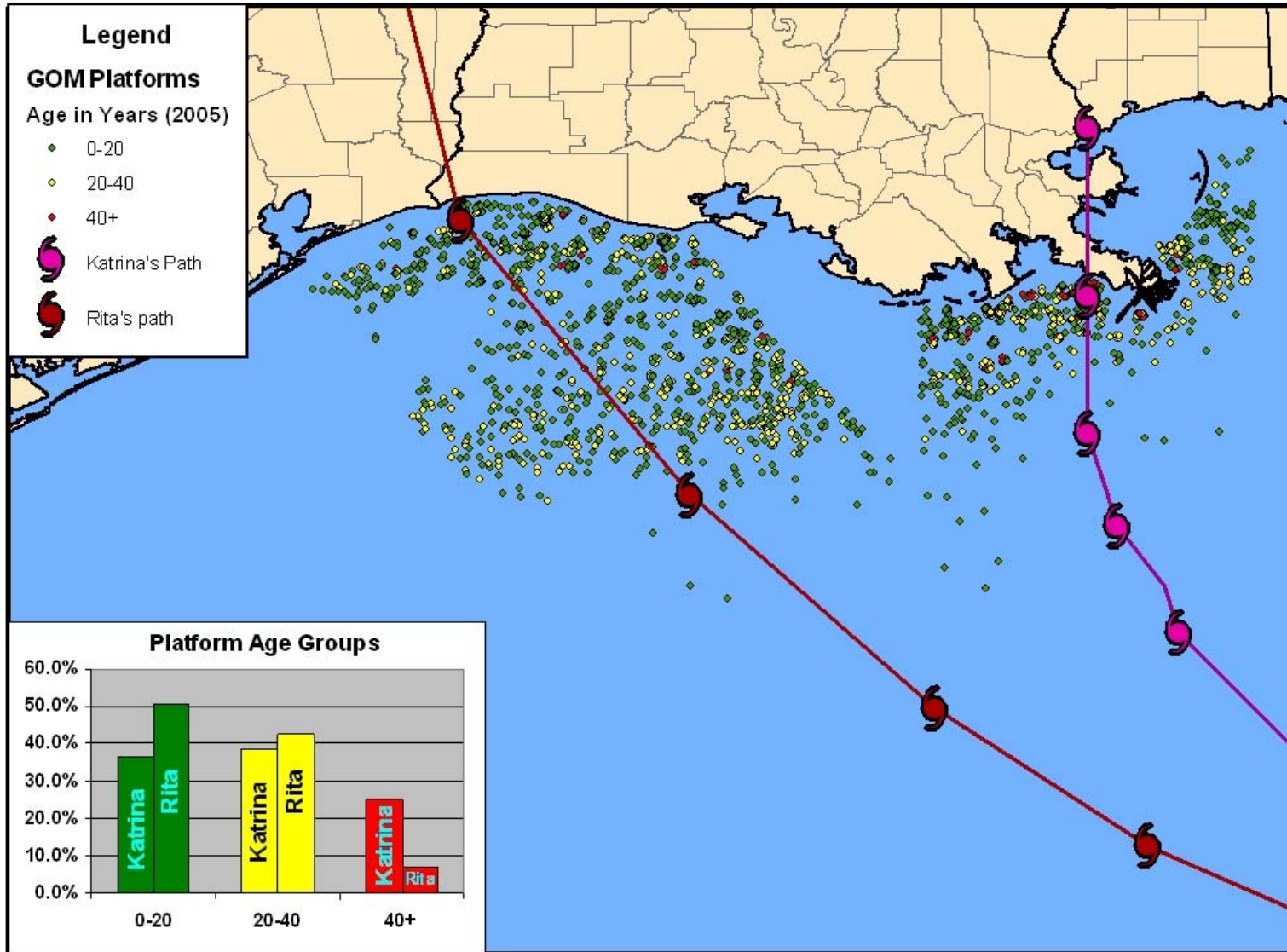
Hurricanes and Energy Production, Processing, and Transportation



Summary on Impacts of Hurricanes

- **Hurricanes were incredibly destructive to energy business – effects felt for some time. Was a shining moment for all in the industry.**
- **Hurricanes clearly showed the interrelationship of all types of energy infrastructure in the Gulf – the “4 Ps” – production, processing, pipes, and power.**
- **Hurricanes impacts were felt nationally and internationally – drives home importance of Gulf coast and critical energy infrastructure.**
- **Amazing recovery but still lingering challenges and uncertainties.**
- **This year’s tropical season will be the biggest challenge ever and could serve to be the catalyst for significant movement in prices.**

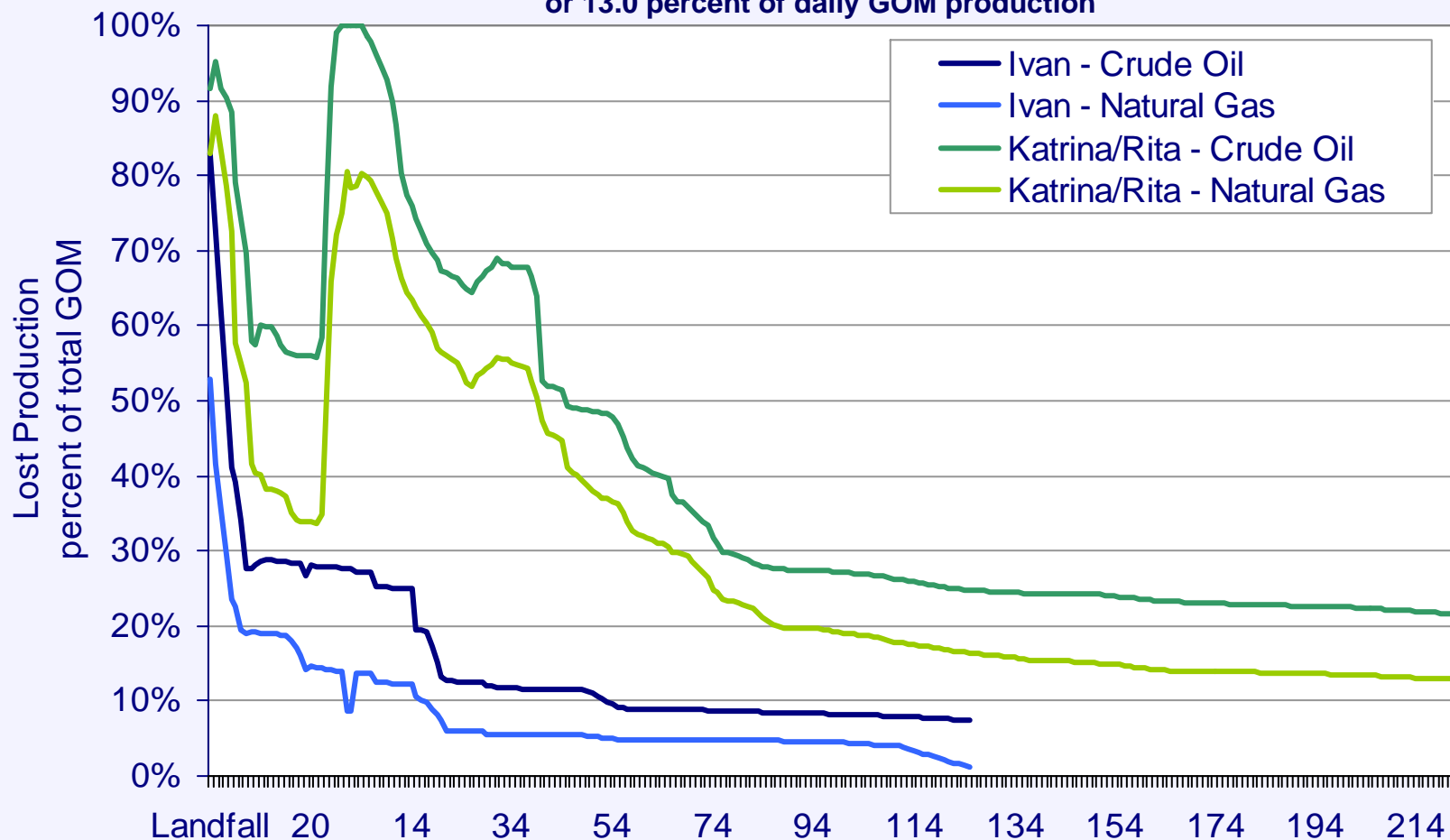
Platforms/Structures Impacted by 2005 Hurricanes





Estimated Return of Existing Crude Oil and Natural Gas Production

As of May 3, 2006 shut in crude oil production was 324,445 barrels per day, or 21.6 percent of daily GOM production. Shut-in gas production was 1.295 bcf per day, or 13.0 percent of daily GOM production



Note: Shut-in statistics for Ivan were no longer reported after 150 days. The last shut-in statistics for Katrina and Rita were published on May 3, 2006 (the 221st day after Katrina made landfall).

Source: Minerals Management Service



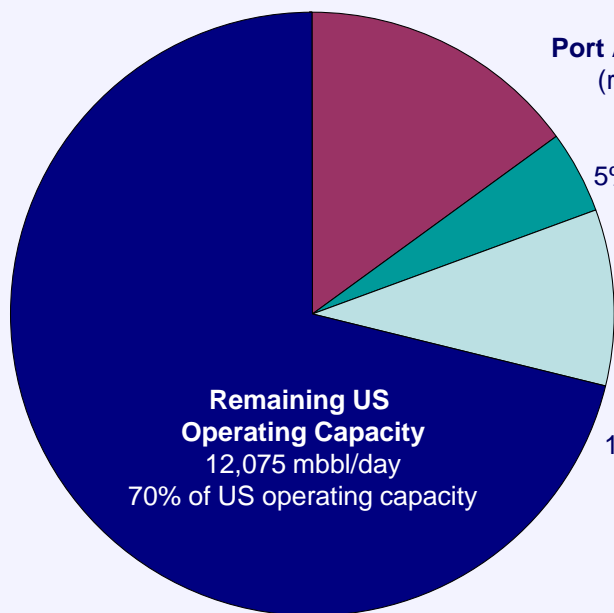
Total Immediate Refinery Impact

Hurricane Katrina

LA/MS/AL Gulf Coast Refiners
(reduced runs and shutdowns)
2,528 mbbbl/day
15% of US operating capacity

Port Arthur/Lake Charles
(reduced runs and supply loss)
775 mbbbl/day
5% of US operating capacity

Midwest
(reduced runs – supplied by Capline Pipeline)
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Total Refinery Impact
4,931 mbbbl/day
30% of US operating capacity

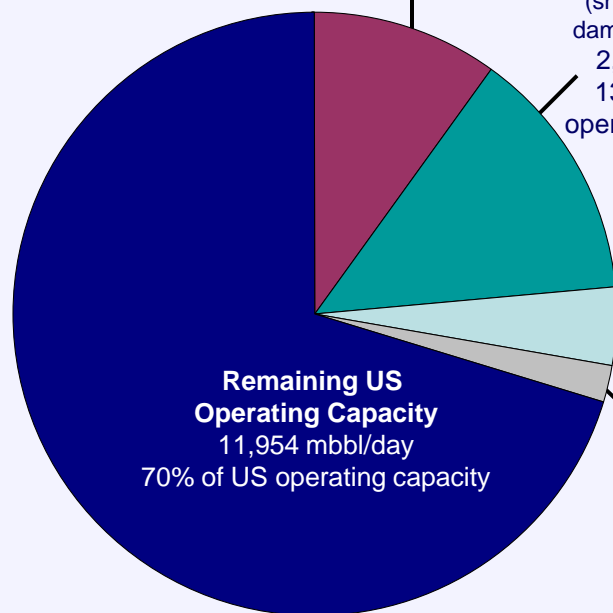
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Corpus Christi
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706 mbbbl/day
4% of US operating capacity

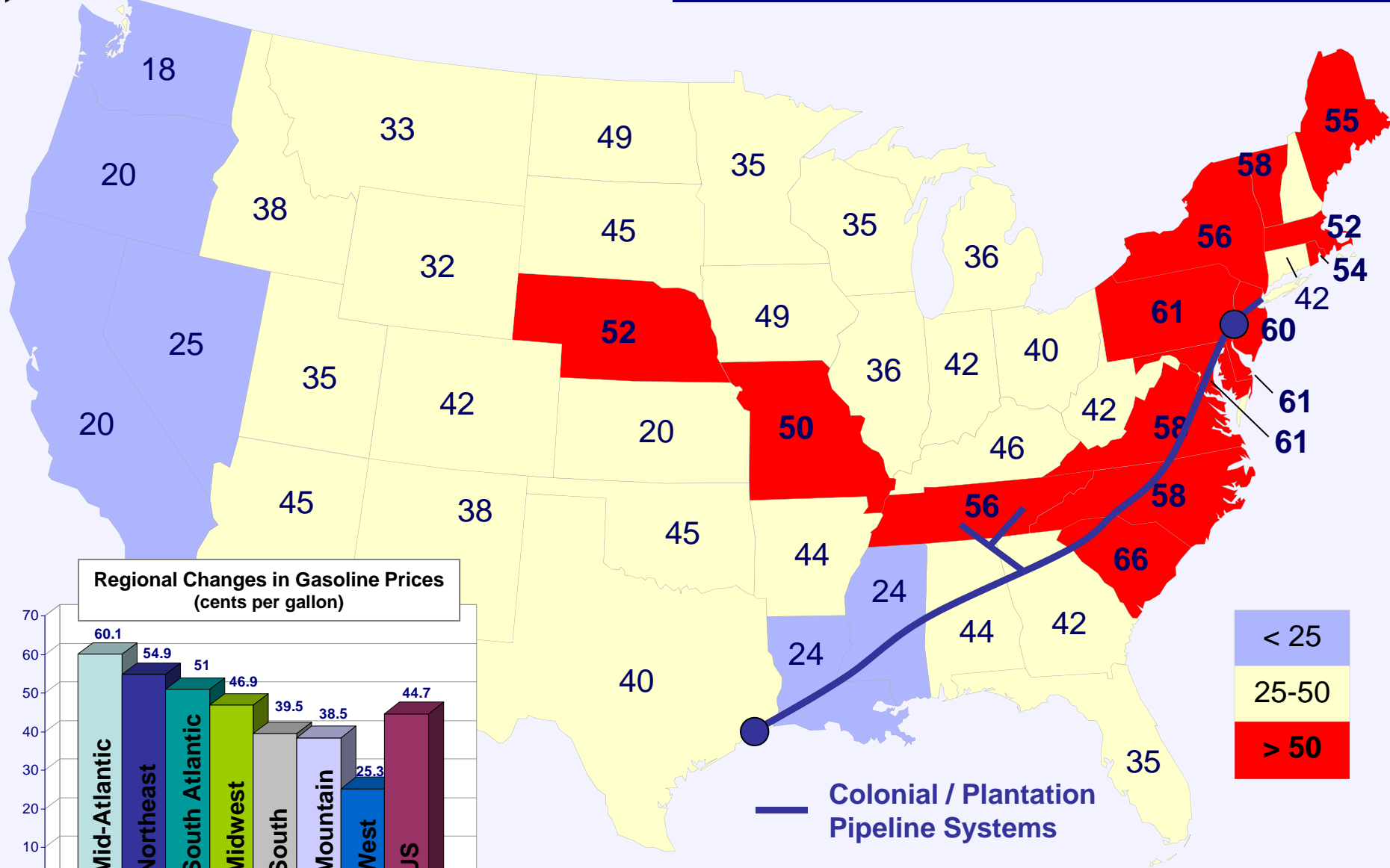
Midwest
(reduced runs from supply loss)
338 mbbbl/day
2% of US operating capacity



Total Refinery Impact
5,052 mbbbl/day
30% of US operating capacity



Gasoline Price Increases August 30, 2005 to September 6, 2005



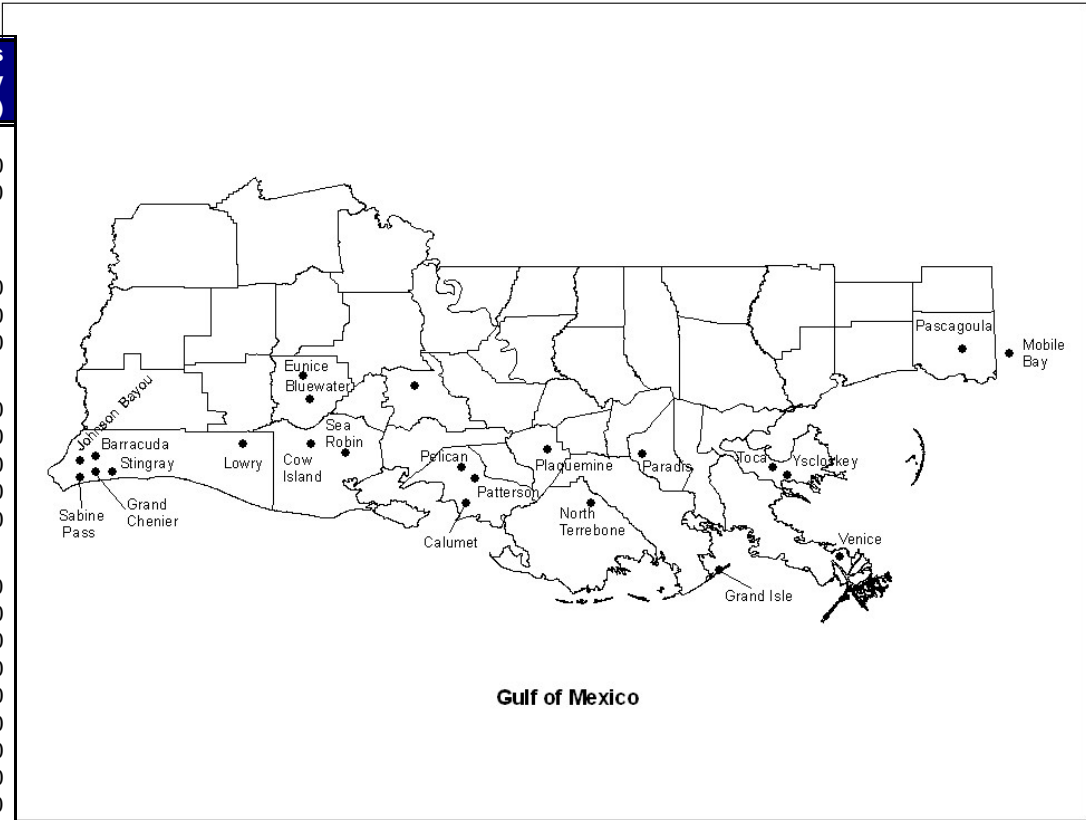
Source: American Petroleum Institute



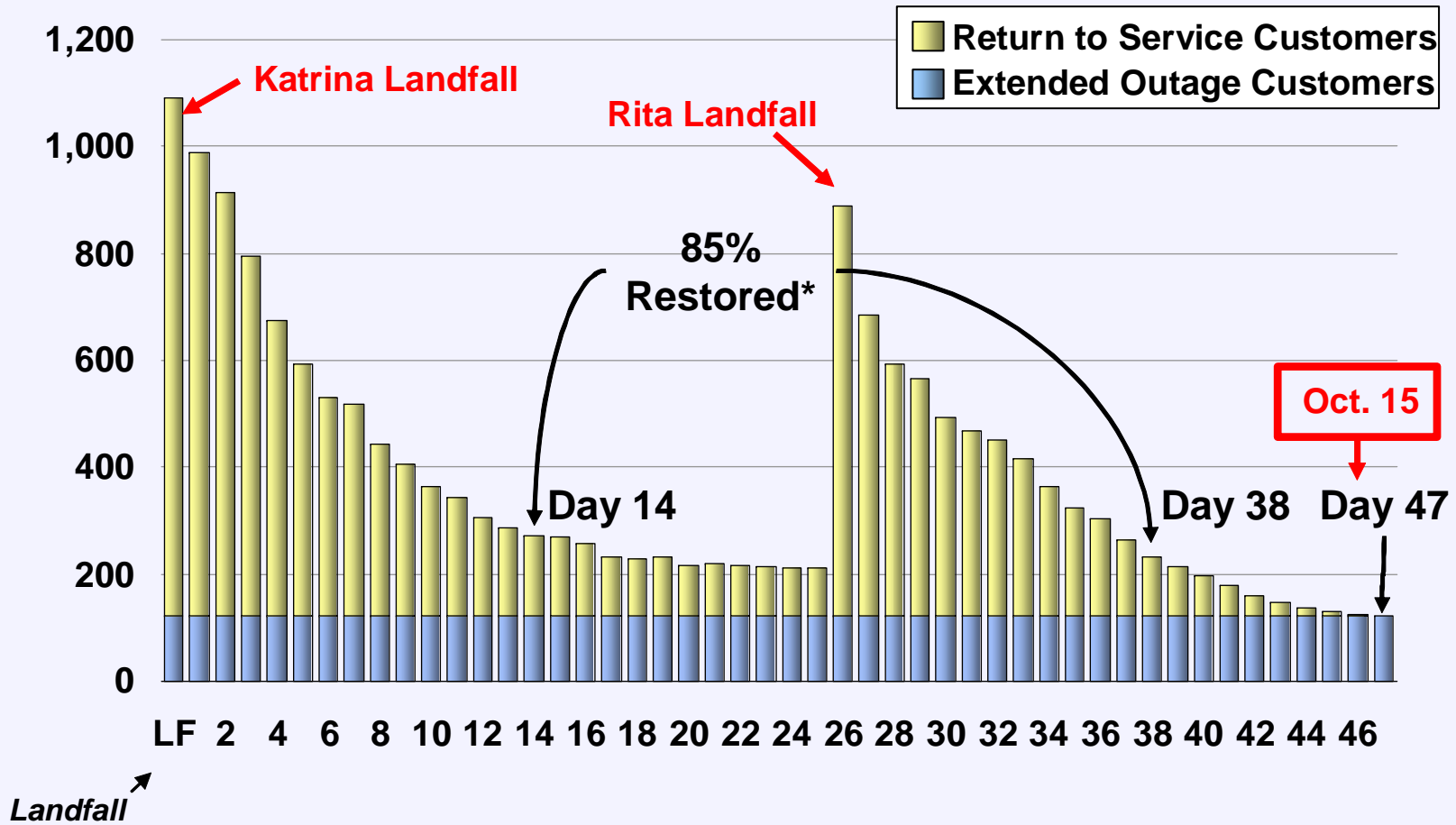
Number of Natural Gas Processing Facilities Out

Outages at gas processing facilities throughout all of south Louisiana was one of the more unique aspects of the combined hurricanes.

State/Company	Facility	Gas Capacity (MMcf/d)
Alabama		
Duke Energy Field Services	Mobile Bay	600.0
Shell Western E P Inc	Yellowhammer	200.0
Louisiana		
East Louisiana Plants		
Venice Energy Services Co LLC	Venice	1,300.0
Enterprise Products Operating LP	Toca	1,100.0
Dynegy Midstream Services LP	Yscloskey	1,850.0
West Louisiana Plants		
Dynegy Midstream Services LP	Barracuda	225.0
Dynegy Midstream Services LP	Stingray	305.0
BP PLC	Grand Chenier	600.0
Williams Cos	Johnson Bayou	425.0
Gulf Terra Energy Partners LP	Sabine Pass	300.0
Central Louisiana Plants		
Amerada Hess Corp	Sea Robin	900.0
Duke Energy Field Services	Patterson II Gas Plant	500.0
Dynegy Midstream Services LP	Lowry	300.0
Enterprise Products Operating LP	Calumet	1,600.0
Enterprise Products Operating LP	Neptune	650.0
Gulf Terra Energy Partners LP	Cow Island	500.0
Gulf Terra Energy Partners LP	Pelican	325.0
Marathon Oil Co	Burns Point	200.0
Norcen Explorer	Patterson	600.0
Mississippi		
BP PLC	Pascagoula	1,000.0
TOTAL		13,480.0
TOTAL GOM CAPACITY		20,285.0
PERCENT OF TOTAL GOM		66.5%



Damage to power infrastructure (transmission) extensive. Restoration was monumental and impressive, but still created “nervous” moments for other energy infrastructure.





Examples of Energy Infrastructure Damage









Photo via Noble Drilling and GlobalSantaFe







**Air Products Facility – Normal Day
New Orleans, Louisiana (Intracoastal Drive)**



Source: Air Products

© LSU Center for Energy Studies

© LSU Center for Energy Studies



**Air Products Facility –
Post Hurricane Katrina
New Orleans, Louisiana**









**Then,
Along Comes Rita**













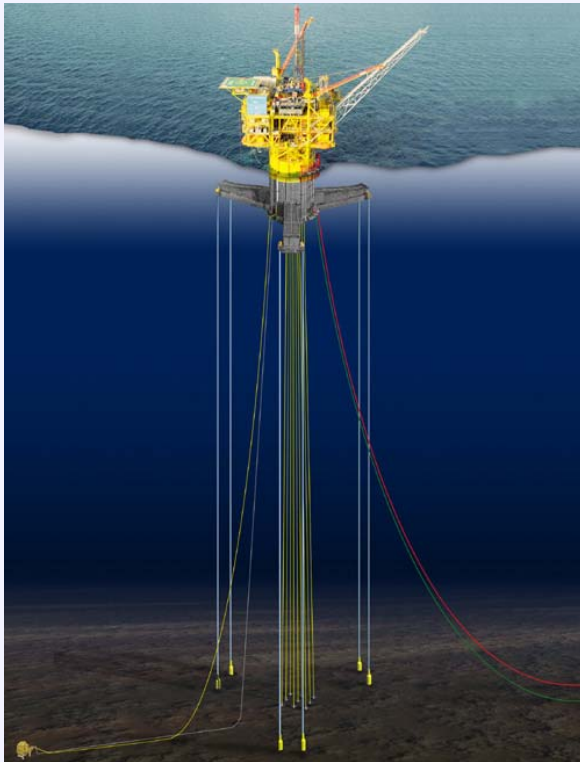
Citgo Refinery – Tent City Lake Charles, Louisiana Post-Rita

Facility rental of \$3.5 million for 3 weeks – for 250 employees – roughly \$156 per day per person





Temporary Natural Gas Release: To date, all subsea safety valves have held. There have been a couple of incidents where pipeline damage has allowed the temporary venting of gas that was in the pipeline. There are currently no known incidents of gas venting from wells and the temporary venting from pipelines appears to have stopped.





Post Hurricane Markets



Post-Hurricane Fears

- Massive outages would not be repaired.
- Industrial demand would be destroyed by high prices.
- Cold winter would create interruptions.

Post-Hurricane Reality

- Unprecedented restoration has occurred.
- Industrial activity remains strong.
- Mild winter resulted in record storage positions.

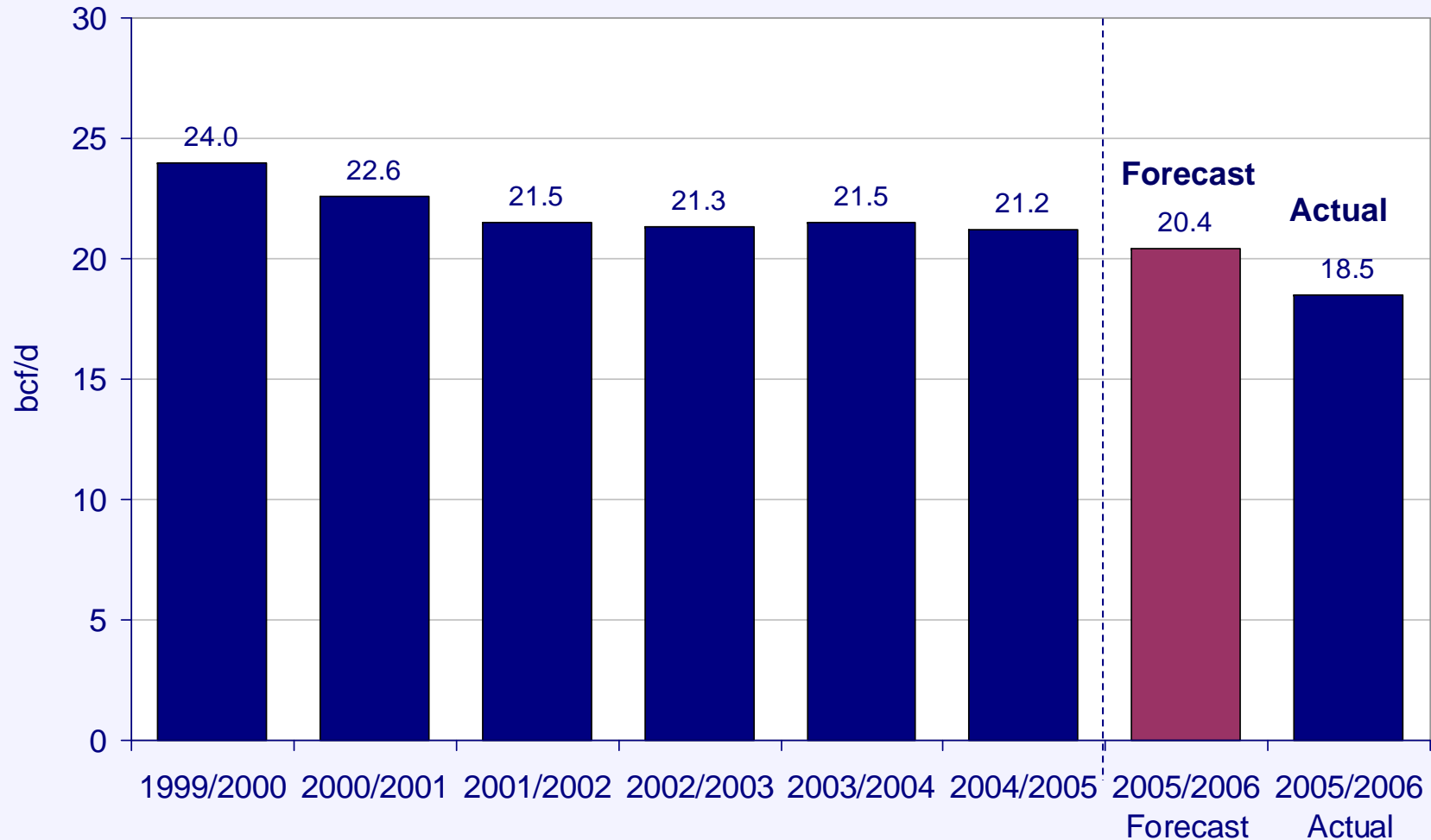


Natural Gas -- Demand



Historic and Forecasted Winter Season Industrial Gas Usage

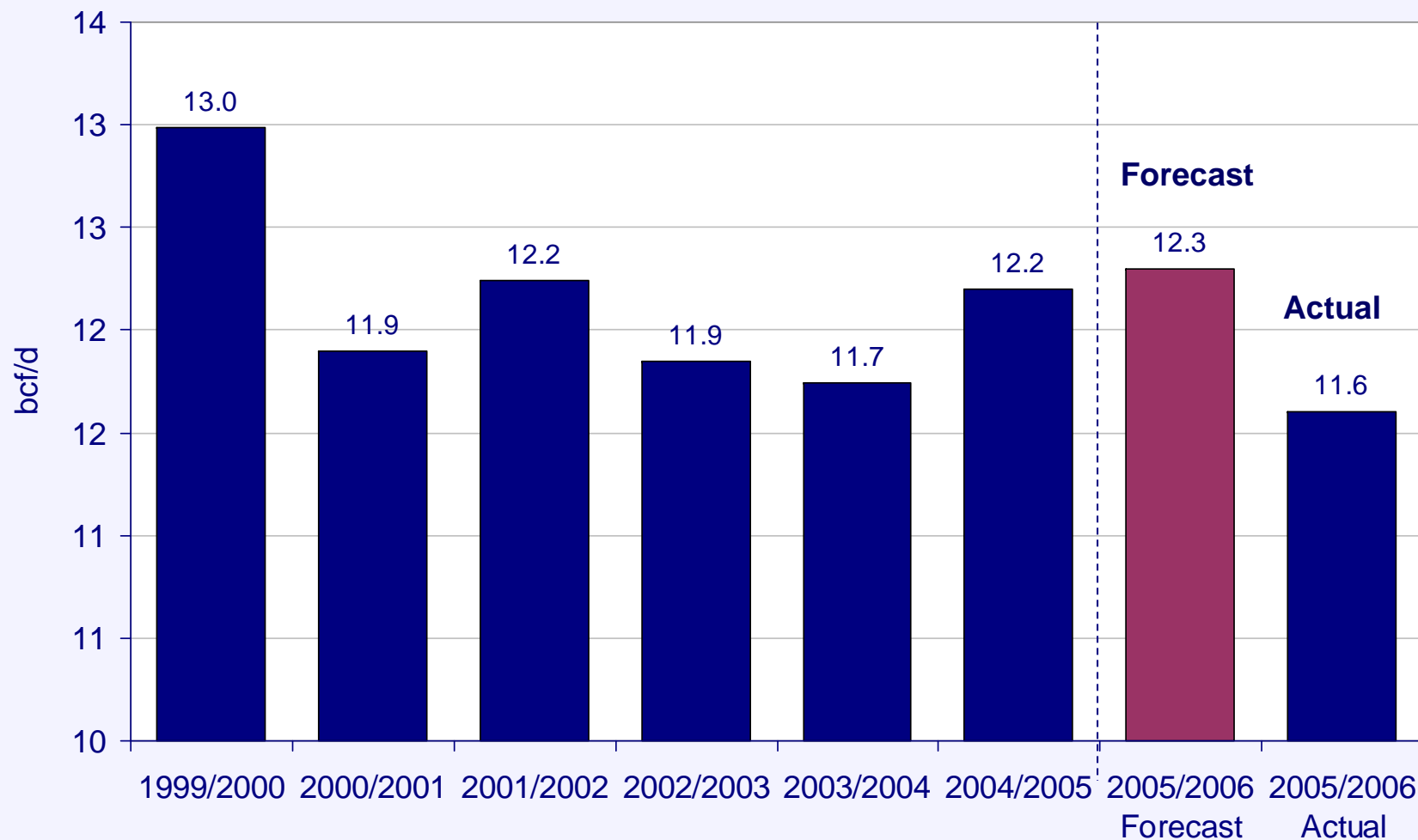
Consensus forecast is that industrial demand will be down by close to 1.0 Bcf/d due to “demand destruction.” What is the true source of the destruction?



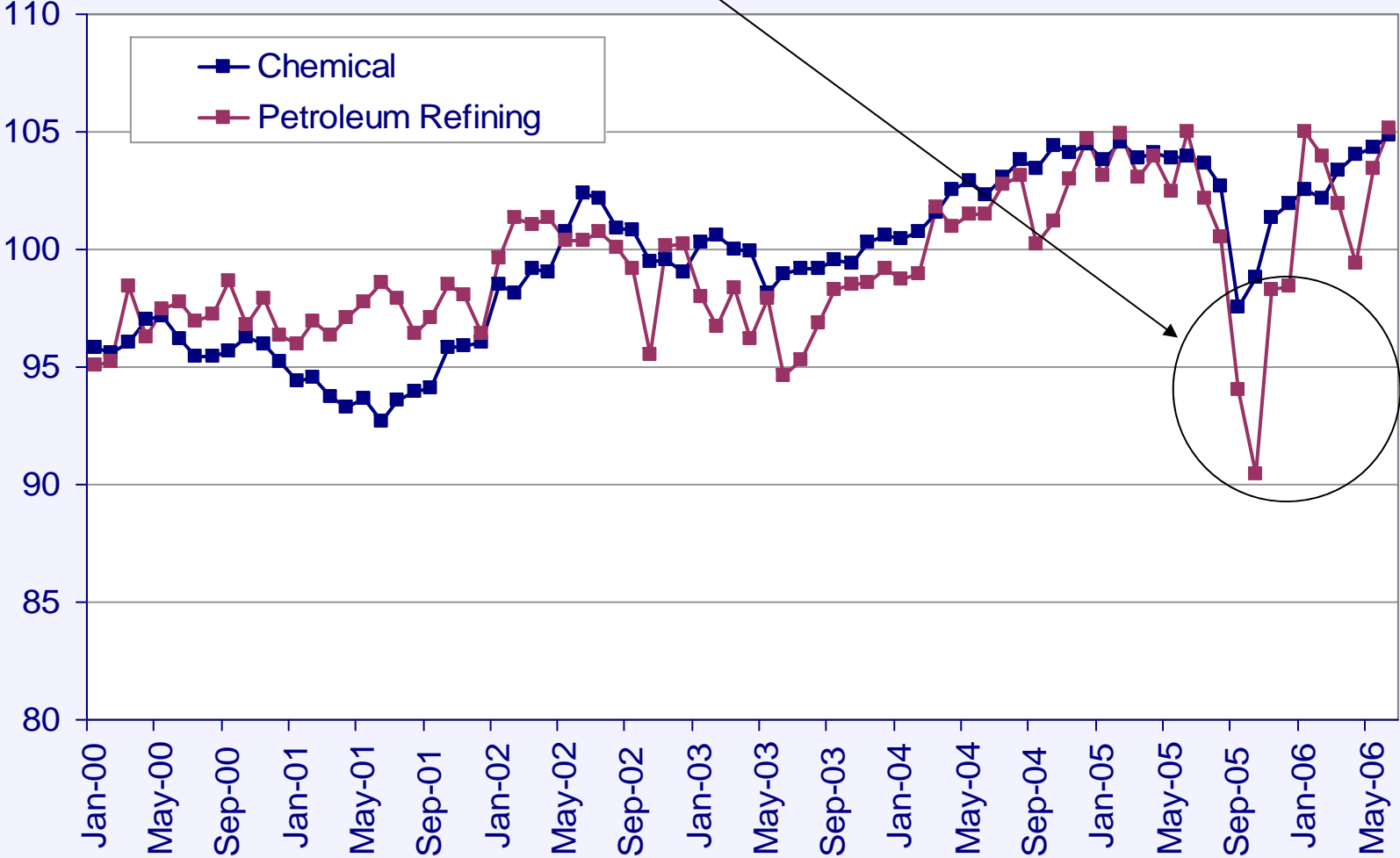


Historic and Forecasted Winter Season Electric Power Gas Usage

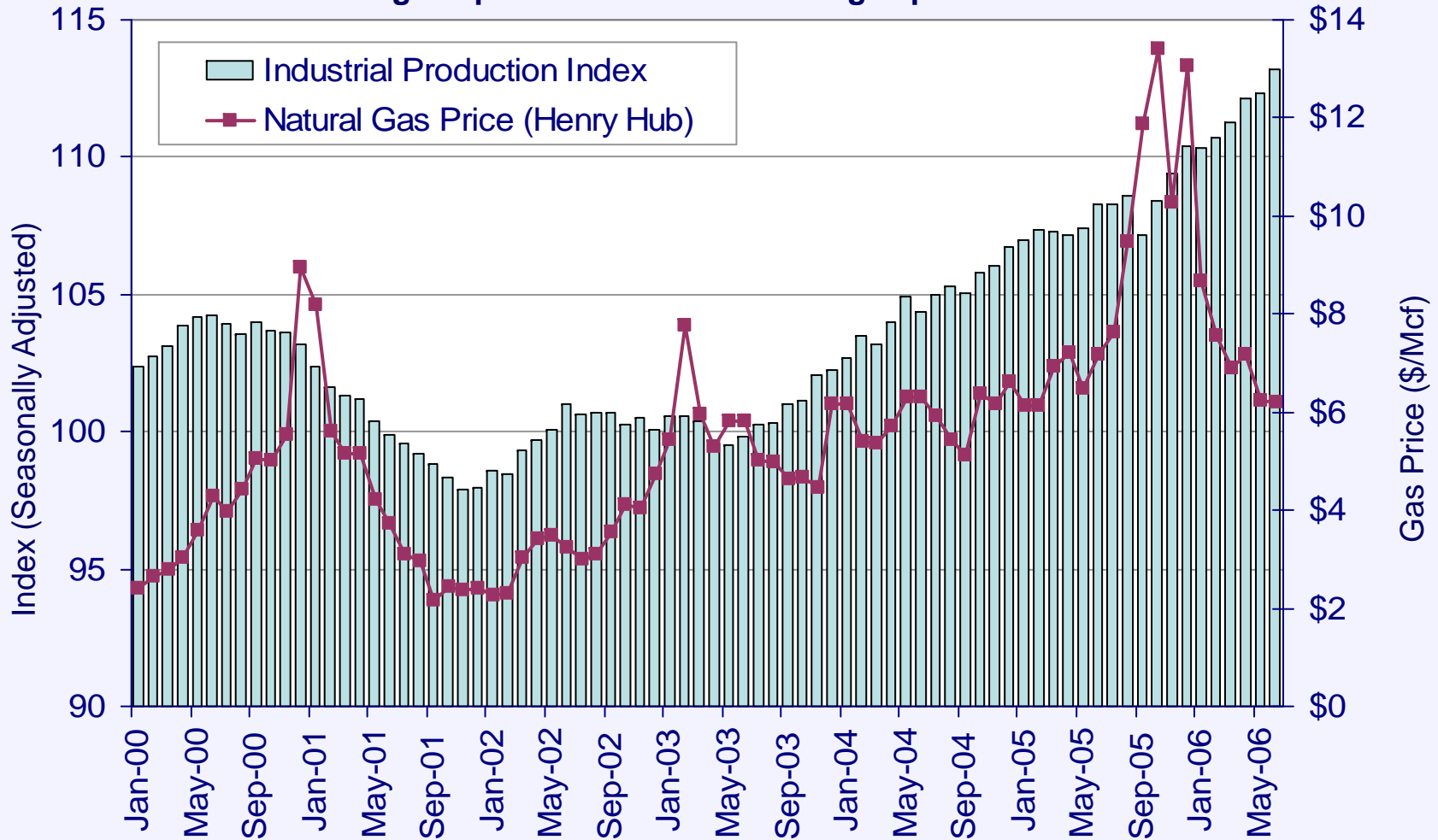
Winter use for gas-fired generation well off expectations – weather.



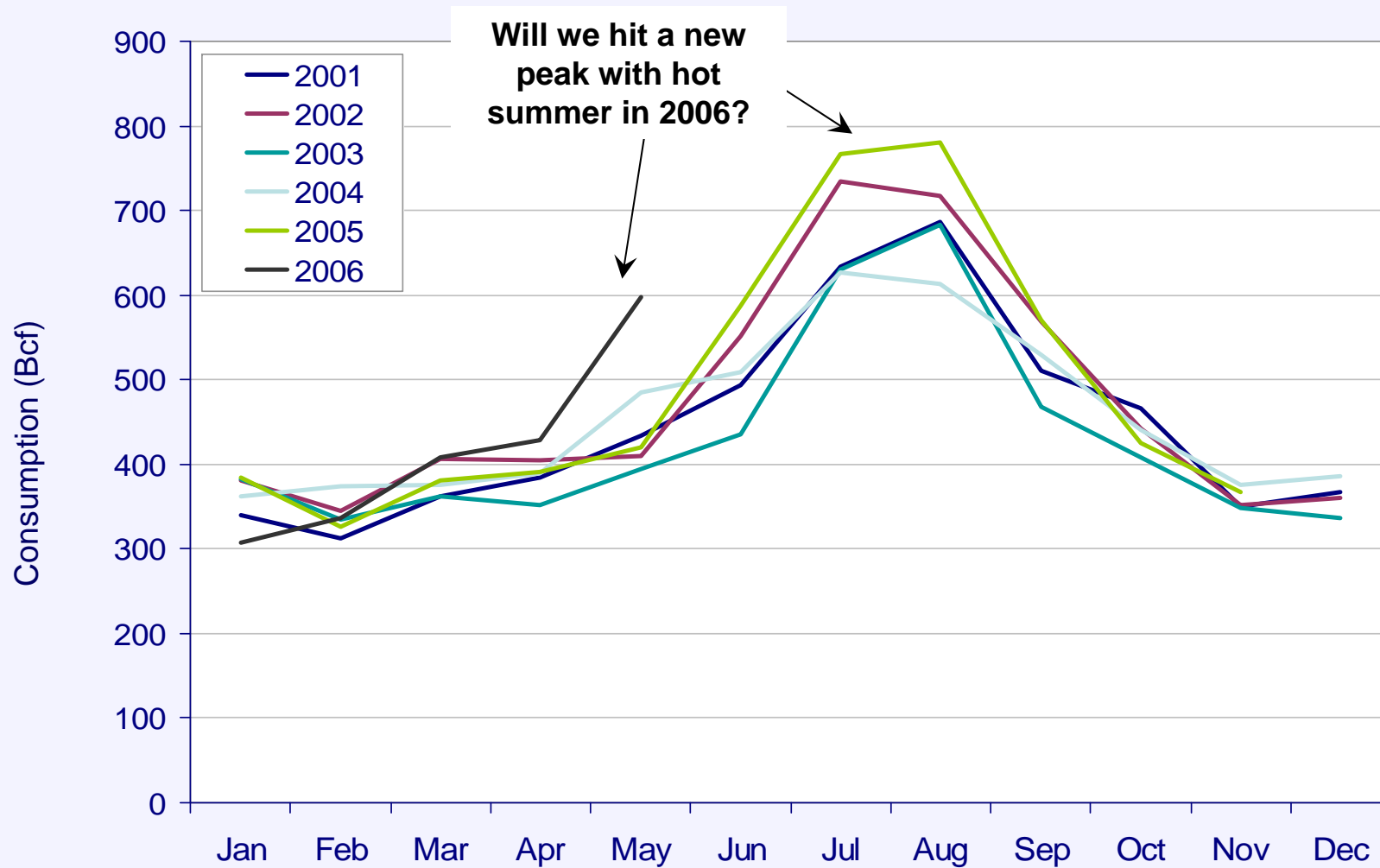
Hurricane-related or price related demand destruction?



After 2000-2001 correction, industry (overall) has been increasing despite increases in natural gas prices since 2002.

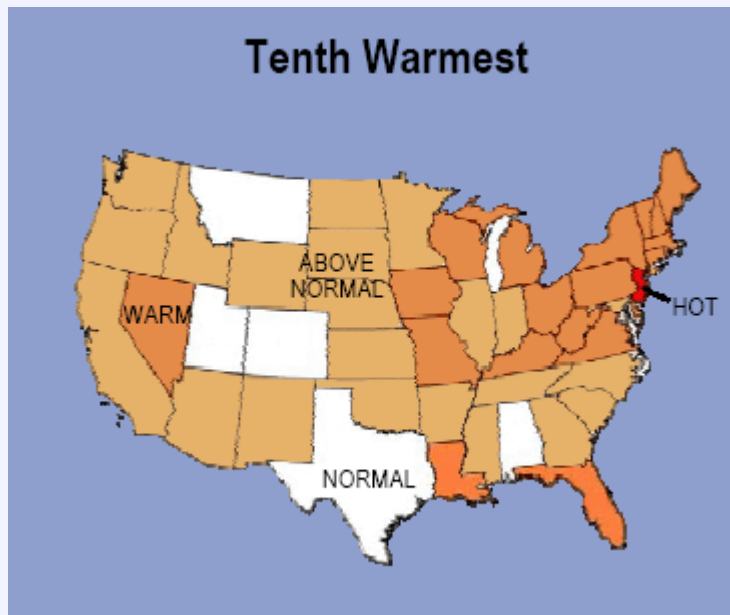


The first challenge to current favorable gas storage positions will be the summer demand for natural gas-fired generation

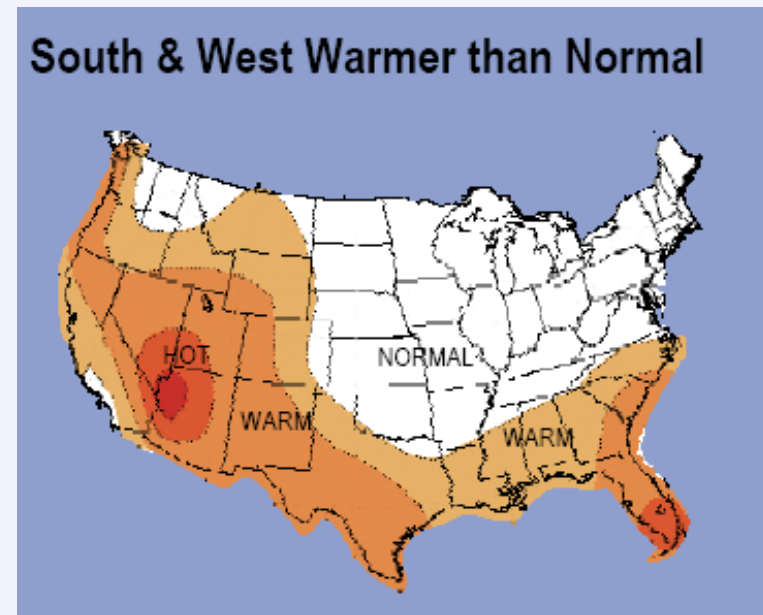


Summer Season (June through August)

Summer 2005 Actual



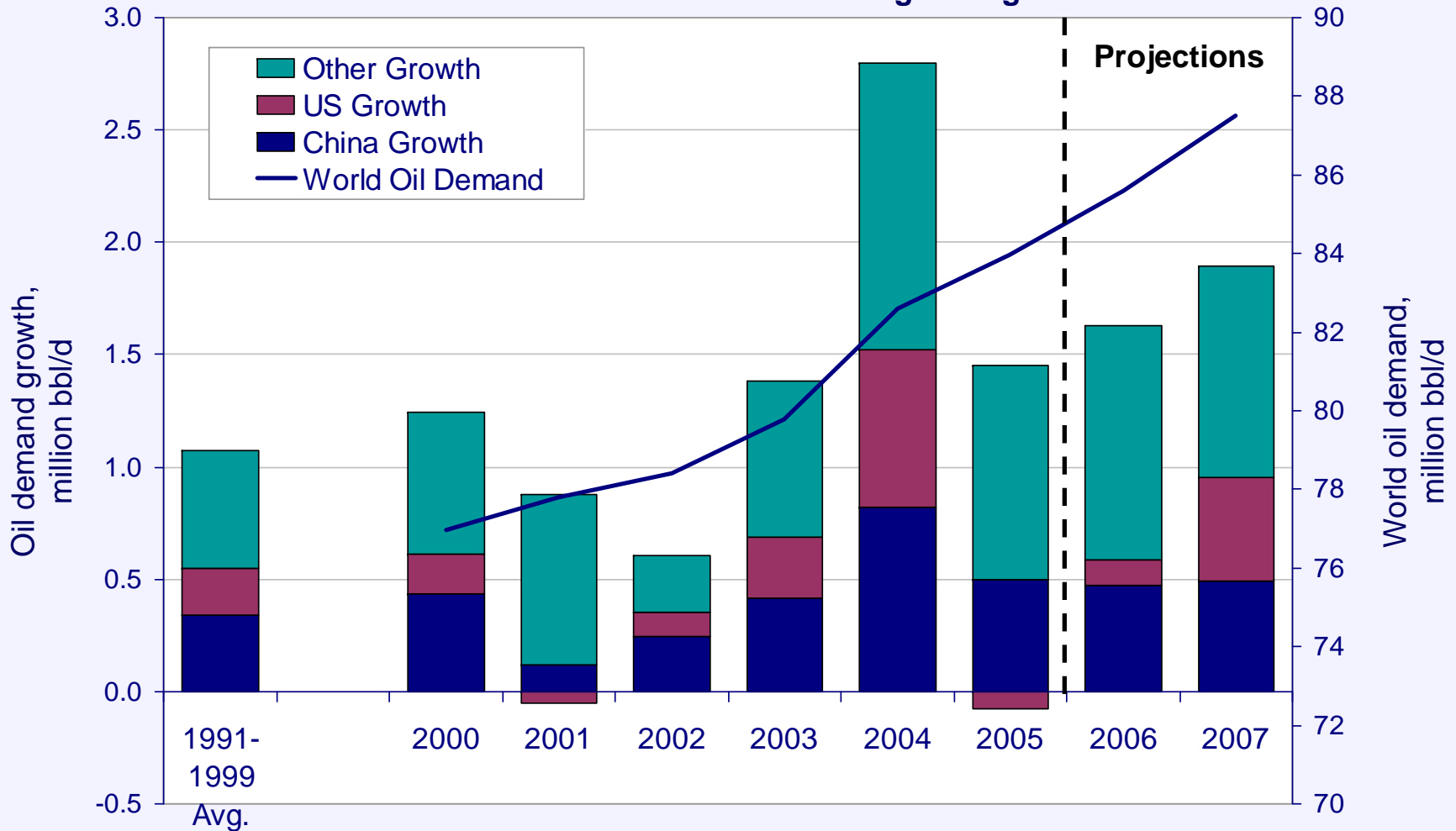
Summer 2006 Forecast



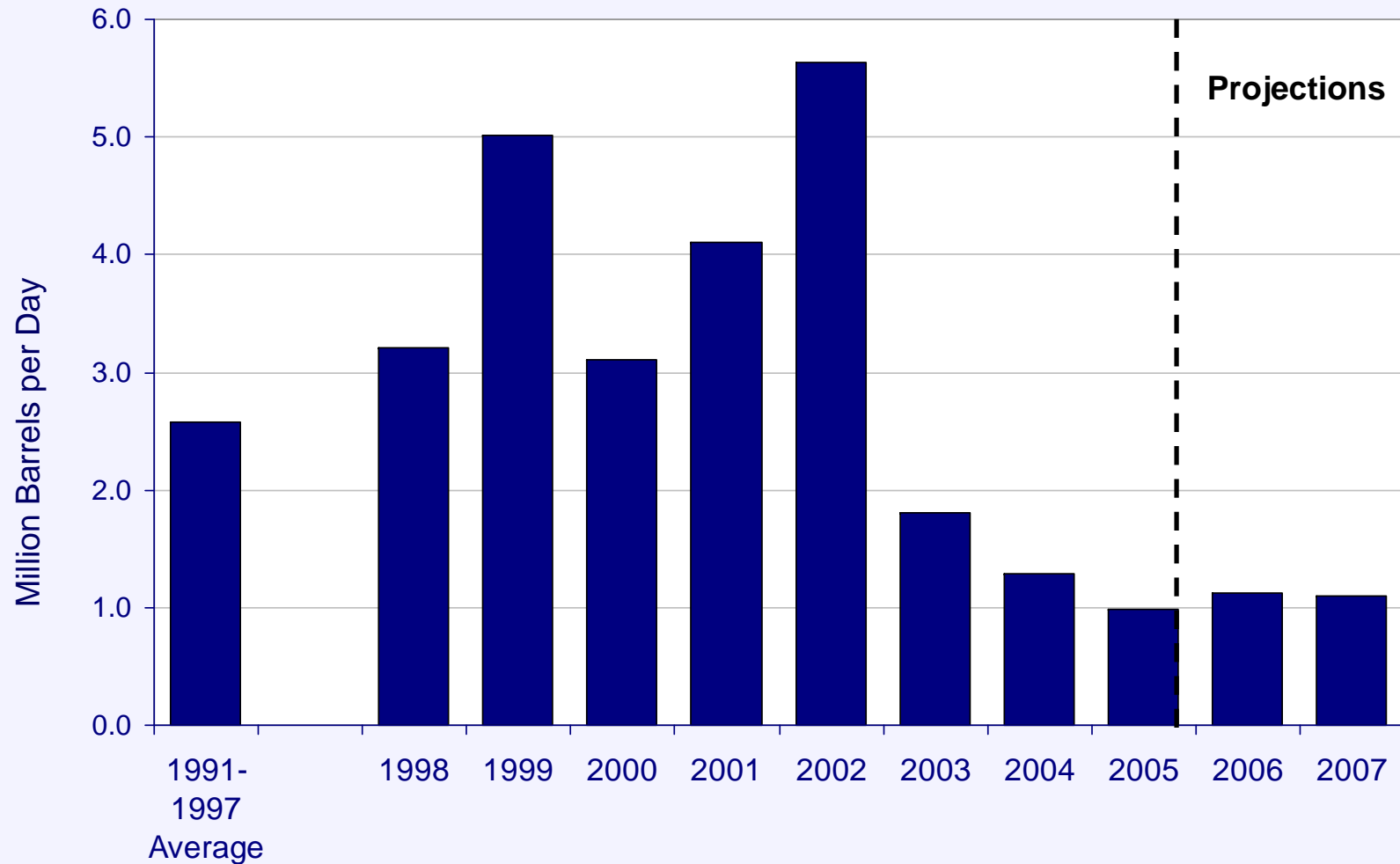


Crude Oil

World oil demand growth currently surging at relatively high rates and continues to be strong through 2007



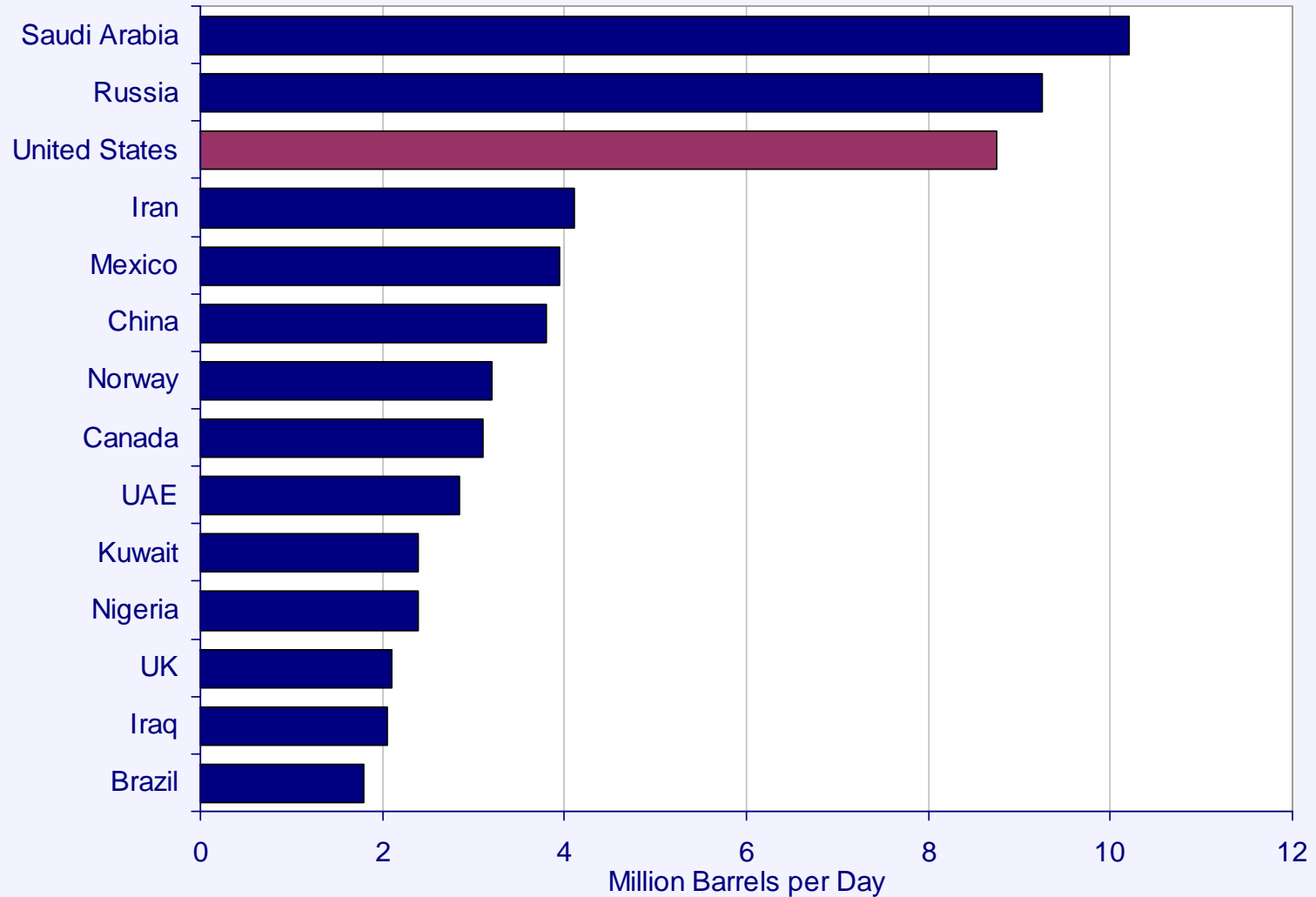
Spare capacity hit its lowest level in 30 years in 2005 and remains low relative to demand growth





Rank Order of World's Largest Oil Producers 2004

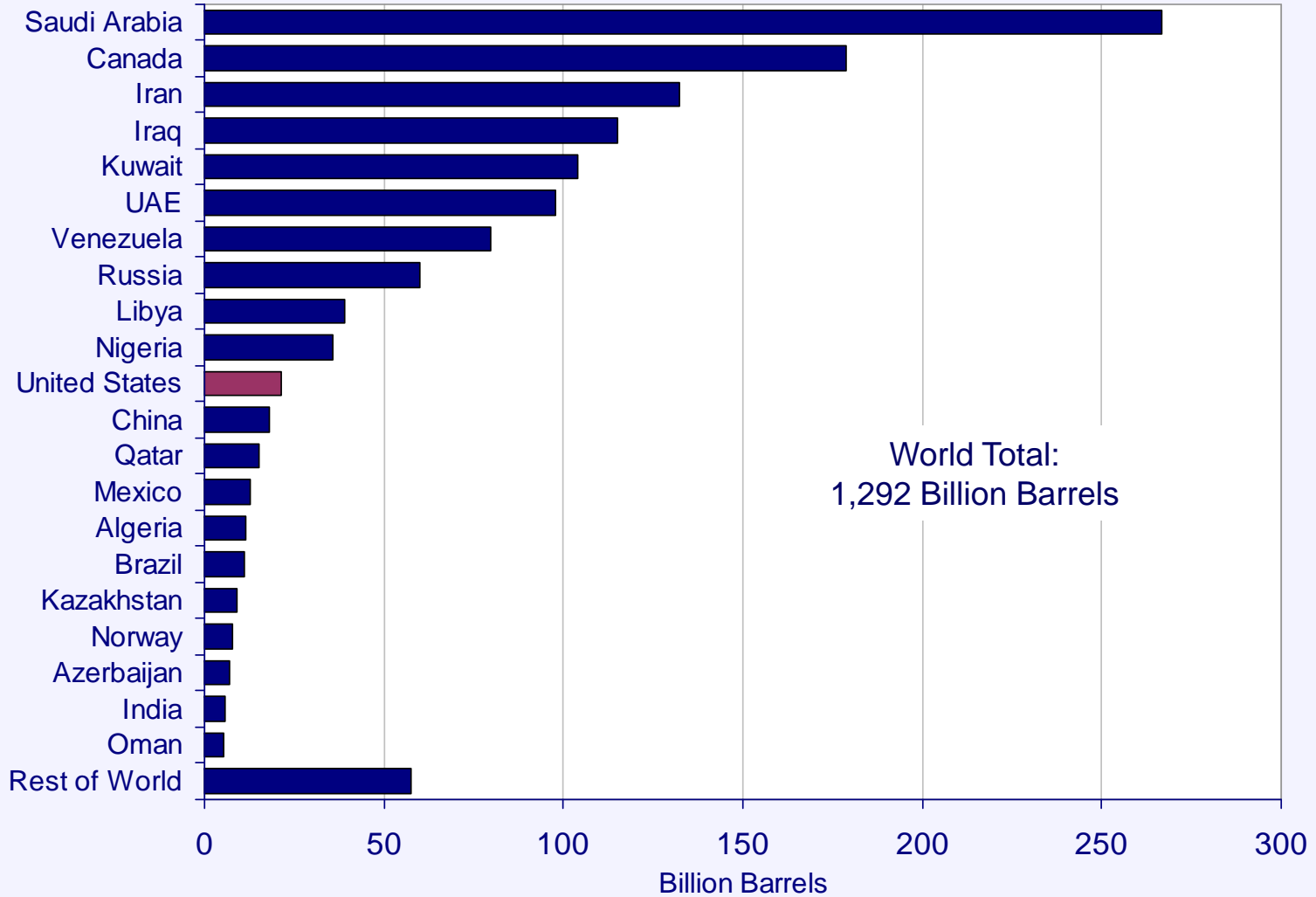
The US is still a formidable crude oil producer, but....





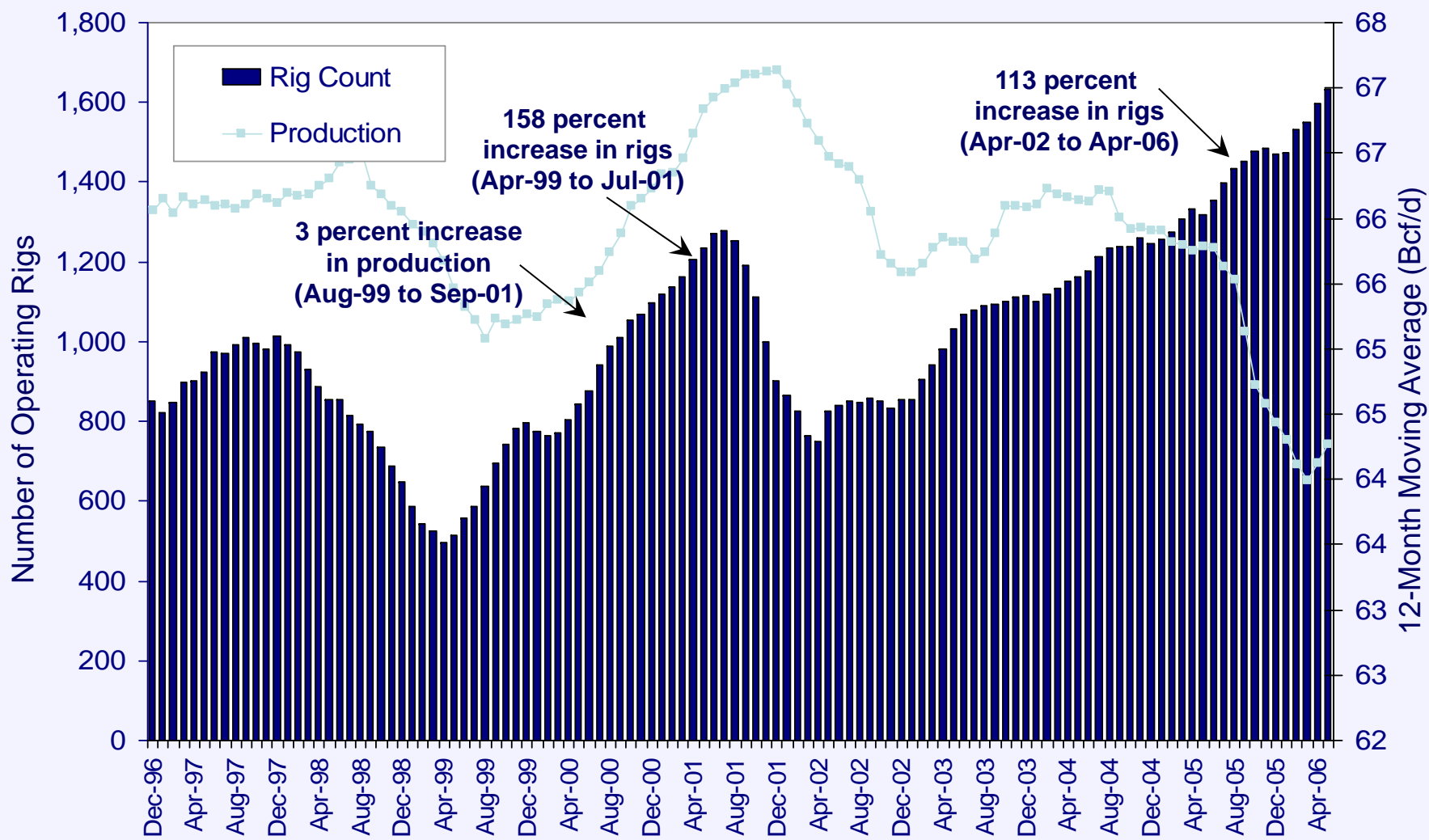
World Oil Reserves by Country As of January 1, 2004

...remaining reserves are much lower than other places in the world.





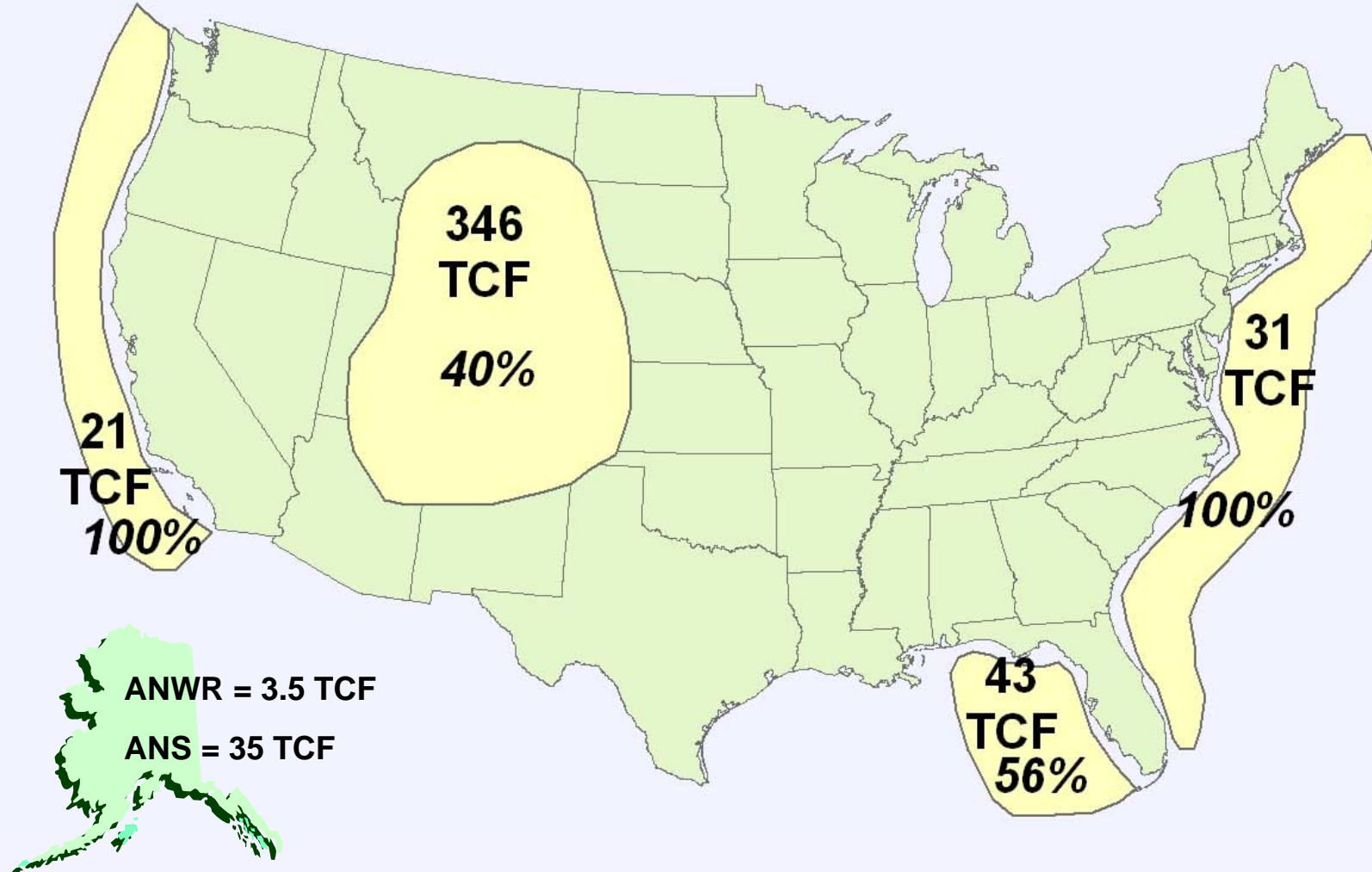
U.S. Natural Gas Production and Monthly Rig Count (1997-Present)



Source: Energy Information Administration, Department of Energy; and Baker-Hughes Inc.

Resource Estimates – Restricted Areas Estimated Percentage Restricted

Many high-yield areas exist, but are unavailable due to drilling restrictions.



Source: "Natural Gas: Can We Produce Enough?" Independent Petroleum Association of America, website: <http://www.ipaa.org/govtrelations/factsheets/NaturalGasProdEnough.asp>.



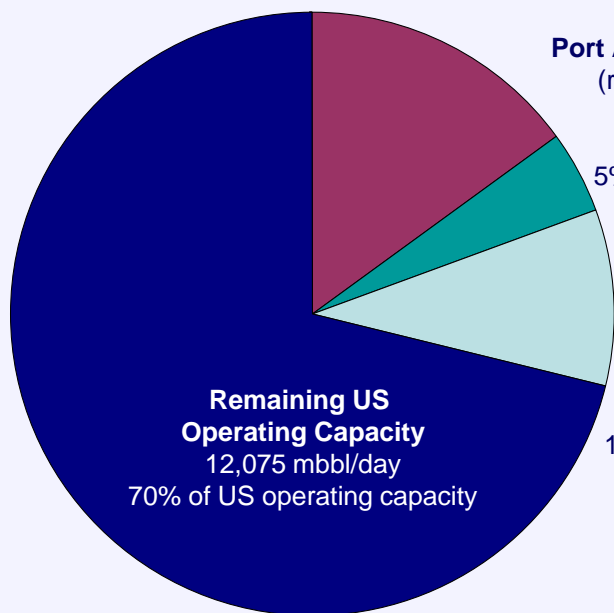
Total Immediate Refinery Impact from 2005 Hurricanes

Hurricane Katrina

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15% of US operating capacity

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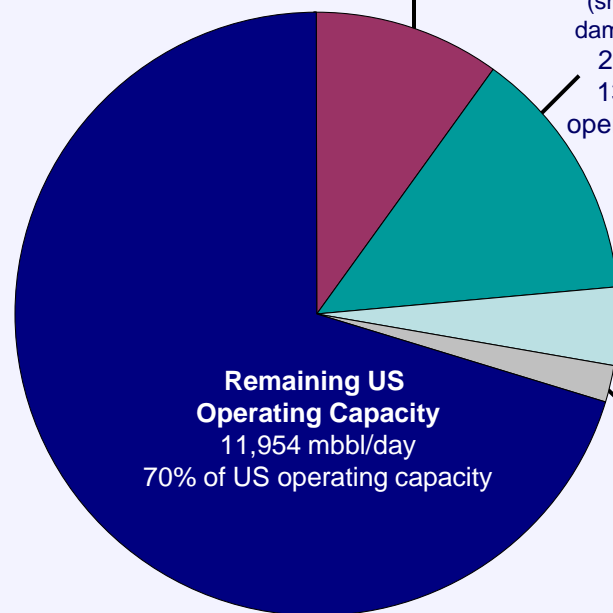
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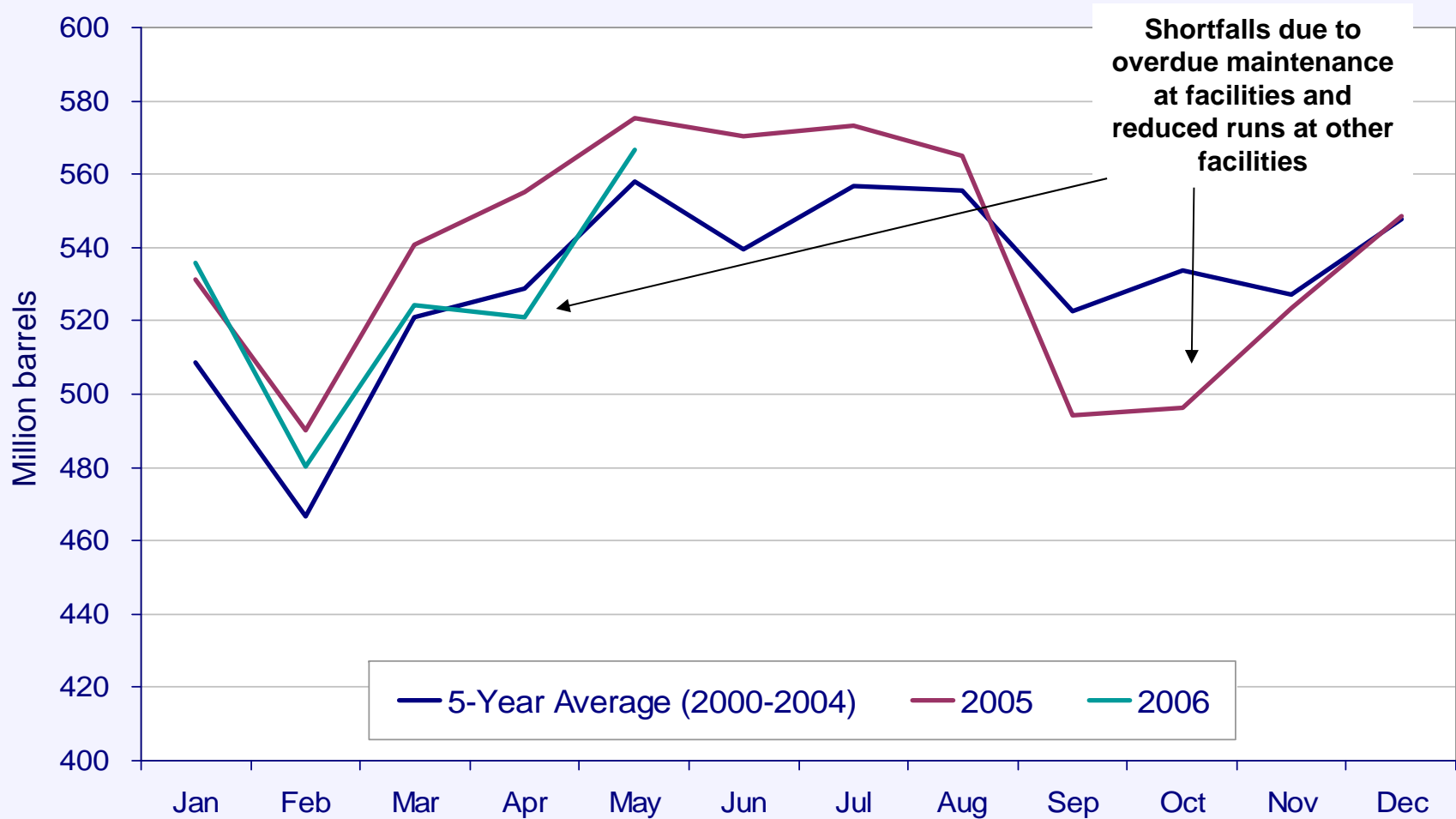
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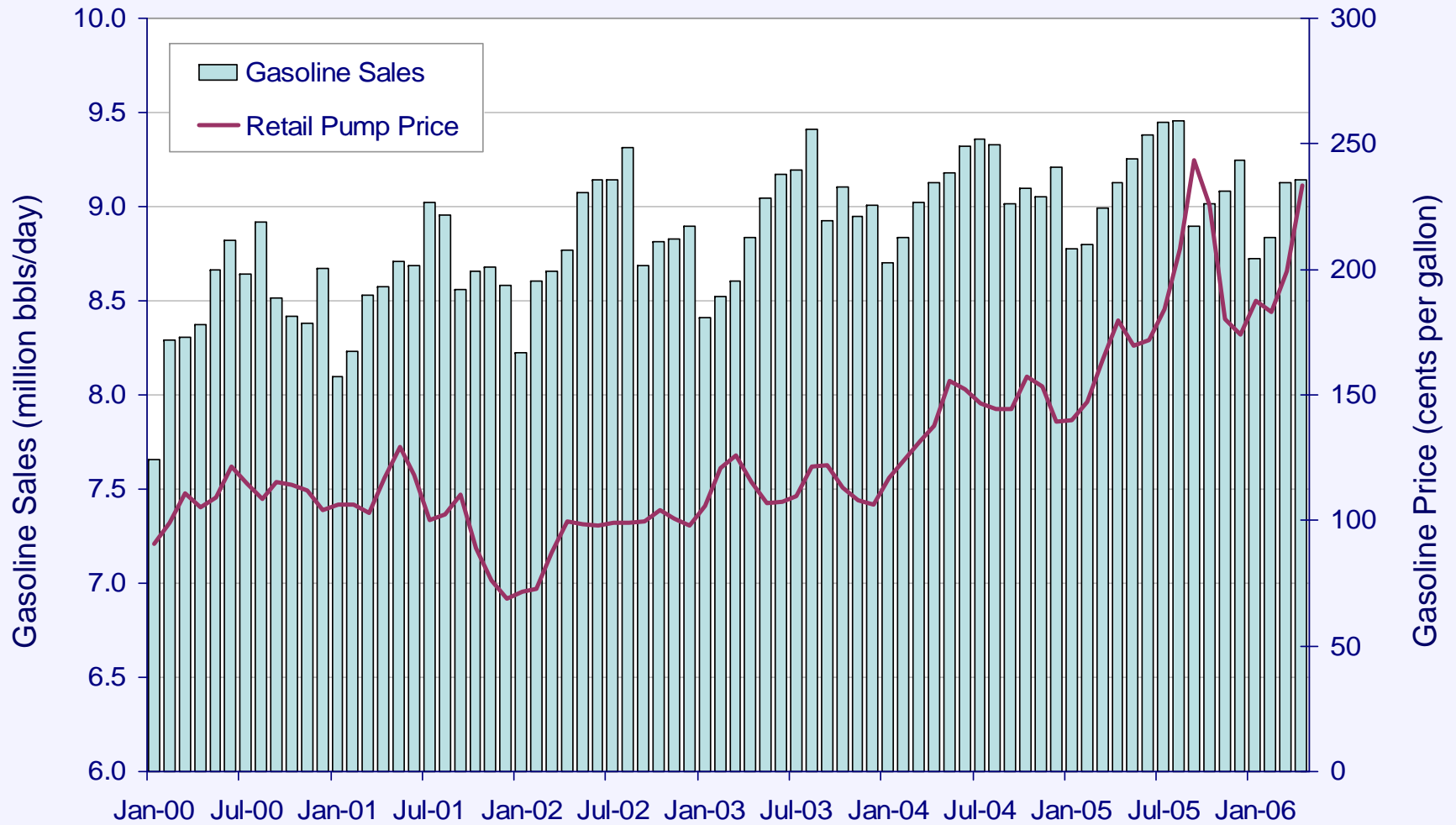
There are still considerable refinery constraints.





US Gasoline Demand and Retail Pump Prices

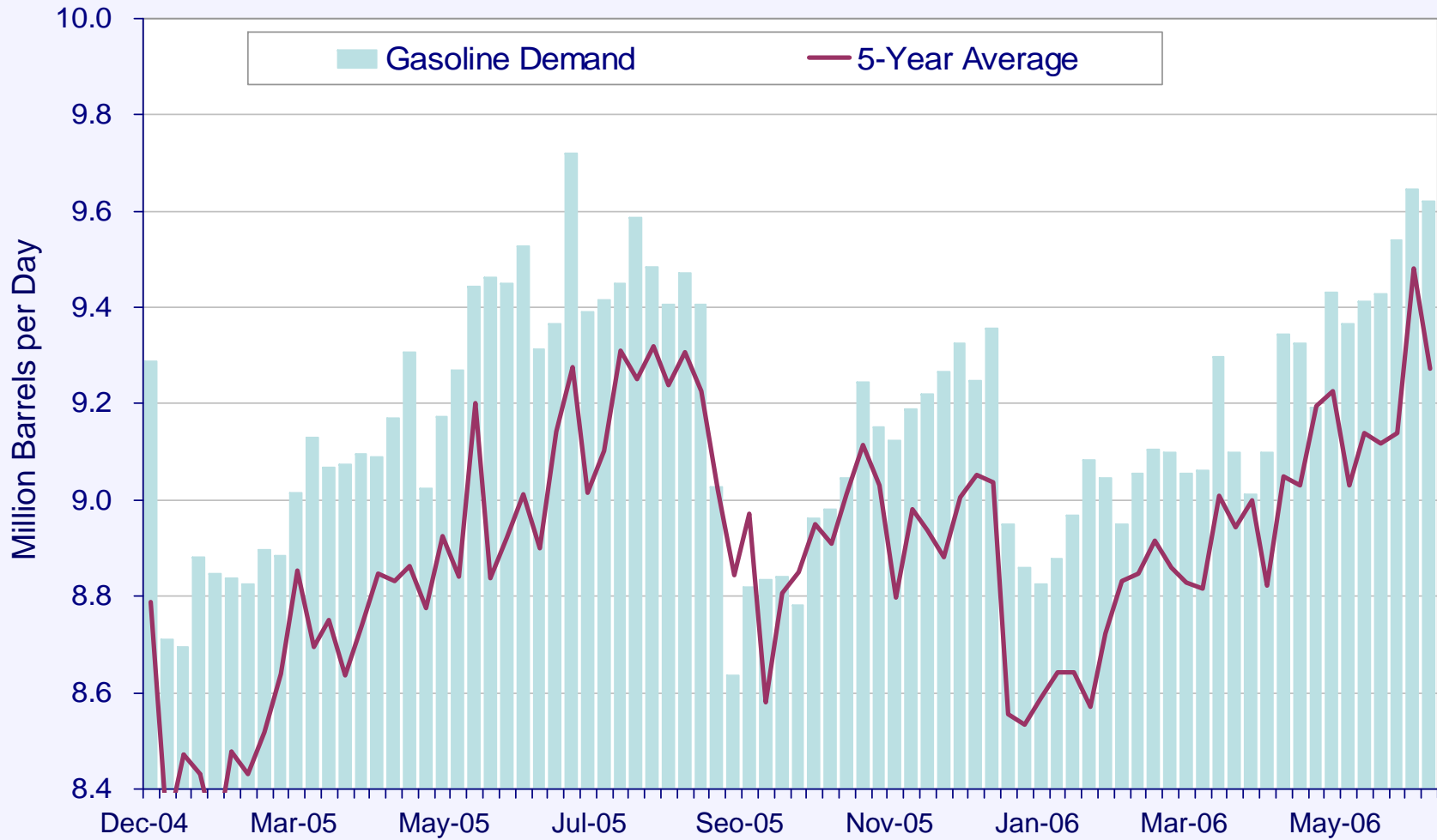
Despite high prices, gasoline demand is still relatively strong.





US Weekly Gasoline Demand Relative to 5-year Average

Recent weeks have seen new gasoline demand records set.



Source: Energy Information Administration, US Department of Energy

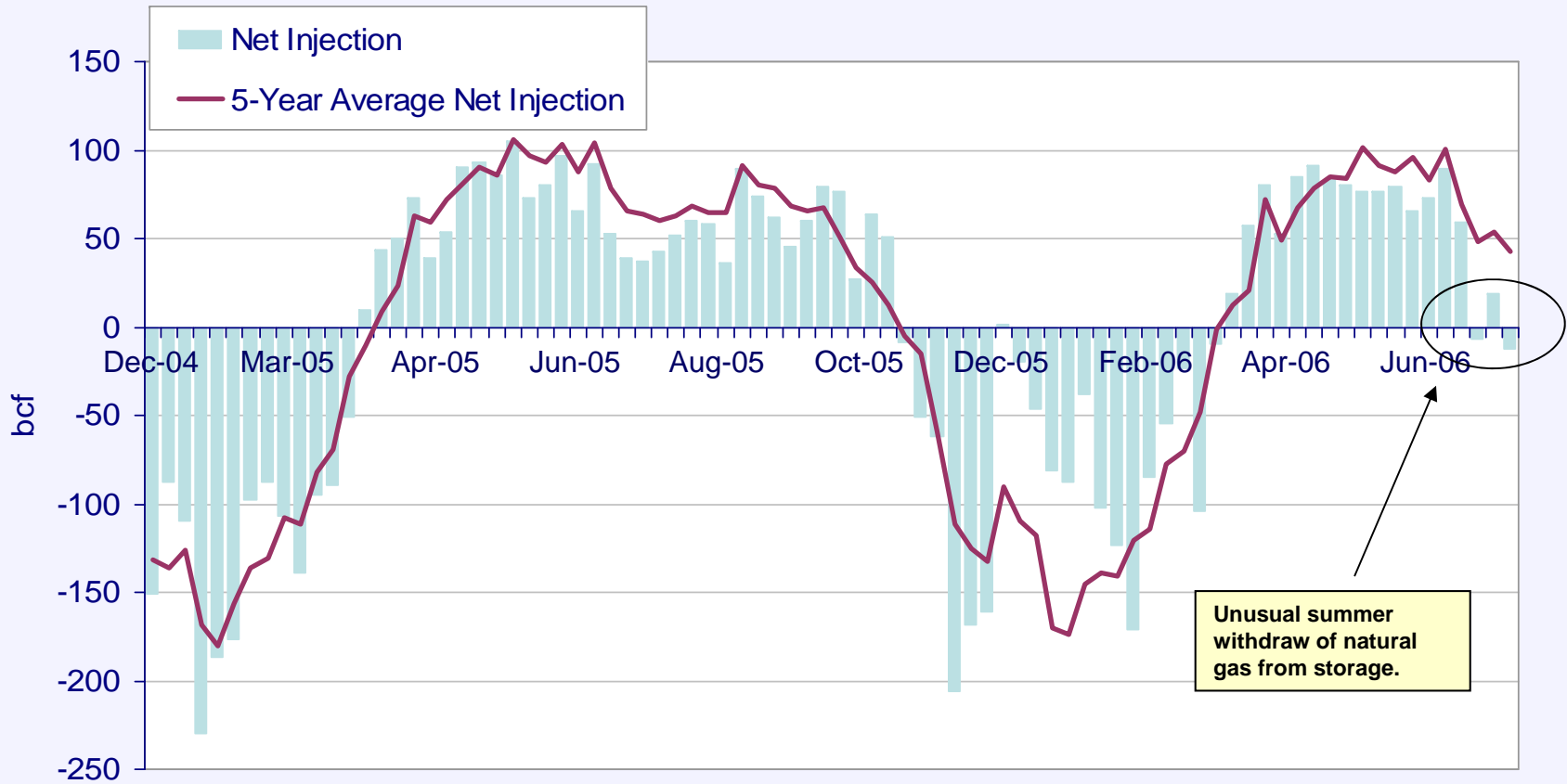


Future Outlook



Weekly Natural Gas Injections Relative to 5-Year Average

Natural gas storage at record levels, injections keeping pace.





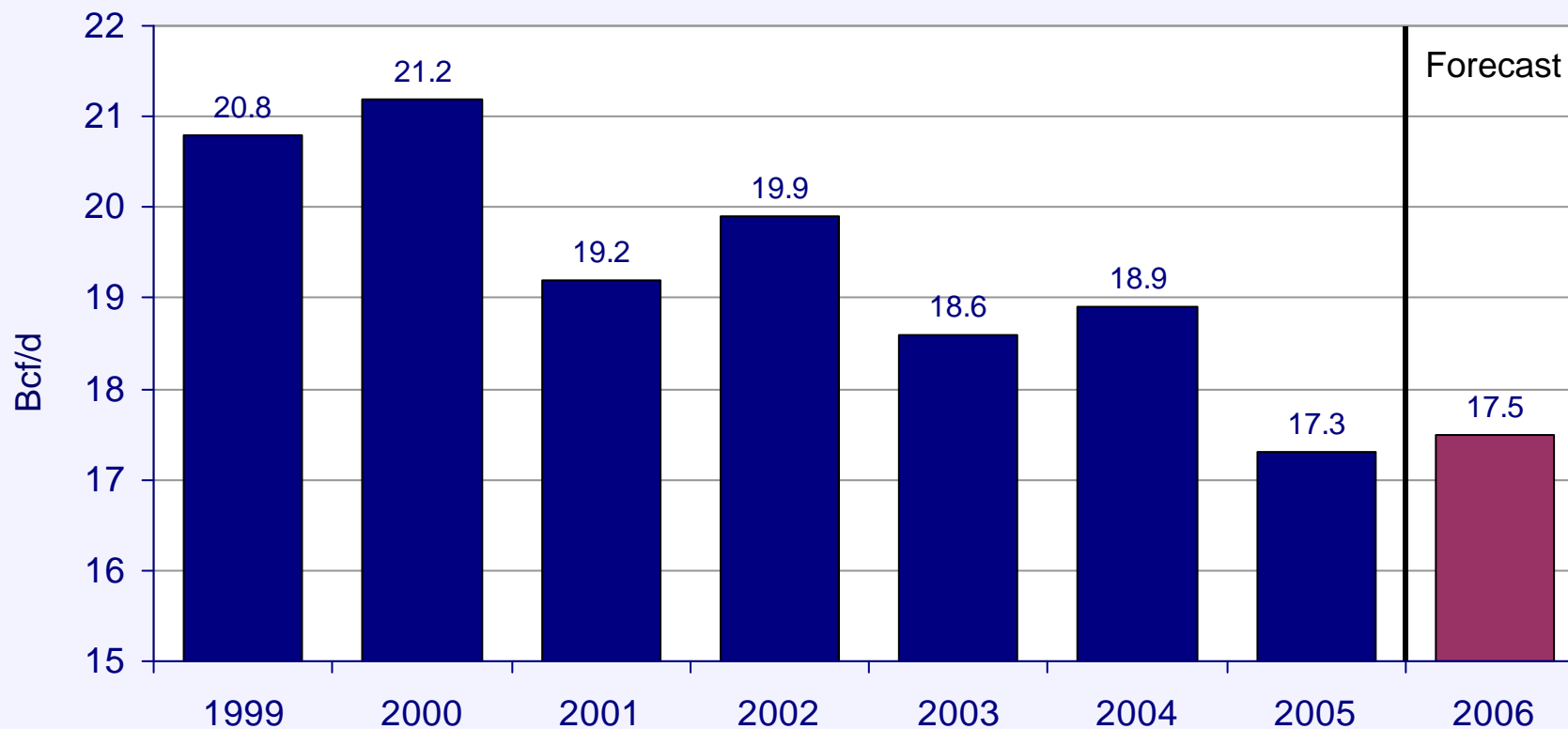
Projected Gas Demand for April through October 2006

Power plant and industrial demand will be the swing factors to watch
for during the summer.

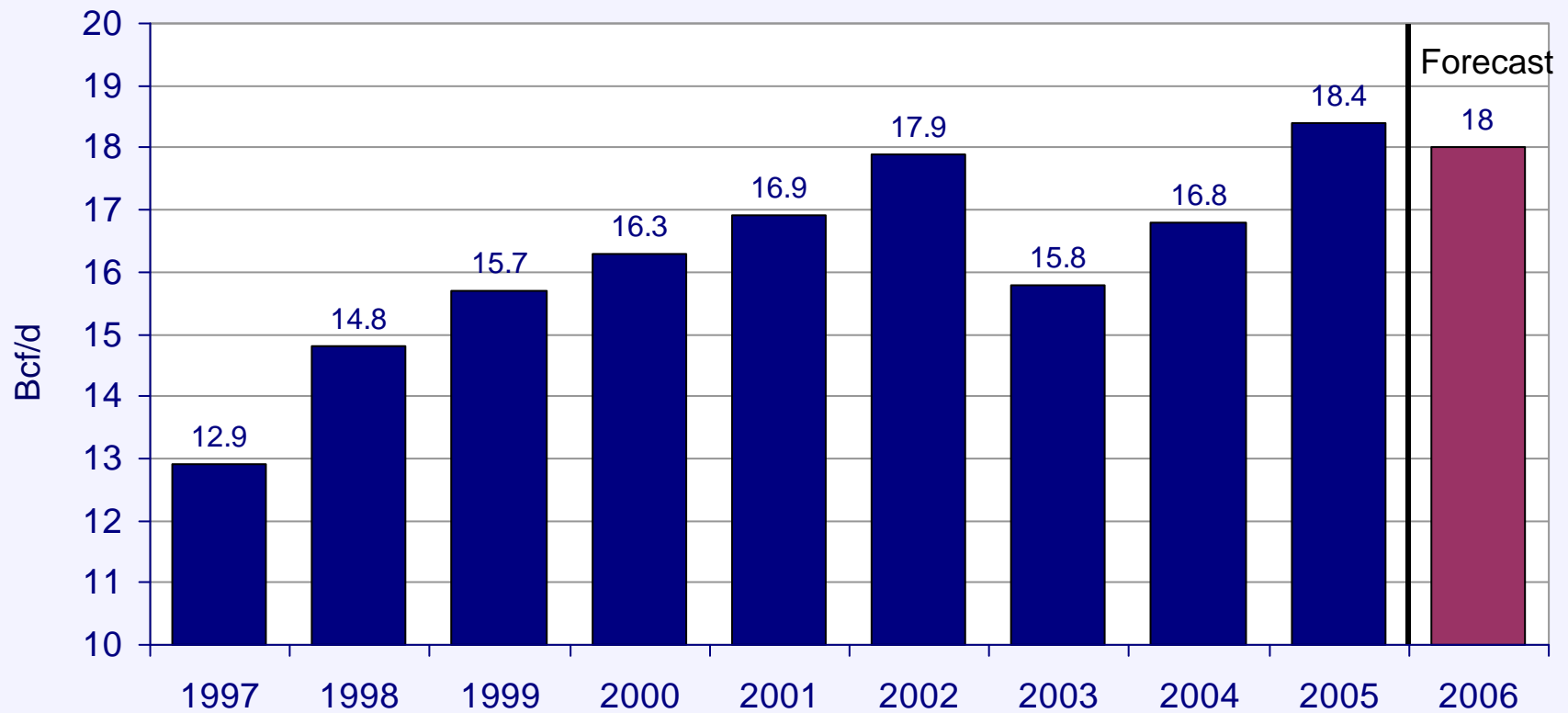
**Electric demand
forecasted to
decrease
despite past
summer trends**

Sector	2006		2005	
	Bcf	Average Bcf/d	Bcf	Average Bcf/d
Residential	1,362	6.4	1,349	6.3
Commercial	1,125	5.3	1,119	5.2
Industrial	3,739	17.5	3,693	17.3
Electric	3,849	18.0	3,940	18.4
Lease, Plant & Pipeline	896	4.1	898	4.2
Subtotal	10,971	51.3	10,999	51.4
Net Storage Injection	1,825	8.5	1,980	9.3

Small increase in industrial demand project, despite strong anticipated production (financial) performance in the sector.



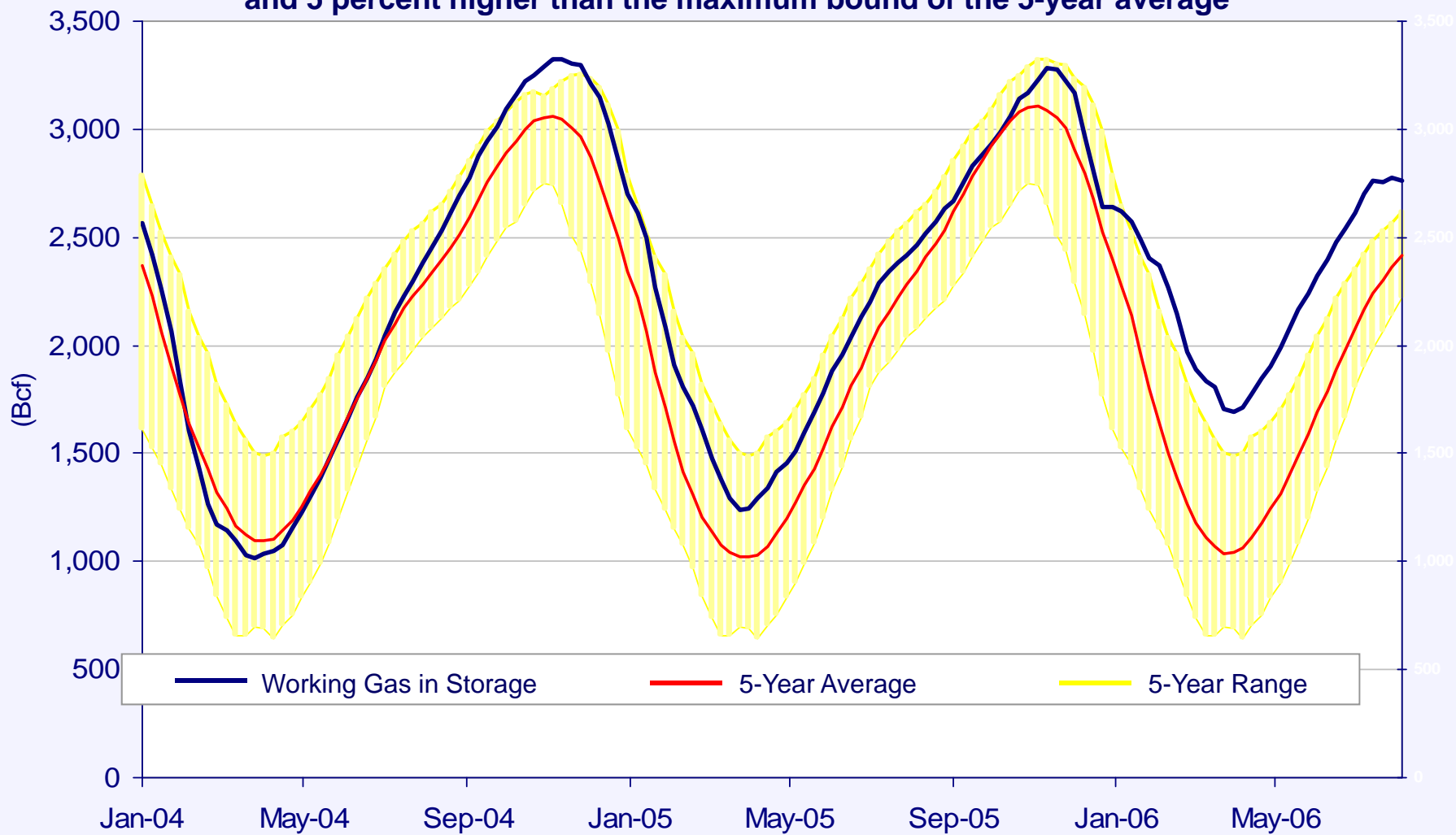
Decrease in power generation use, despite trends.





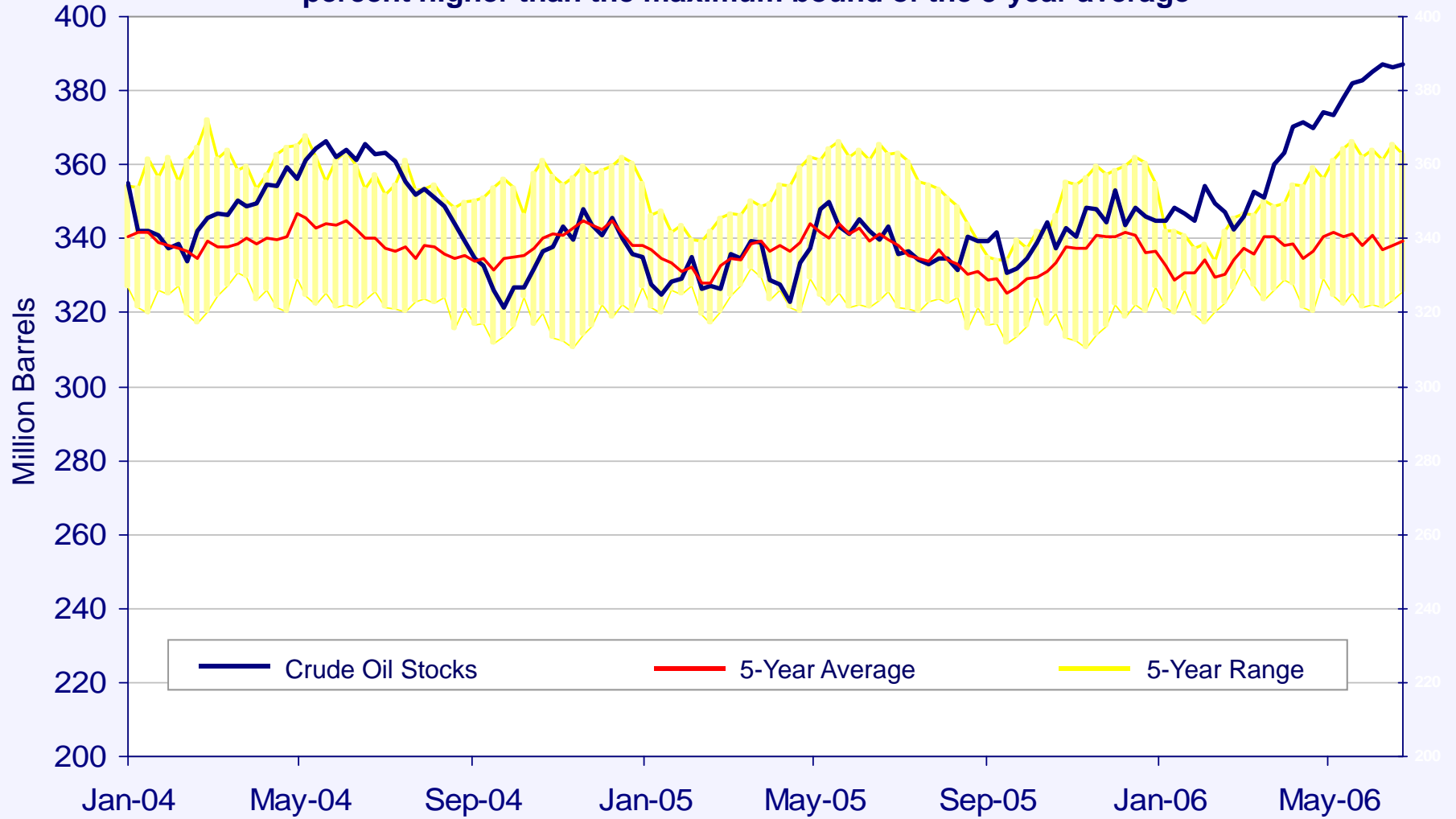
Working Gas in Underground Storage

Working gas in storage is currently 14 percent higher than the 5-year average and 5 percent higher than the maximum bound of the 5-year average



Source: Energy Information Administration, Department of Energy.

Crude oil stocks are currently 11 percent higher than the 5-year average and 5 percent higher than the maximum bound of the 5-year average

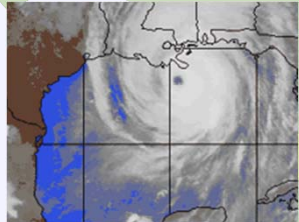


Impact of Shut-in Production Worldwide

Total of Potential from Shut-in Production: 2.7 MMBbl/d
Forecast World Consumption Growth for 2006: 1.6 MMBbl/d
Forecast World Consumption Growth for 2007: 1.8 MMBbl/d



Alaska
400 MBbl/day



2005 Hurricanes

Gulf of Mexico
180 MBbl/day

Venezuela
600 MBbl/day



Venezuelan instability



Nigerian civil strife

Iraq
1 MMBbl/day

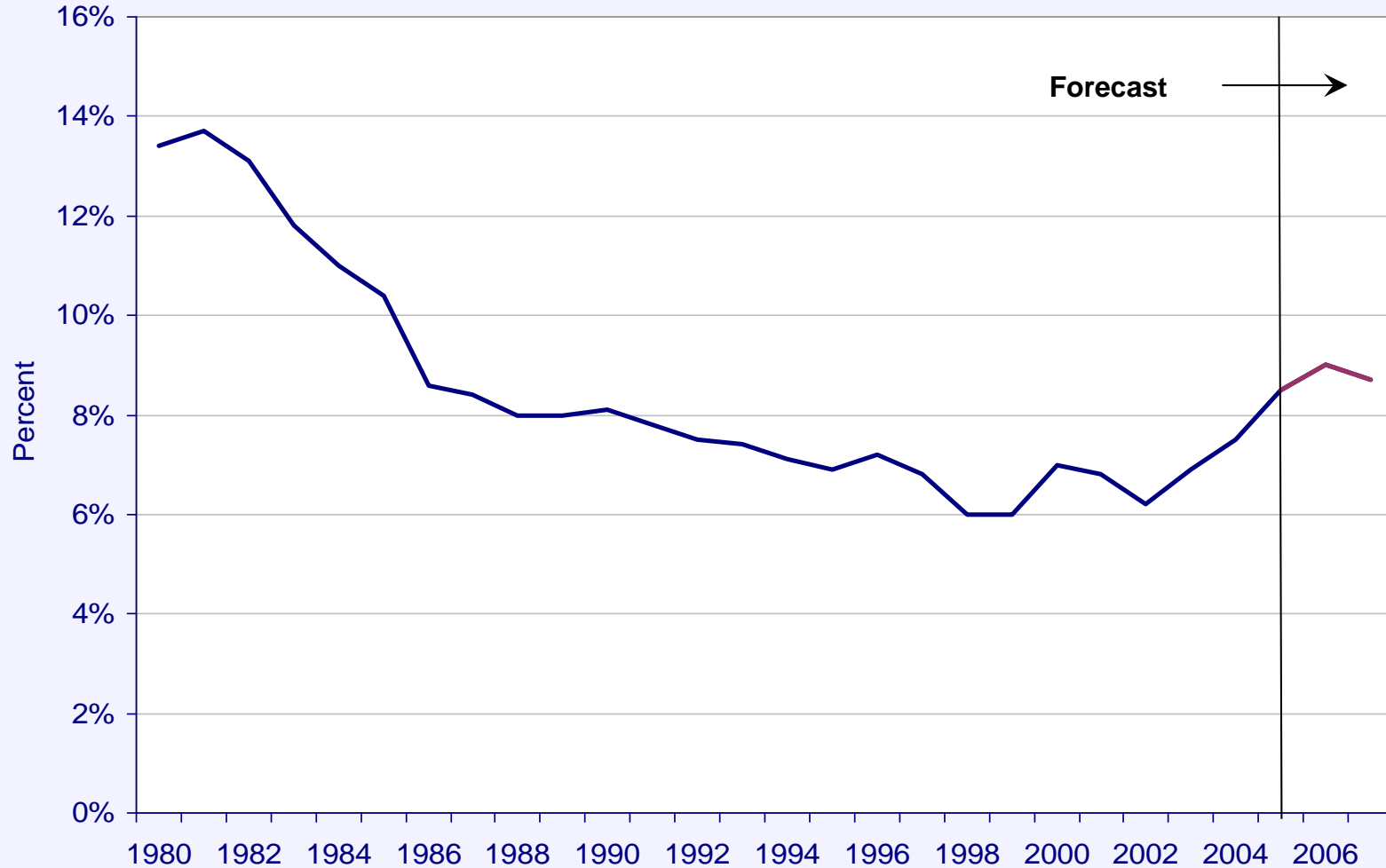


Iraq post-war
insurgency



US Energy Expenditures as a Percent of GDP (1970-2000)

US economy uses less energy per unit of income – more efficient and wealthier than past energy crisis. Could explain demand resiliency.





Dr. William Gray's December Hurricane Forecasts - Colorado State University

The 2006 Original Forecast includes the highest forecasted number of storms and "major" hurricanes this decade.

April "First" Forecast	Named Storms	Total Hurricanes	'Major' Hurricanes
2001	9	5	2
2002	13	8	4
2003	12	8	3
2004	13	7	3
2005	11	6	5
2006	17	9	5
NOAA 2006	13-16	8-10	4-6
Accuweather 2006		5	3

CSU 2006 Revised Forecast has reduced named storms to 15 with 7 total hurricanes and 3 major.

Actual 2006 activity has been very limited, and conditions very unfavorable (to date) for development. However, still early in the season.



Most activity in August and September.



- **Intermediate Term Impacts: (6 months and beyond)**
 - Markets have the opportunity to bounce in two different directions.
 - Large storage levels in crude and natural gas would point to potential softening of energy prices.
- **However, there is CONSIDERABLE uncertainty:**
 - Tropical activity could be concern (cyclical shift in weather trends).
 - Geopolitical tensions will continue to drive movements in crude.
- **Longer run, high prices can (should) have impact:**
 - High prices are bad for energy sensitive industries – will eventually show up in trade deficit numbers (chemicals, refining, and paper and pulp).
 - Imports for energy (crude, natural gas) will pick up and have impacts on trade deficit.



Questions, Comments, & Discussion

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