
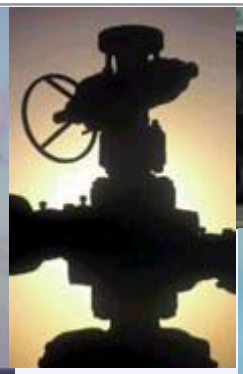




Gulf Coast Energy Outlook: Issues and Trends

ISA-Lafayette Technical Conference & EXPO
Cajundome Conference Center

Lafayette, Louisiana
March 12, 2009

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David E. Dismukes
Center for Energy Studies
Louisiana State University

Take Away Points – What's Happened?

- **Market has shown incredible resilience in the face of exceptional geopolitical and weather-related pressures.**
- **Spent most of 2005-2007 playing "catch-up" – supply started showing signs of catching up with demand by mid-2008.**
- **Market has reacted with considerable supply, transportation, refining/processing and storage infrastructure development despite volatile prices and risks.**
- **Natural gas production and reserve increases have been impressive. Crude reserves holding steady with some anticipated growth in production in EOR and deepwater.**

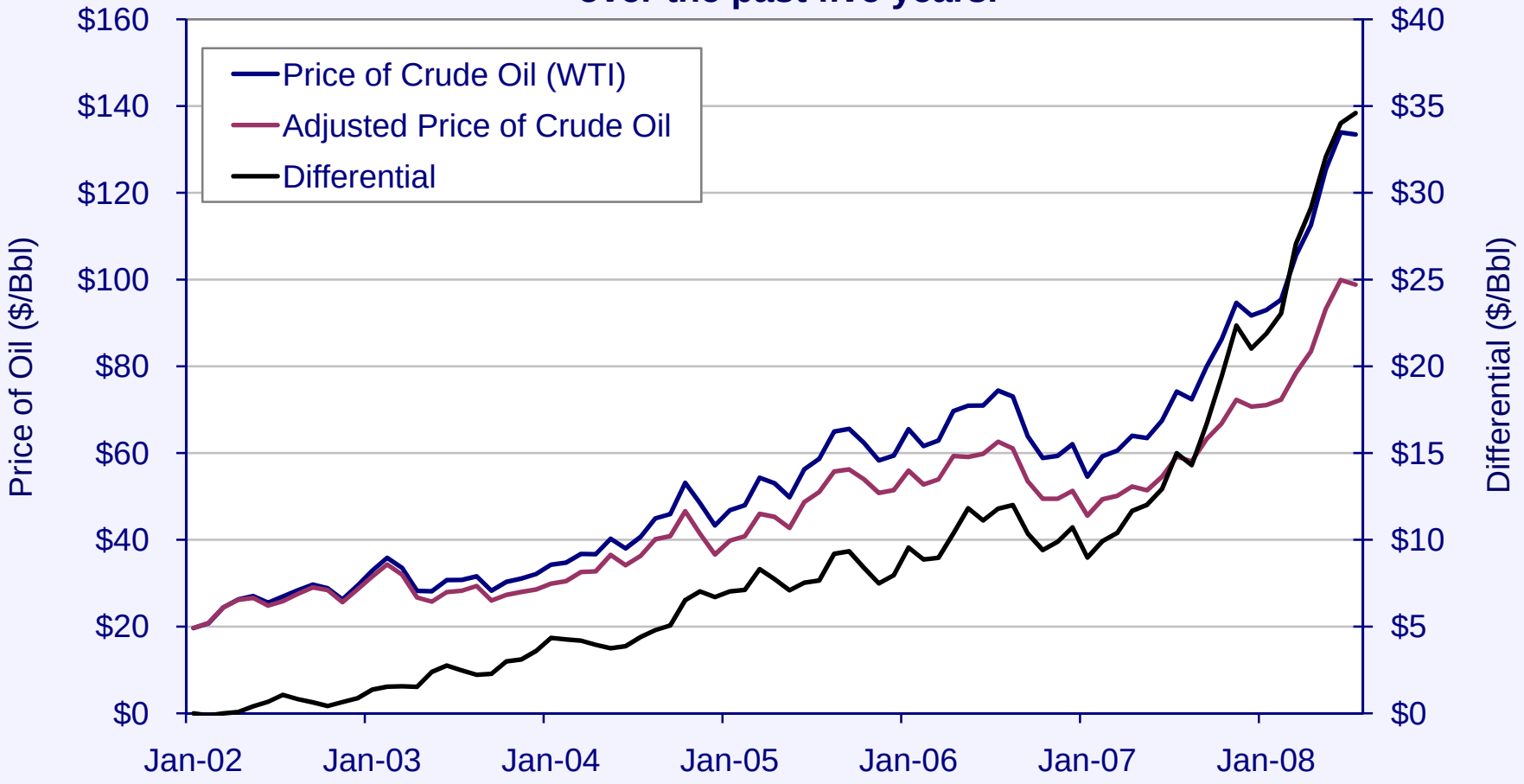
Take Way Points: Outlook & Issues

- Bottom has fallen out of the energy market just like other commodity markets.
- Economy has virtually tanked and conventional wisdom is that it will stay that way for some time.
- Economic contraction has resulted in one of the fastest energy demand contractions in history.
- Production, reserves, and stocks all strong… for now….
- Starting to see risks and capital access considerations undermine investment projects.
- Policy is moving quickly against the industry.
- Next year will be one of the most difficult for all sectors of the business: new mandates; new taxes; higher risks; lower demand; lower margins and profits.

Recent Trends

Dollar Value and Oil Prices

Prices say a lot about what has been going on in energy markets over the past five years.



Note: The adjusted price of crude oil is the nominal WTI adjusted by the Federal Reserve Bank's Broad Index. The Broad Index is a weighted average of the foreign exchange values of the U.S. dollar against the currencies of a large group of major U.S. trading partners. Base year is 2002.
Source: Federal Reserve Bank

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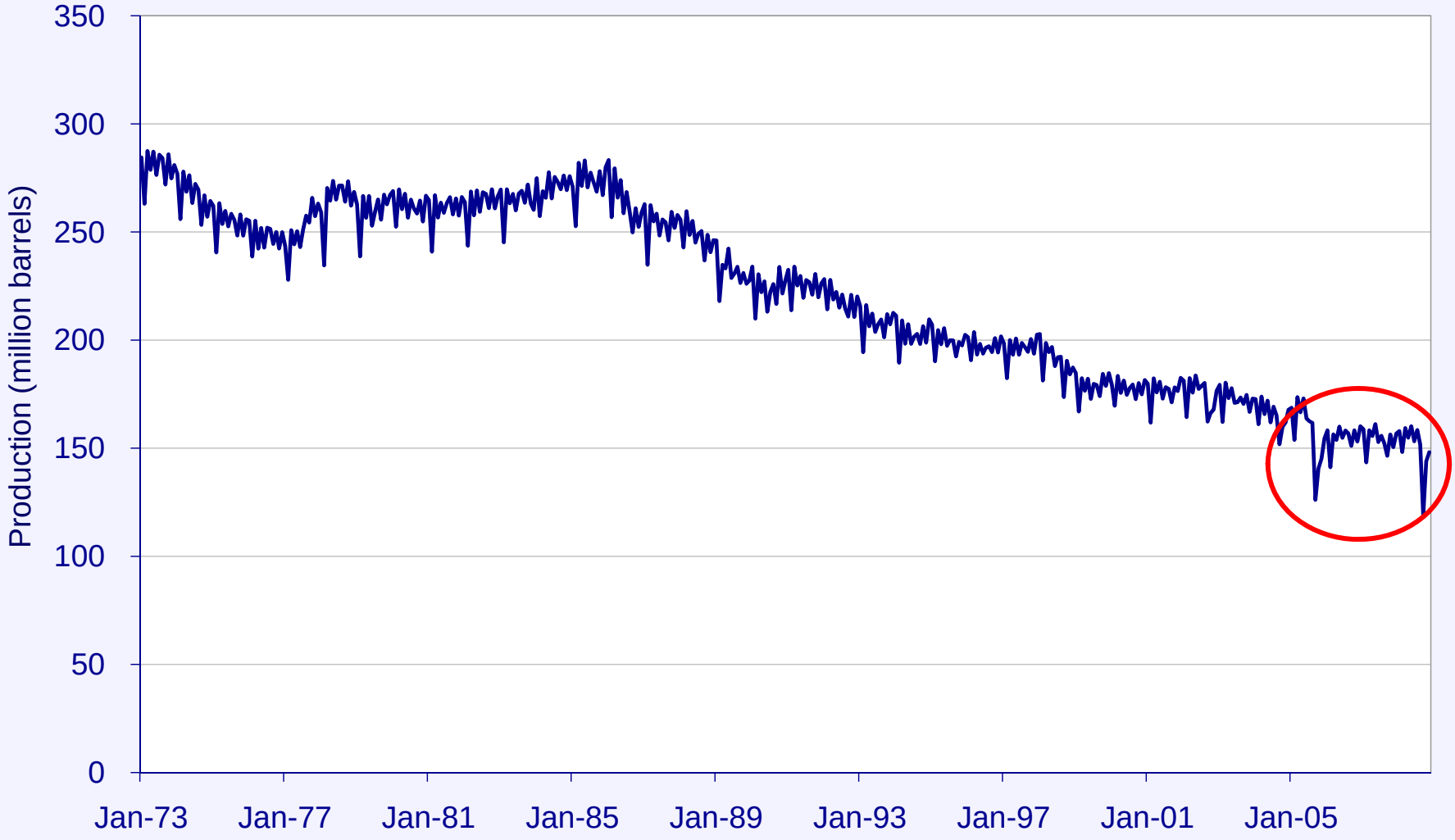
U.S. Crude Oil Production 1973 to 2008

U.S. crude production, while down from its heyday, is reaching a plateau given EOR and deepwater GOM production.



Source: Energy Information Administration, Department of Energy

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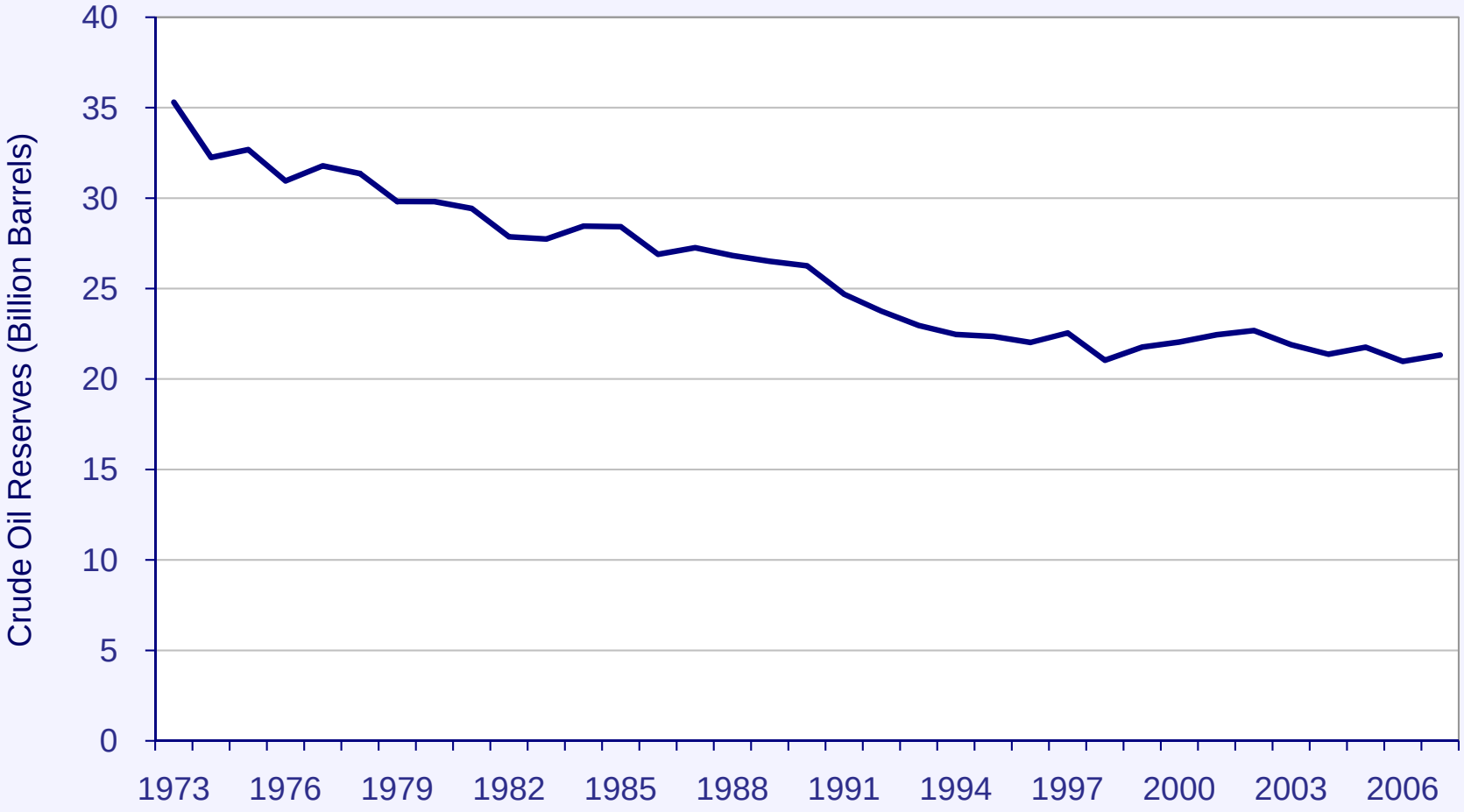
U.S. Crude Oil Proved Reserves 1973 to 2006

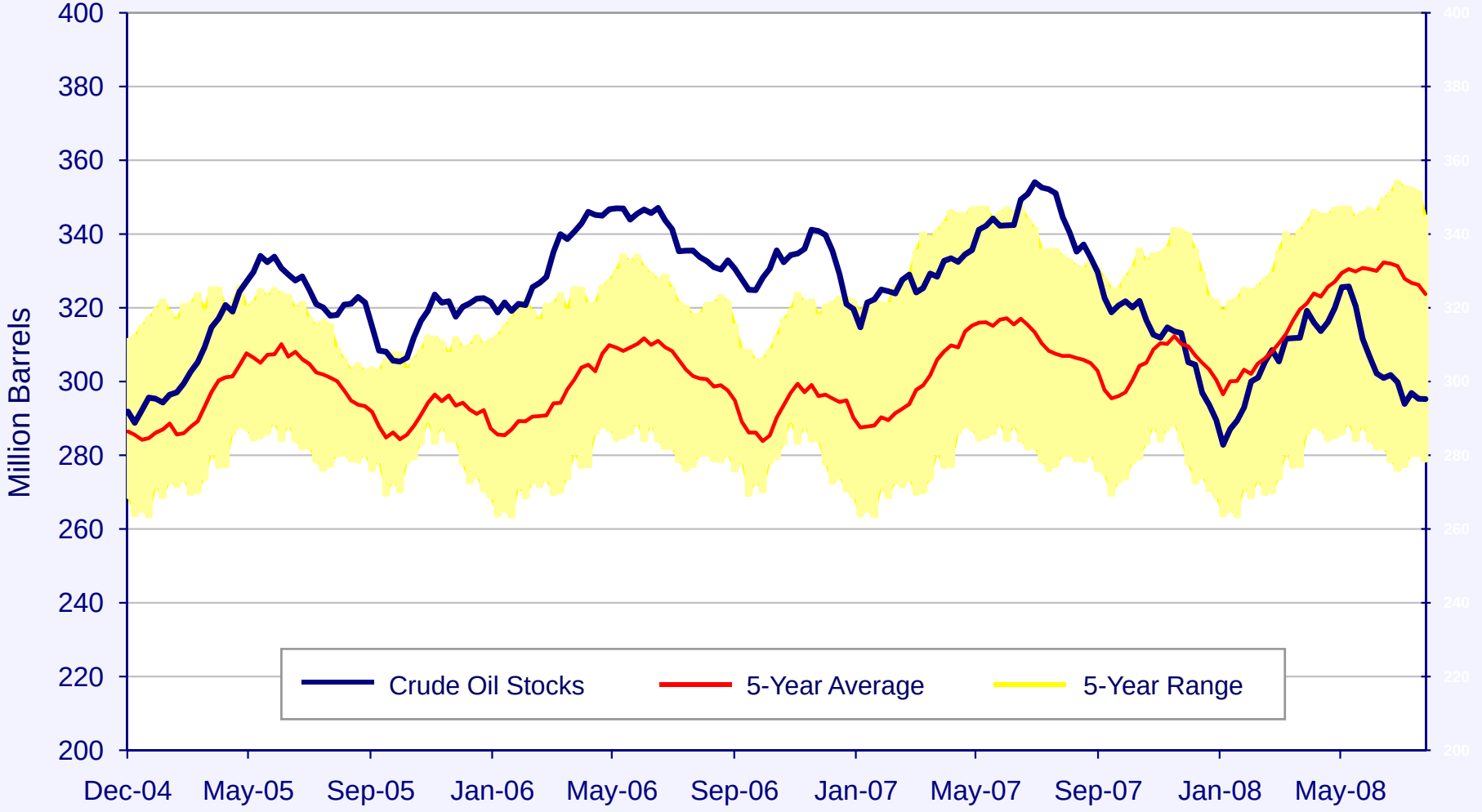
Reserves holding steady between 22 to 20 BBbls since 1992.



Source: Energy Information Administration, Department of Energy

US Crude Oil Stocks

Stocks have been challenged but within historic norms.



Source: Energy Information Administration, Department of Energy.

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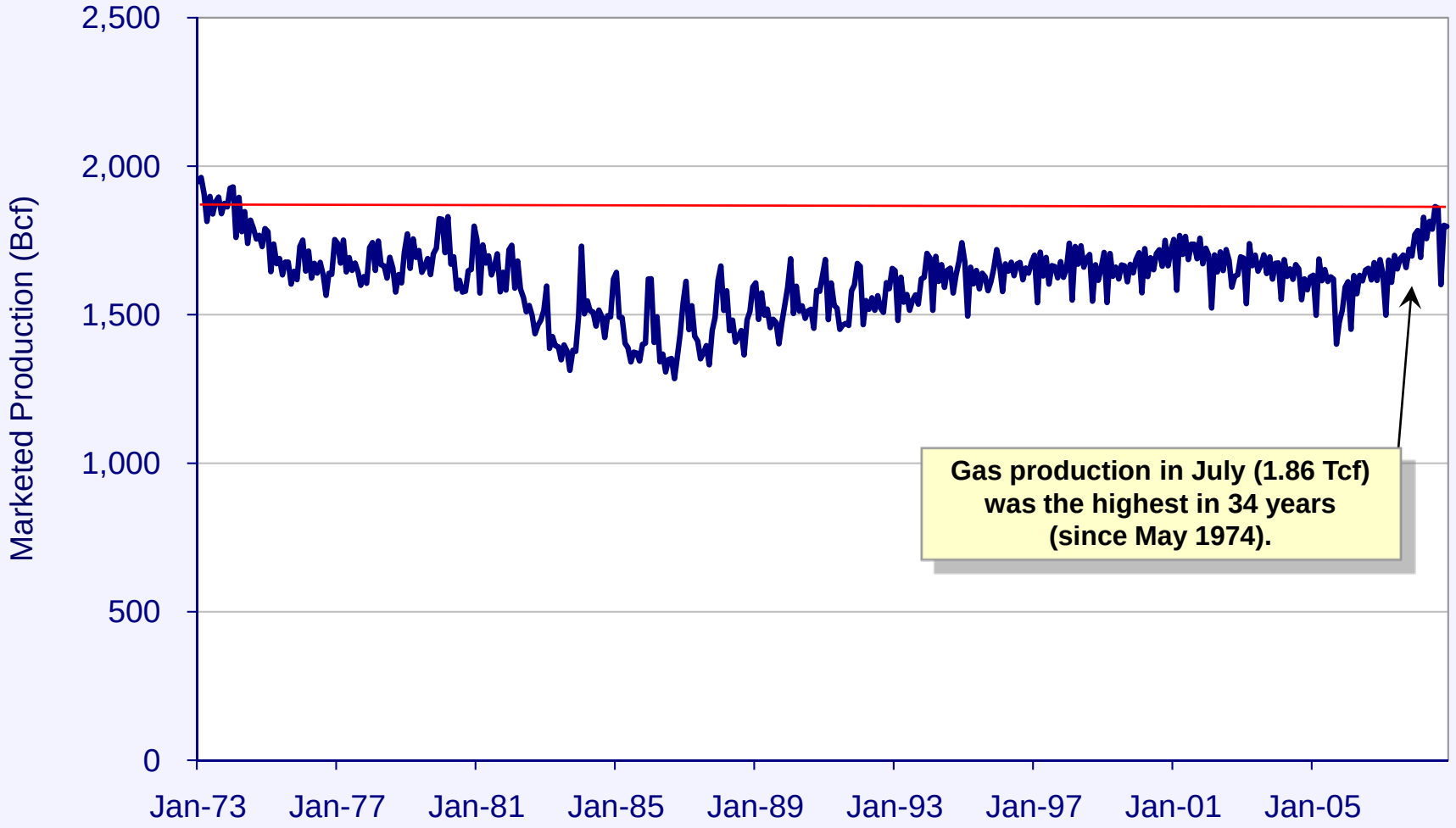
U.S. Natural Gas Production 1973 to 2008

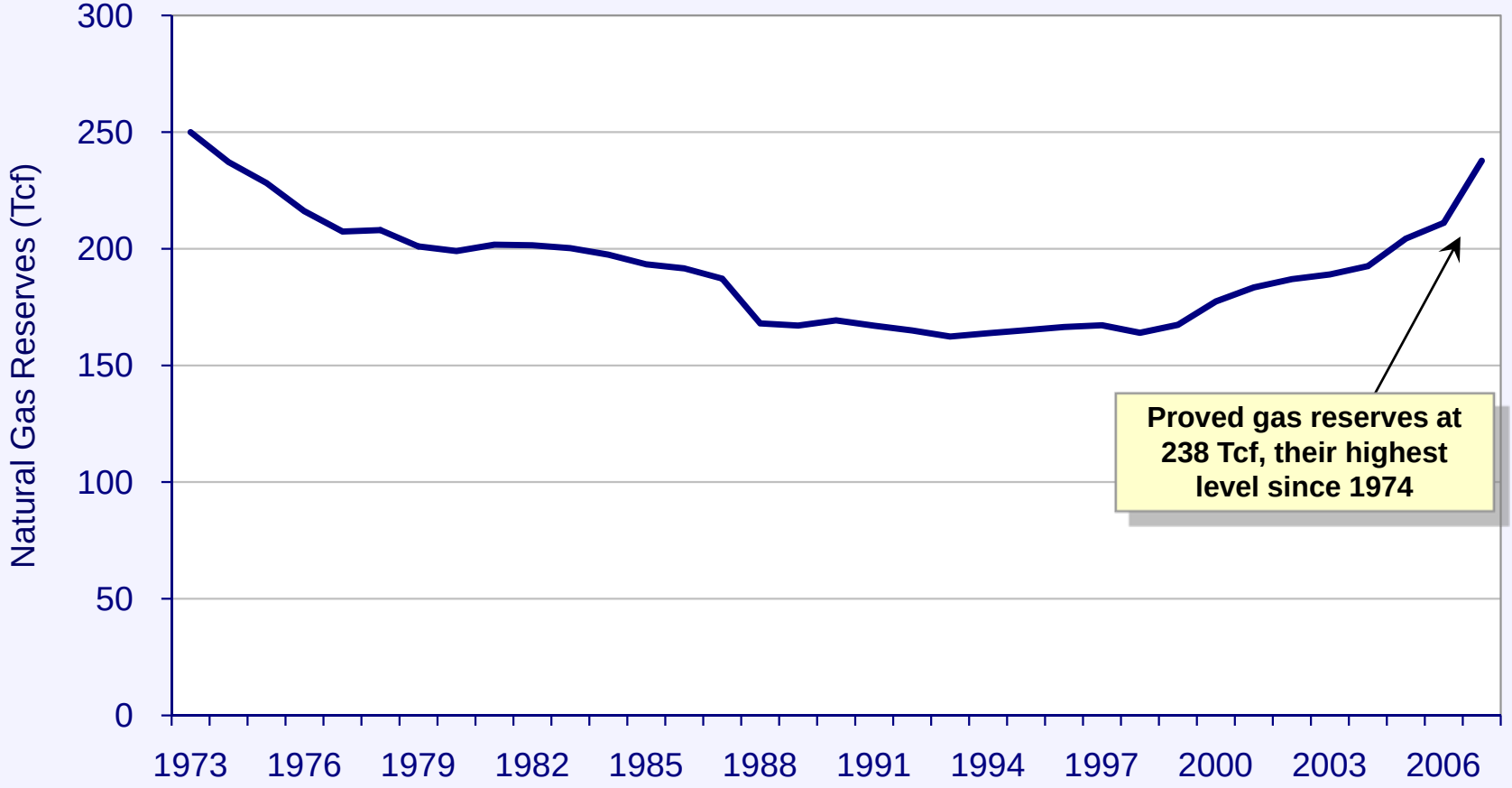
Impressive natural gas production increases, driven by deepwater, and increasingly by unconventional resources.



Source: Energy Information Administration, Department of Energy

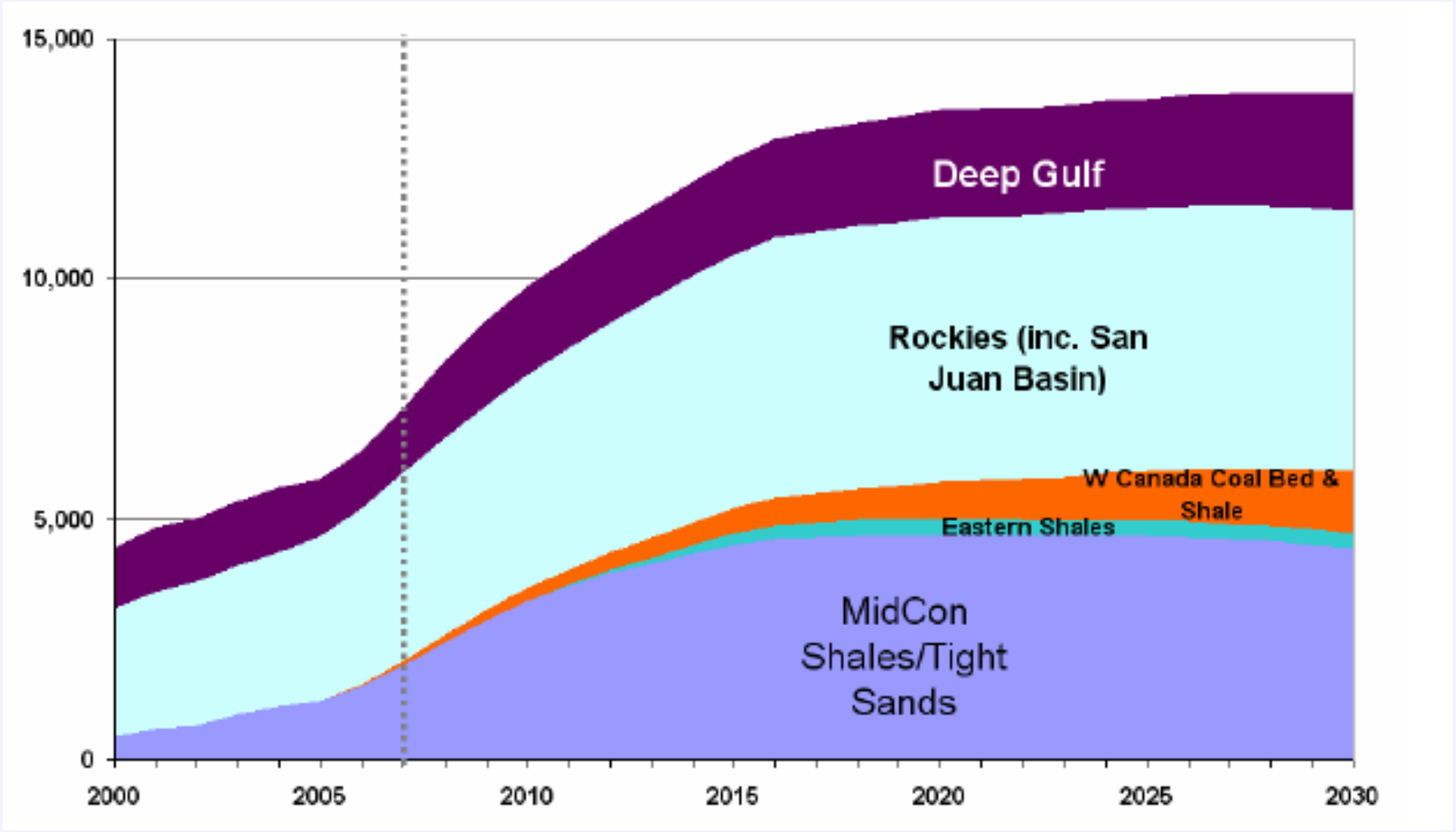
U.S. Dry Natural Gas Proved Reserves 1973 to 2007

2006-2007 reserves growth is the largest in over 30 years. Natural gas reserves have been increasing by almost 5 percent since 2000 (except 2004-2005 tropical season, 2.5 percent)



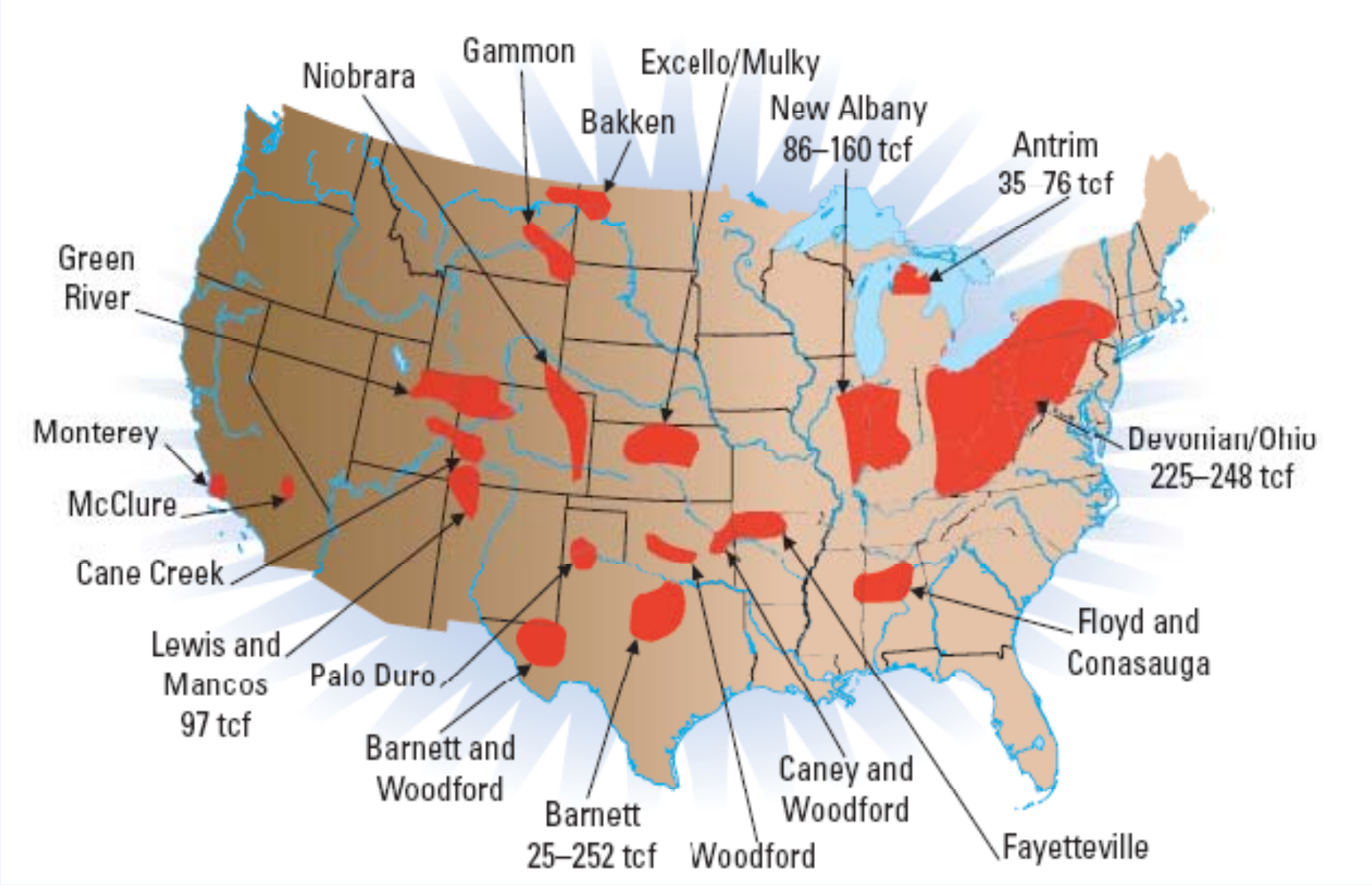
Source: Energy Information Administration, Department of Energy

Unconventional Gas Production



Source: Energy Information Administration, US Department of Energy

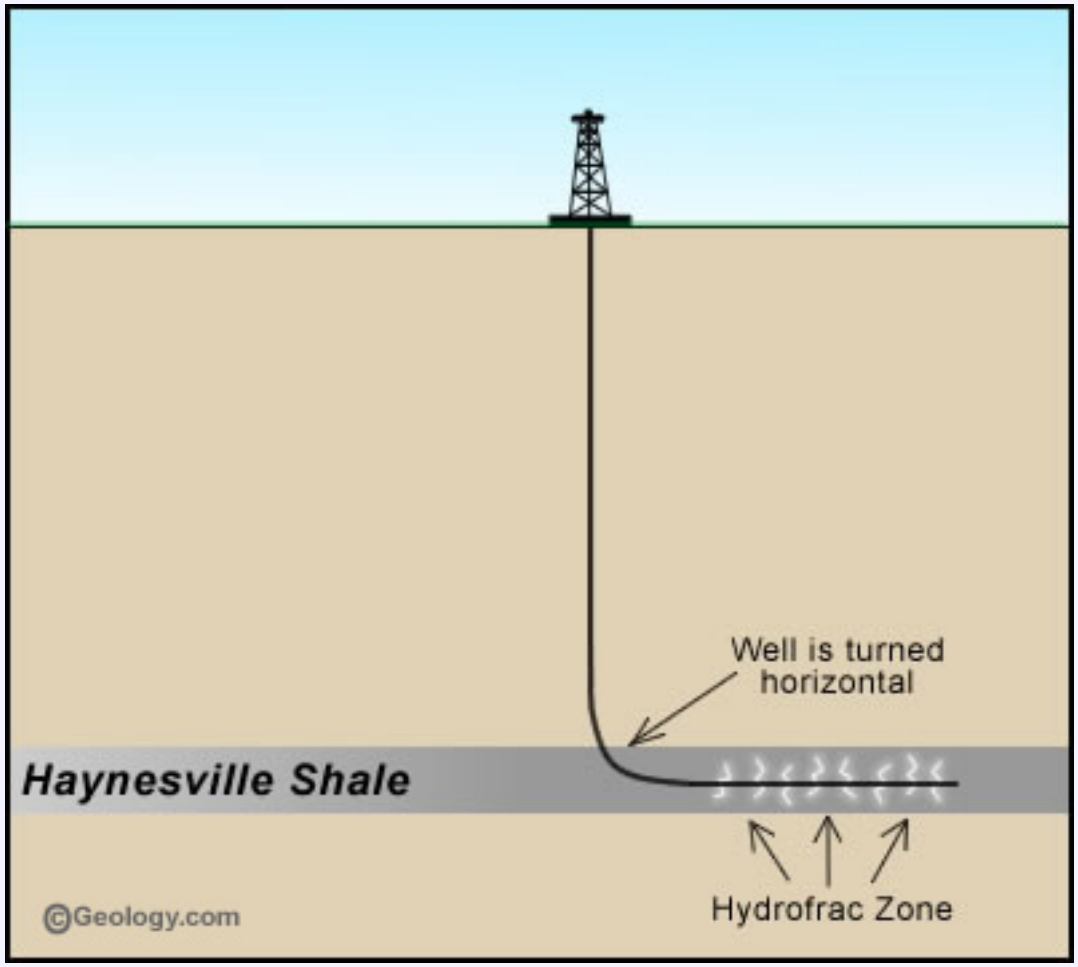
Major Shale Gas Basins in U.S.



Note: Major shale gas basins in the United States with total resource potential of 500 to 1,000 tcf.
Source: Schlumberger

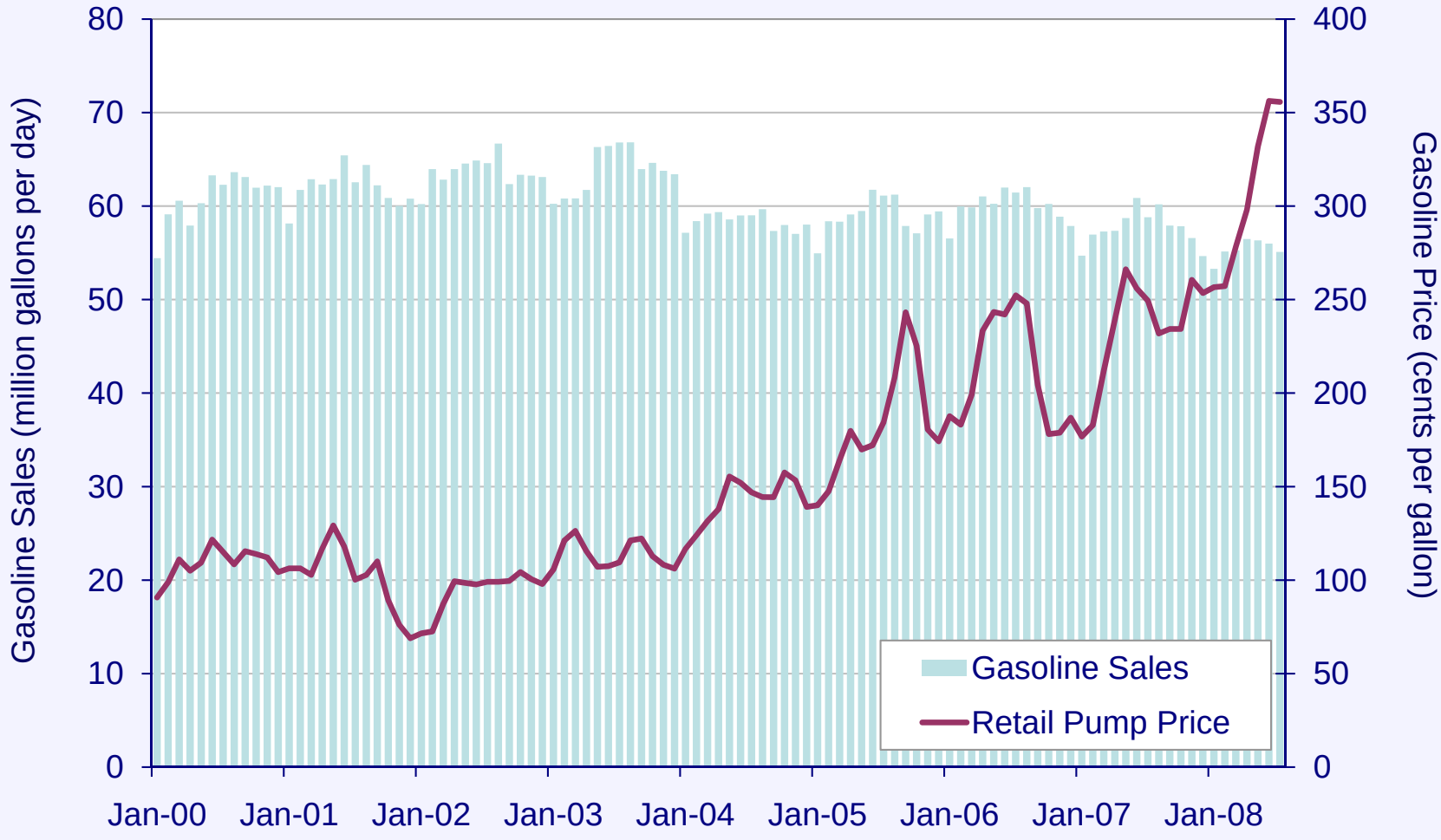
Haynesville Shale / Horizontal Drilling

Haynesville Shale success based on gains in horizontal drilling and hydrofracing. These processes liberate gas from the shale and allows a single well to drain a much larger volume of rock than a traditional vertical well.



US Gasoline Demand and Retail Pump Prices

After long period of high prices, gasoline demand was starting to show some limited reductions in late 2008.



Source: Energy Information Administration, Department of Energy

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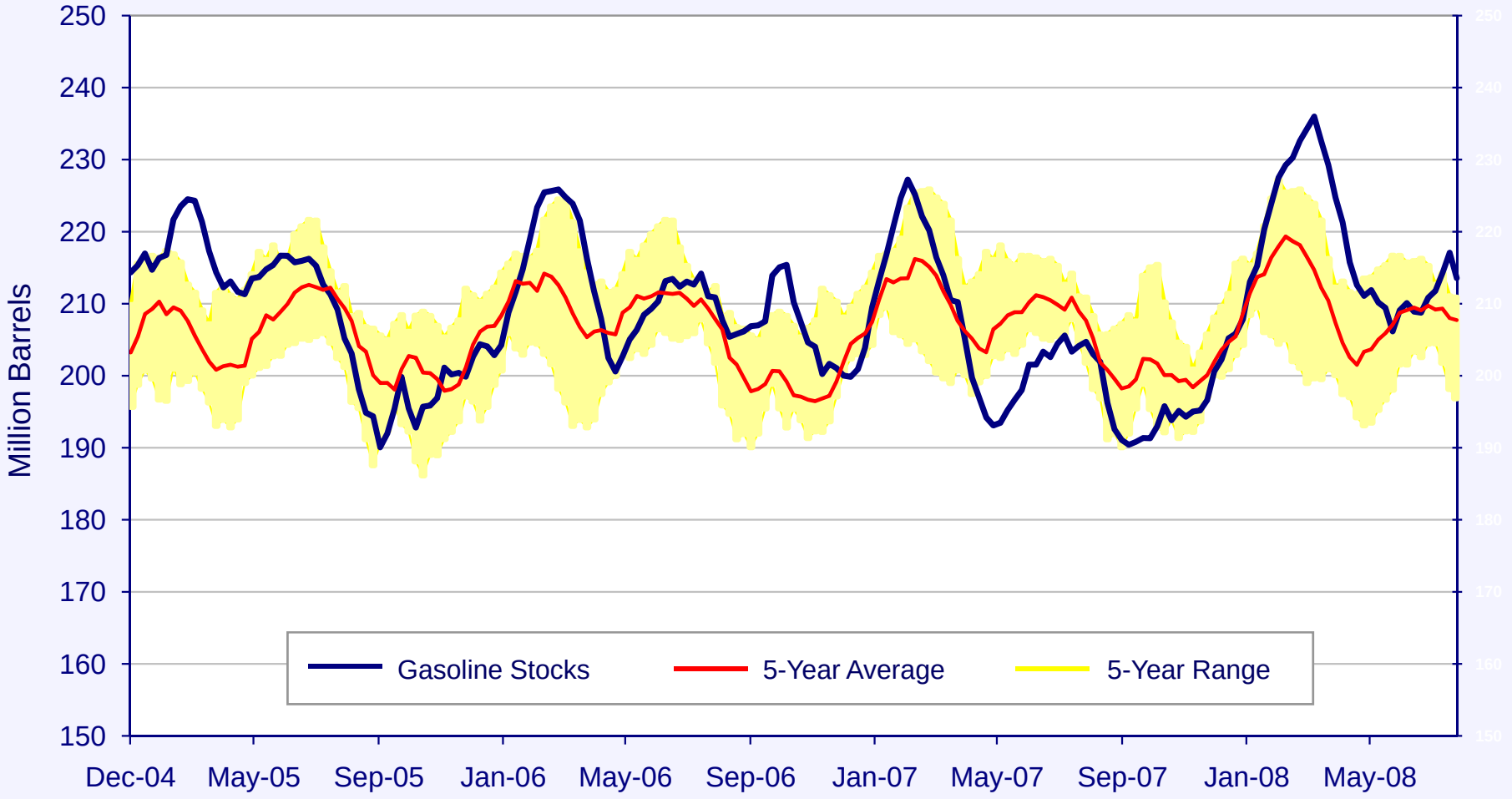
US Gasoline Stocks and Days of Supply

Low stocks help drive up prices in 2007, but a moderate recovery started in 2008.

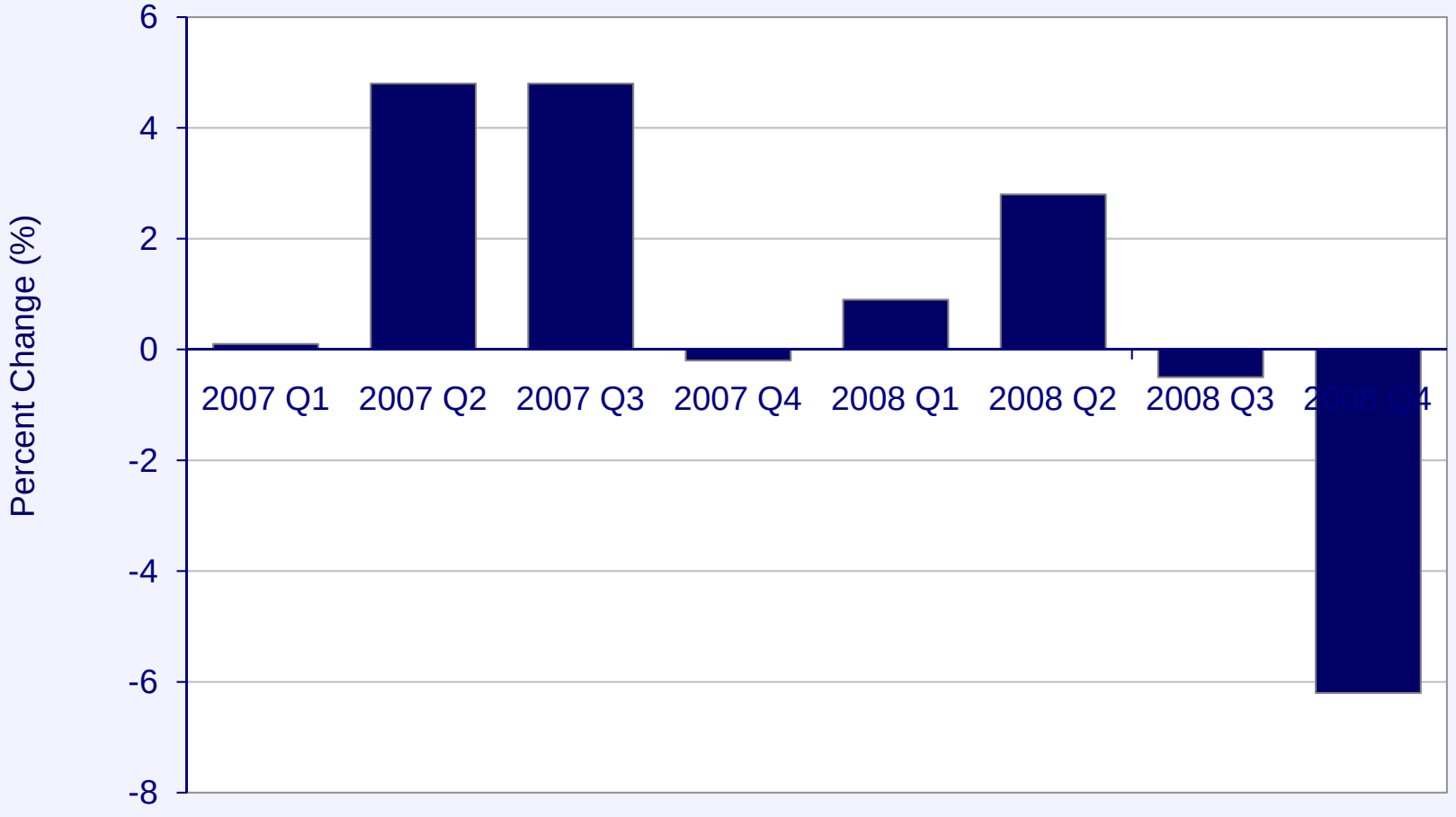


Source: Energy Information Administration, Department of Energy.

Market Disruption

Percent Change in Quarterly GDP

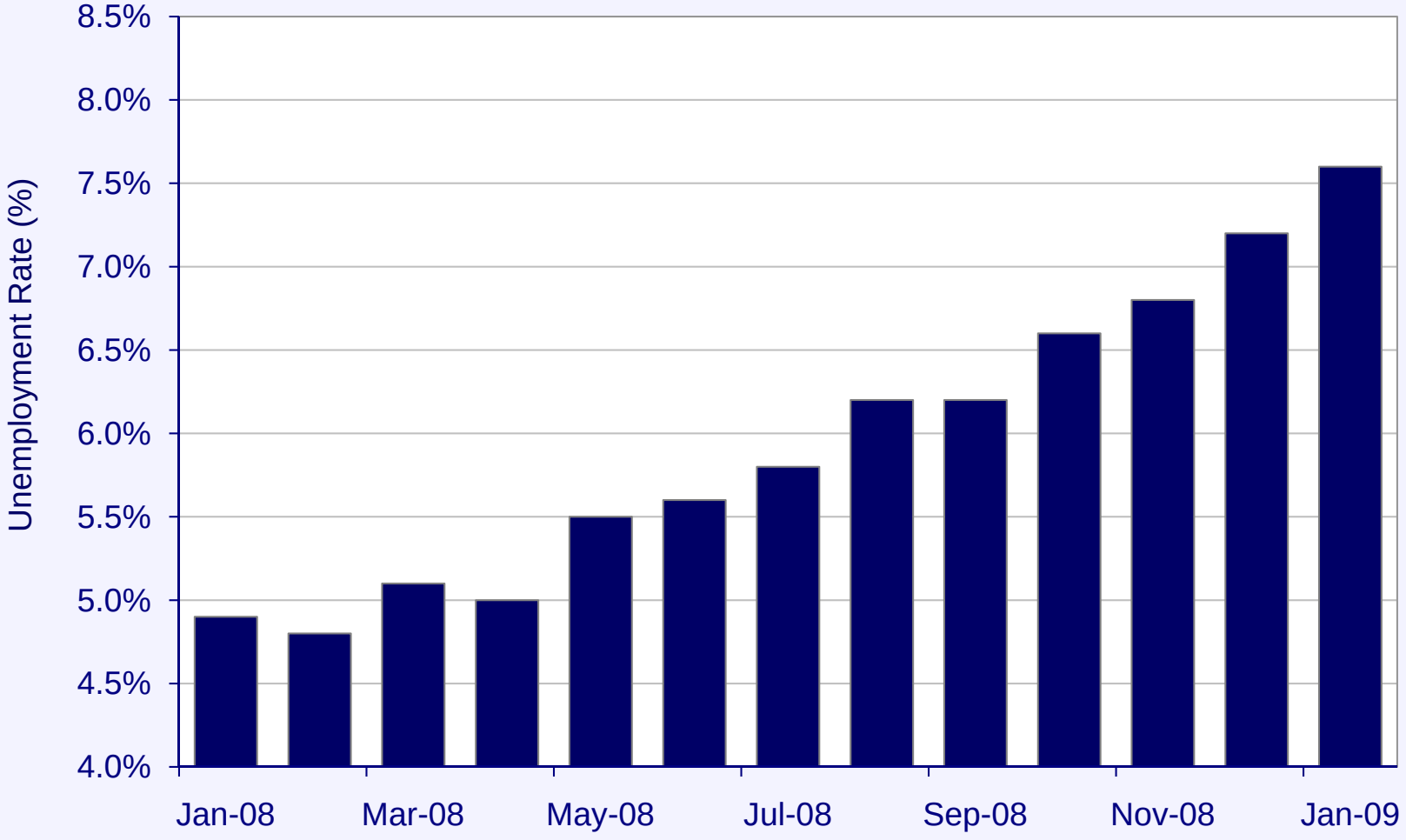
U.S. economy has been significantly challenged since late 2007, and has technically been in recession since the beginning of 2008.



Source: Bureau of Economic Analysis, U.S. Department of Commerce.

Unemployment Rate

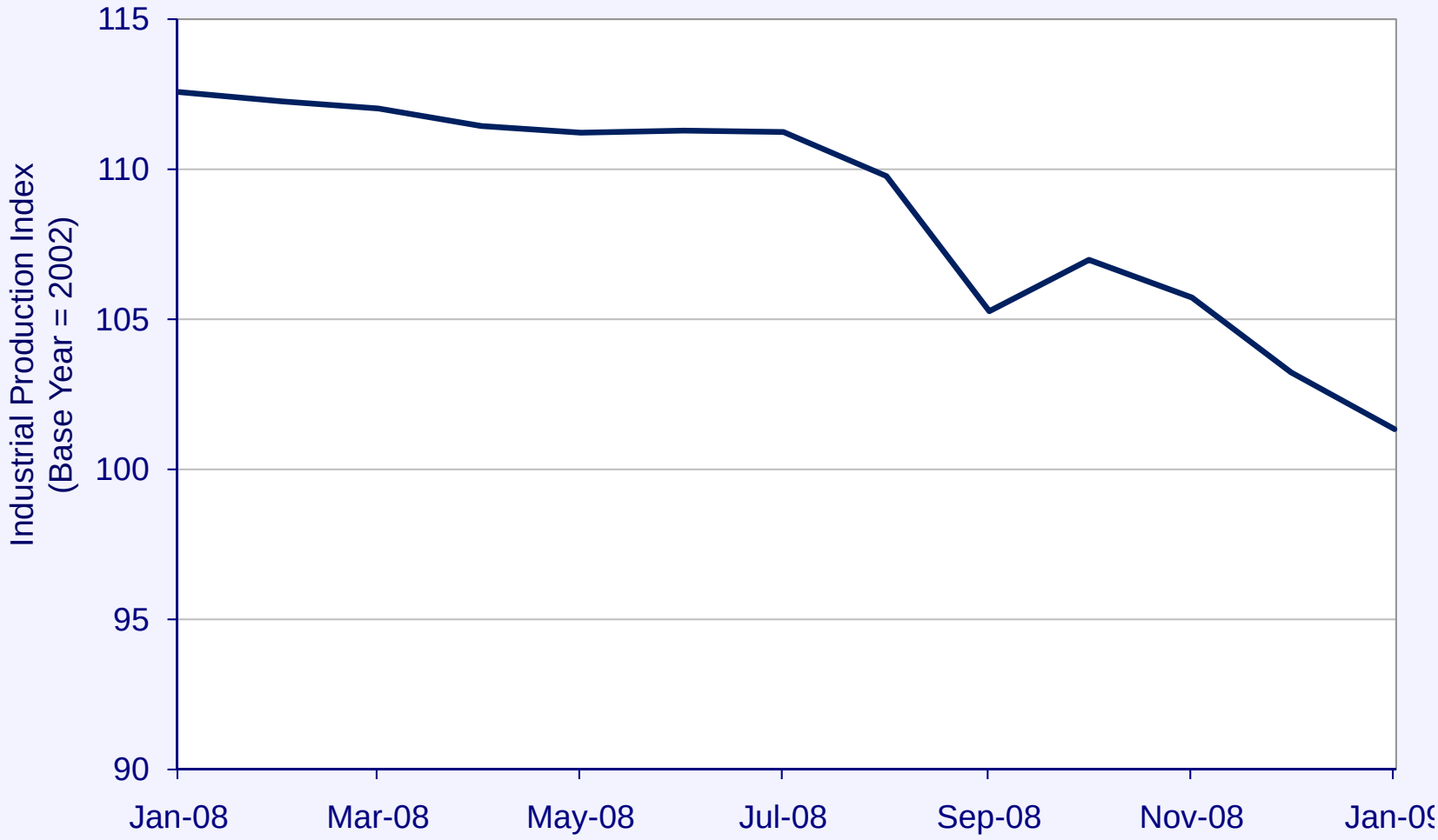
The real metric of the contraction is seen in rapidly growing unemployment rates.



Source: Bureau Labor Statistics, U.S. Department of Labor.

Industrial Production Index

Industrial production has fallen to some of its worst levels on record.



Source: Federal Reserve Bank

Dow Jones Industrial Average

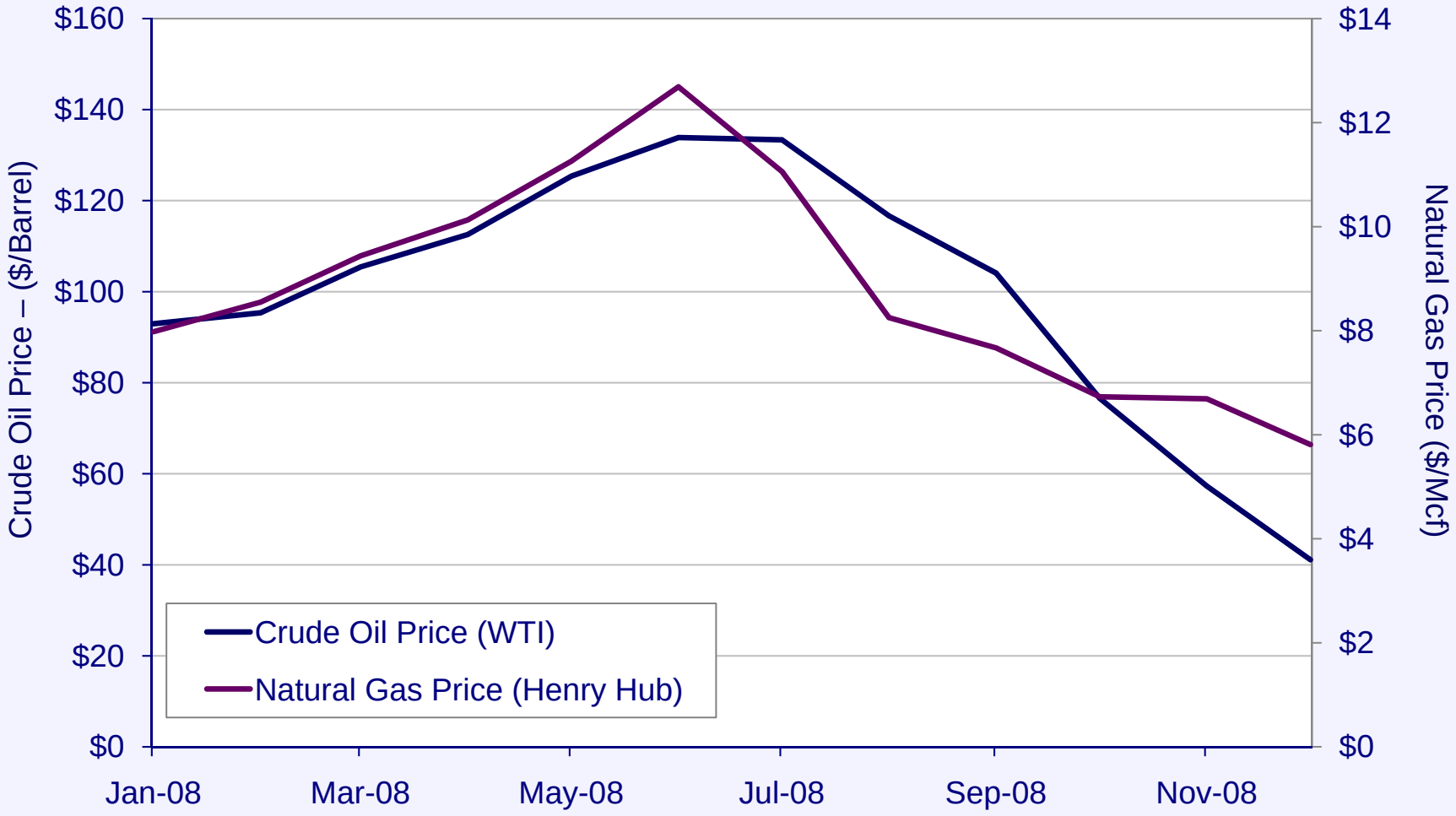
The Dow Jones Industrial Average has lost over $10 trillion in market capitalization since the nominal highs of 2007.

Source: Google Financial

Energy Market

Recent Trends in Oil and Gas Prices

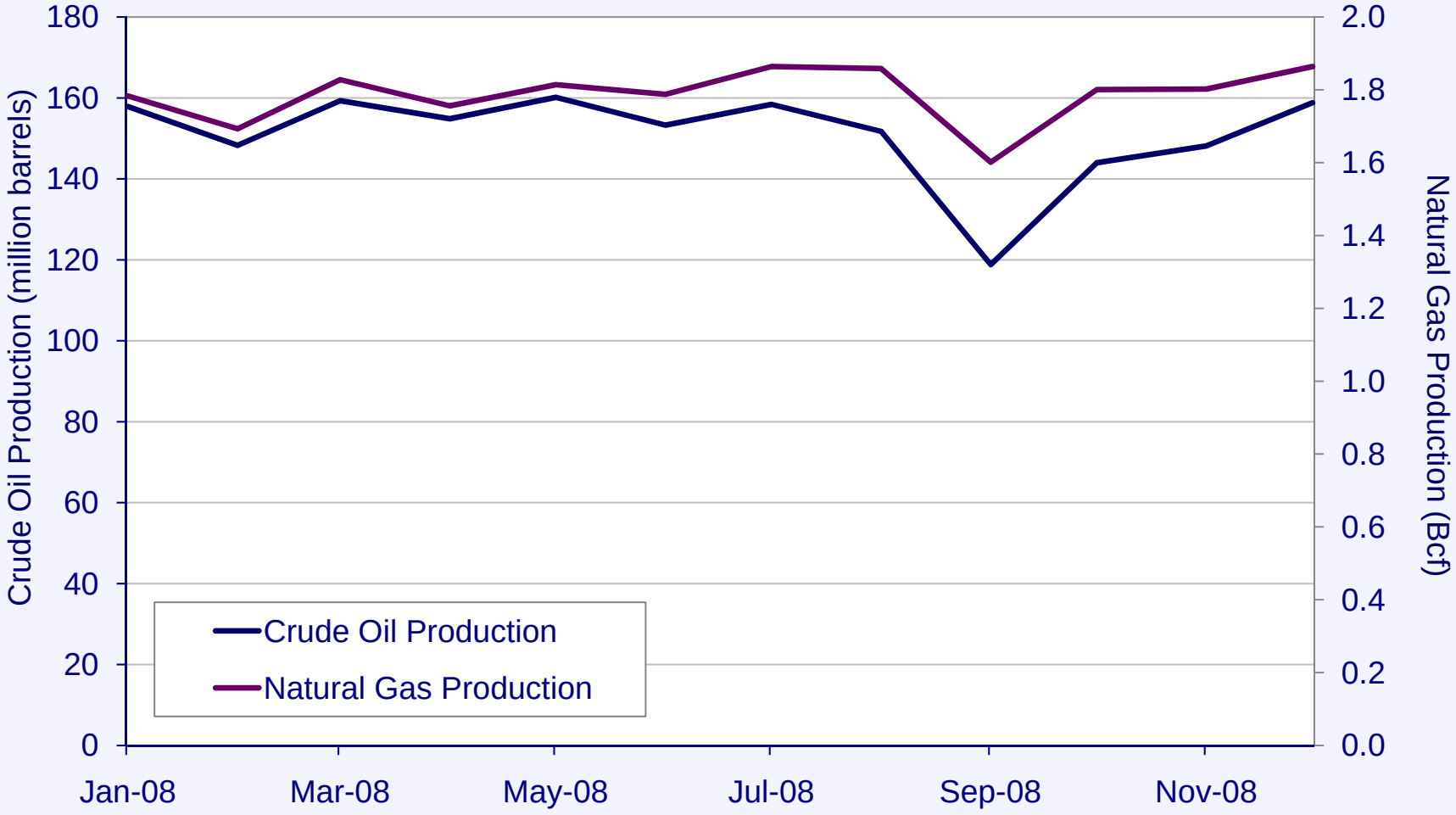
The contraction in demand is clearly being seen in energy prices.



Source: Energy Information Administration, Department of Energy

Recent Trends in Oil and Gas Production

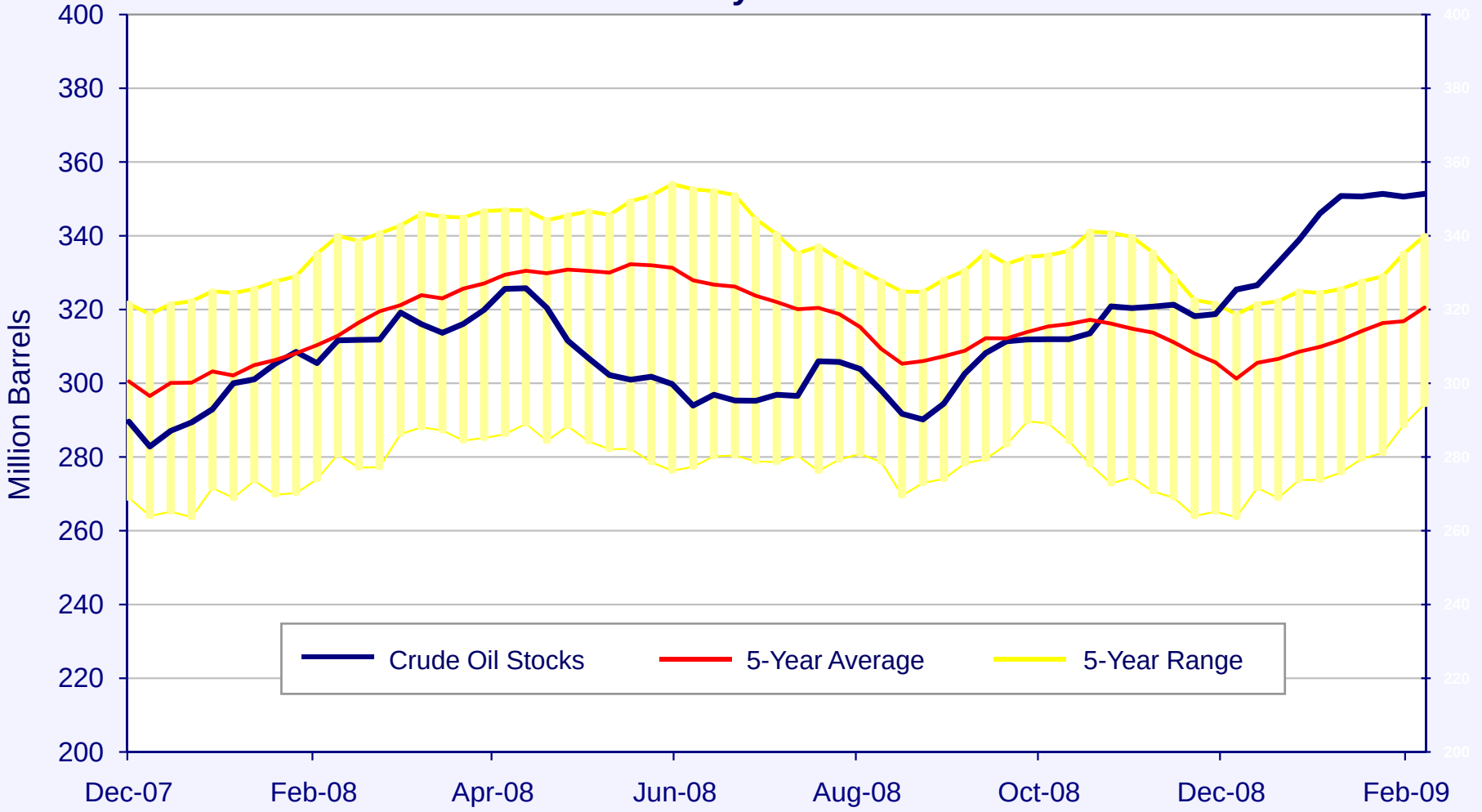
Oil and gas production have both done well despite contractions in demand.



Source: Energy Information Administration, Department of Energy

US Crude Oil Stocks

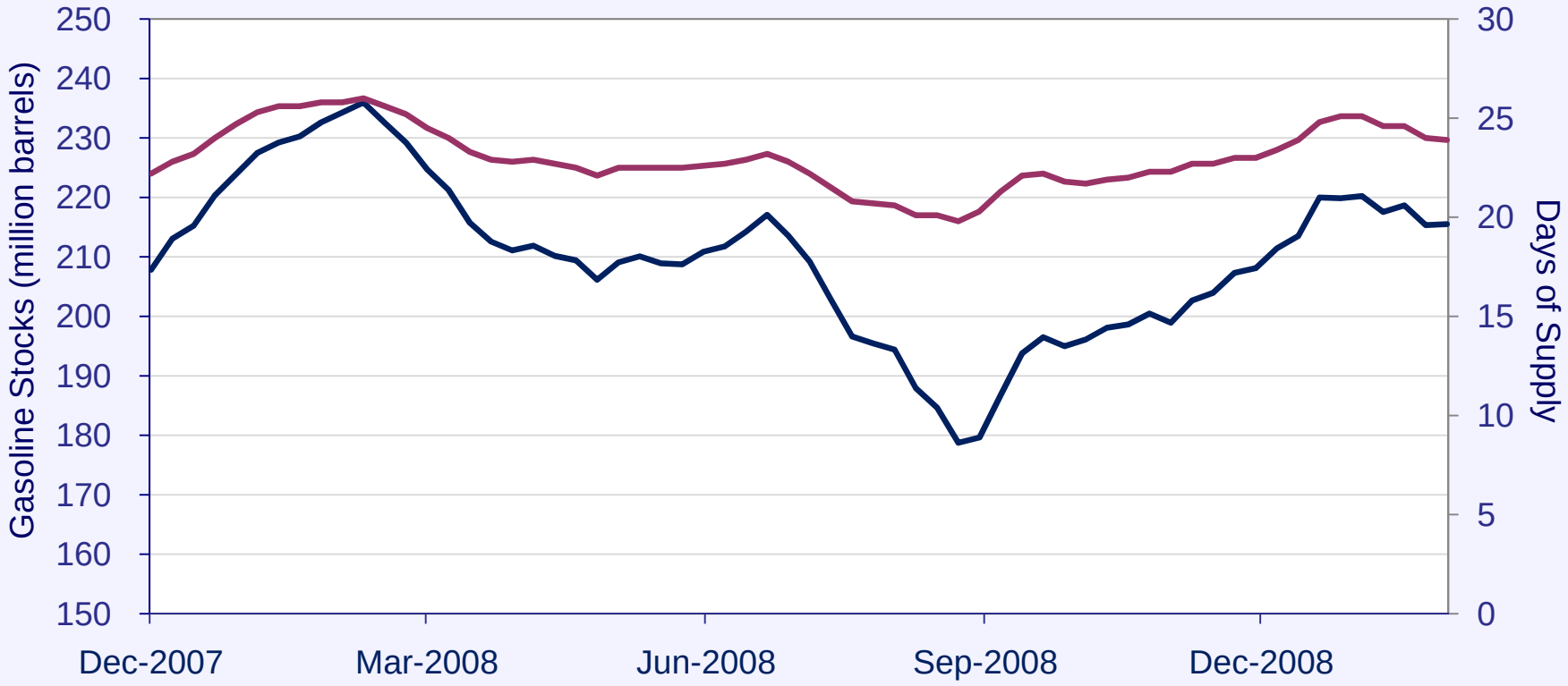
Decreases in crude demand are reflected in stocks. Hitting very large inventory levels.



Source: Energy Information Administration, Department of Energy.

Recent Trends in Gasoline Stocks

Gasoline stocks are following similar patterns as crude.



Source: Energy Information Administration, Department of Energy

Public Policy Reaction

Historic Presidential Election Returns

Large margin in popular vote translated by many as mandate for change in policies – including energy.

	Democrat		Republican		Other	
	Popular	Electoral	Popular	Electoral	Popular	Electoral
	----- (%) -----		----- (%) -----		----- (%) -----	
1980	42.4%	9.1%	51.0%	90.9%	6.6%	0.0%
1984	40.8%	2.4%	59.2%	97.6%	n.a.	n.a.
1988	46.1%	20.7%	53.9%	79.3%	n.a.	n.a.
1992	43.3%	68.8%	37.7%	31.2%	19.0%	0.0%
1996	50.1%	70.4%	41.4%	29.6%	8.5%	0.0%
2000	48.9%	49.5%	48.4%	50.5%	2.8%	0.0%
2004	48.8%	46.7%	51.2%	53.3%	n.a.	n.a.
2008	53.4%	67.8%	46.6%	32.2%	n.a.	n.a.

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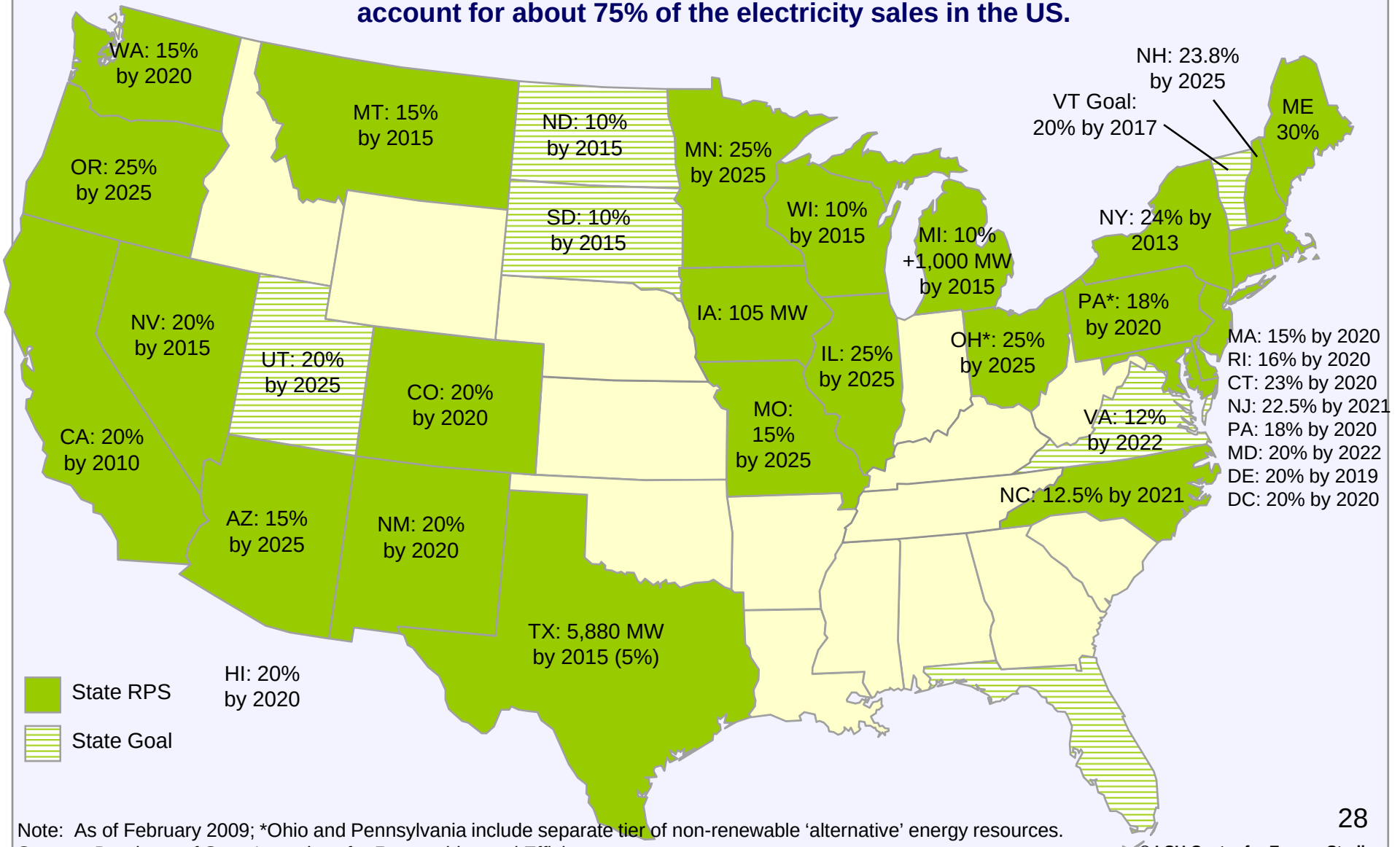
States with Renewable Portfolio Standards

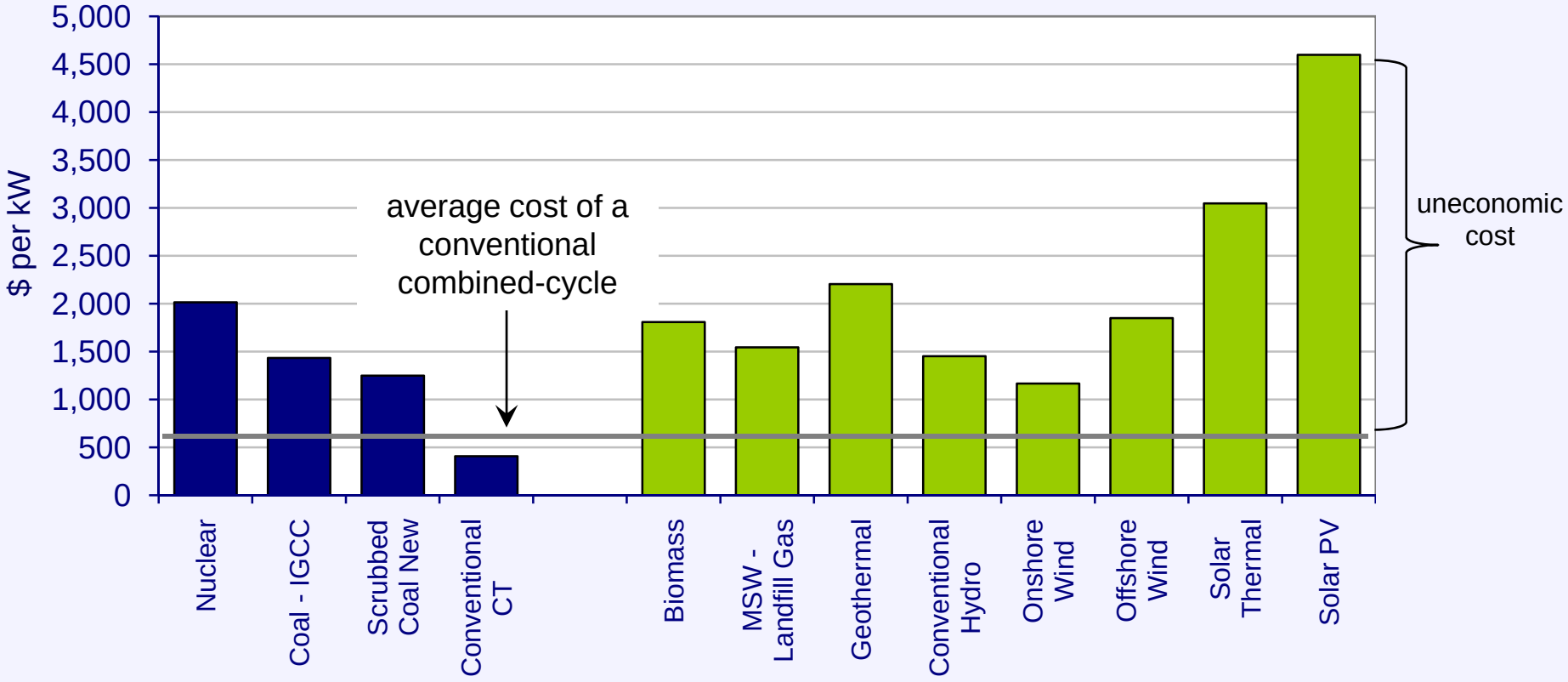
Currently there are 33 states that have RPS policies in place. Together these states account for about 75% of the electricity sales in the US.



Note: As of February 2009; *Ohio and Pennsylvania include separate tier of non-renewable 'alternative' energy resources.
Source: Database of State Incentives for Renewables and Efficiency.

Total Overnight Cost for New Plants

Resources are typically uneconomic without additional support

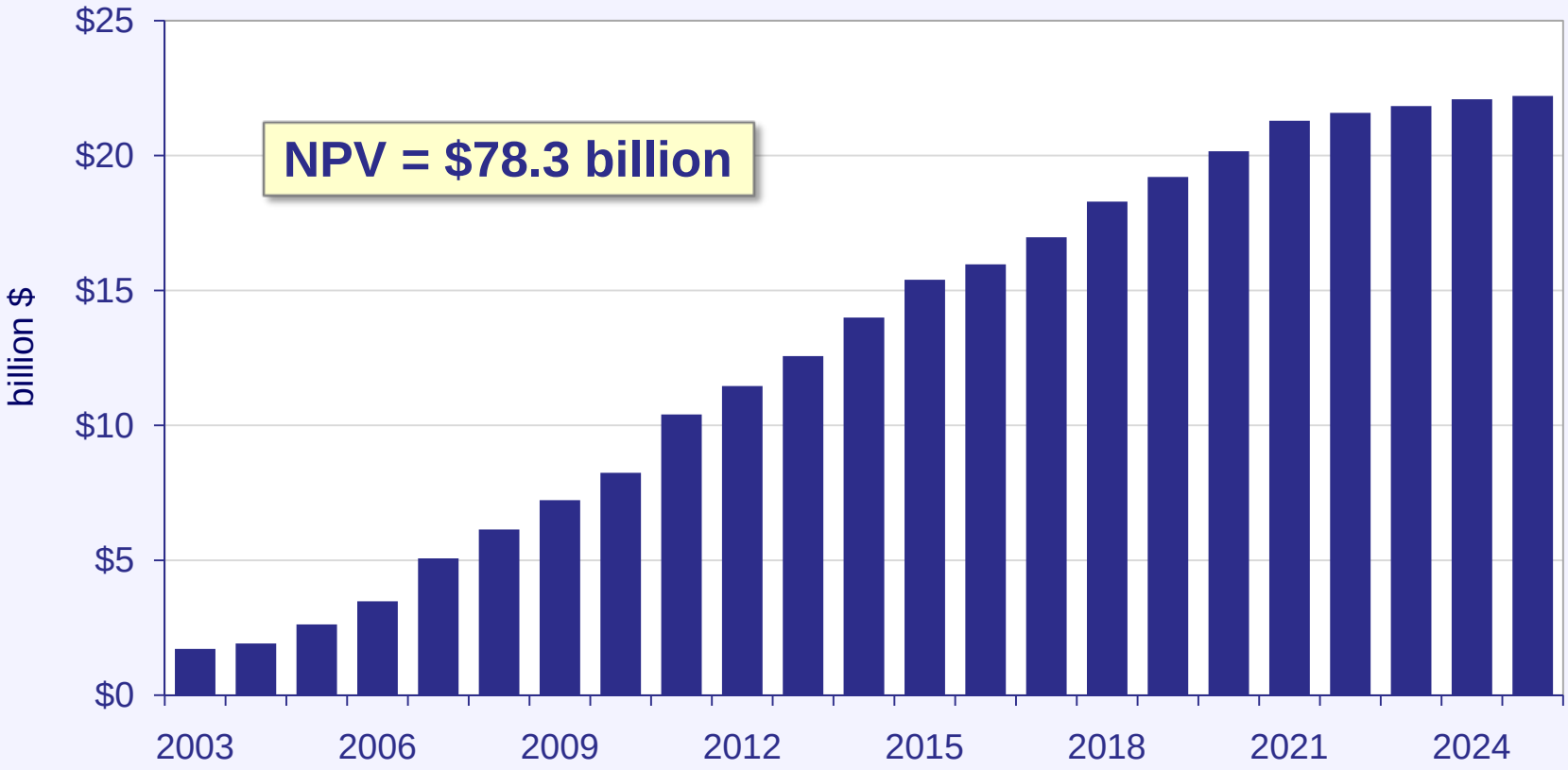


These differentials will have to be recovered from various funding sources

Source: Assumptions to the Annual Energy Outlook 2006

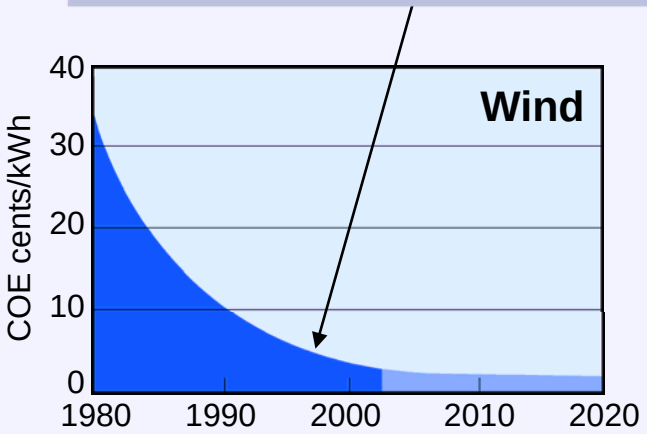
Estimated Cost of RPS Standards

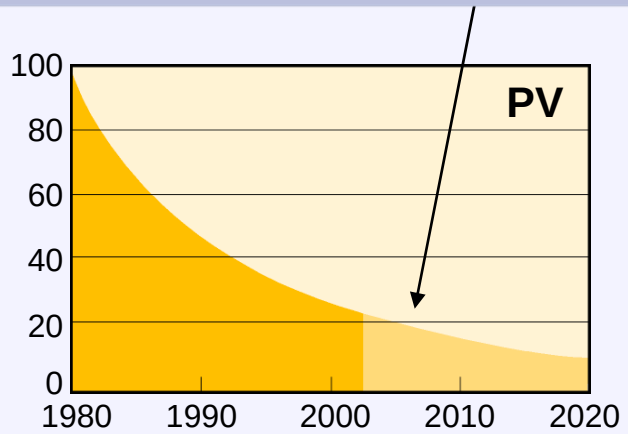
Renewable energy standards will require significant capital investment and cost support.

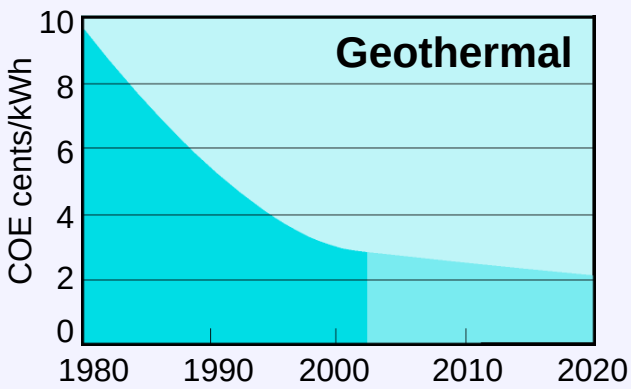


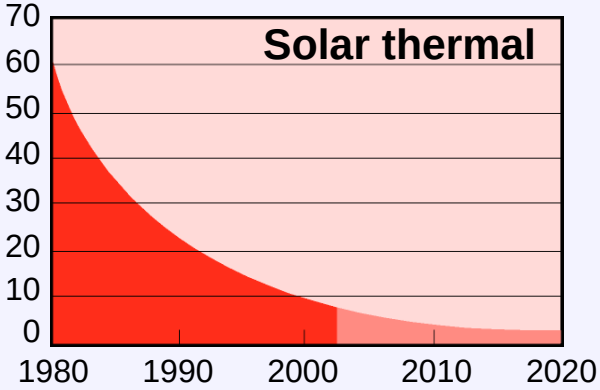
Renewable Energy Cost Trends

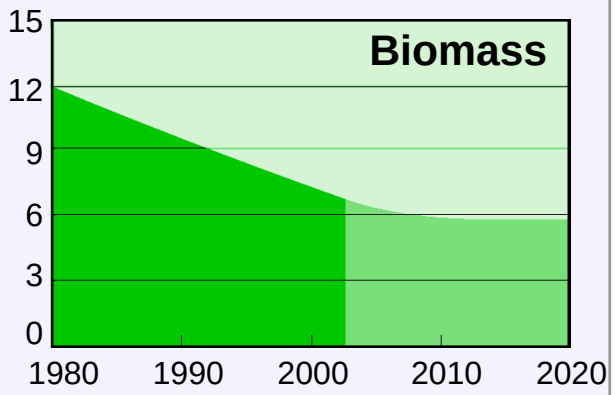
Will government support and policies reduce incentives to maintain cost efficiency trends











Levelized cents/kWh in constant $2000[1]

Source: NREL Energy Analysis Office

Energy Efficiency

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Energy Efficiency Resource Standards

ID: Energy Plan puts conservation – DR and EE – as priority resource

MT: state agency reduction initiative: save 20% by 2010

MI: annual savings: 1% of prior year's sales by 2012

MN: reduce fossil fuel use 15% by 2015 through EE, RE

IA: utilities must establish EE goals by end of 2008

WI: RPS requires utility EE

IL: reduce energy 2% by 2015 (EE) and 0.1% from prior year (DR)

OH: reduce peak-demand 8% by '18; 22% energy savings by '25

KY: proposed REPS - EE and conservation to offset 18% of projected 2025 demand

ME: 10% new EE by 2017; in RPS goal as 2nd priority

VT: EE & RE to meet 2007-12 growth

MA: meet 25% of capacity and energy with DSR by 2020

NY: 15% electric use reduction by 2015; doubles EE funding

CT: 4% savings by 2010; a Tier III RPS resource

NJ: reduce consumption 20%, and peak demand 5,700 MW by 2020

DE: EE, RE, DG, and DR are priority resources before new gen

PA: reduce energy consumption 3% and peak demand 4.5% by 2013

DC: reduce peak demand and energy consumption

MD: reduce peak demand and per cap electricity use 15% by 2015

VA: reduce 10% of 2006 sales by 2022 with EE, DR

NC: EE to meet up to 25% of RPS to 2011; later to 40%

FL: PSC to adopt goals to reduce electric consumption, peak demand

WA: must pursue all cost effective conservation

OR: IOUs required to have EE in IRP & assess cost-effectiveness

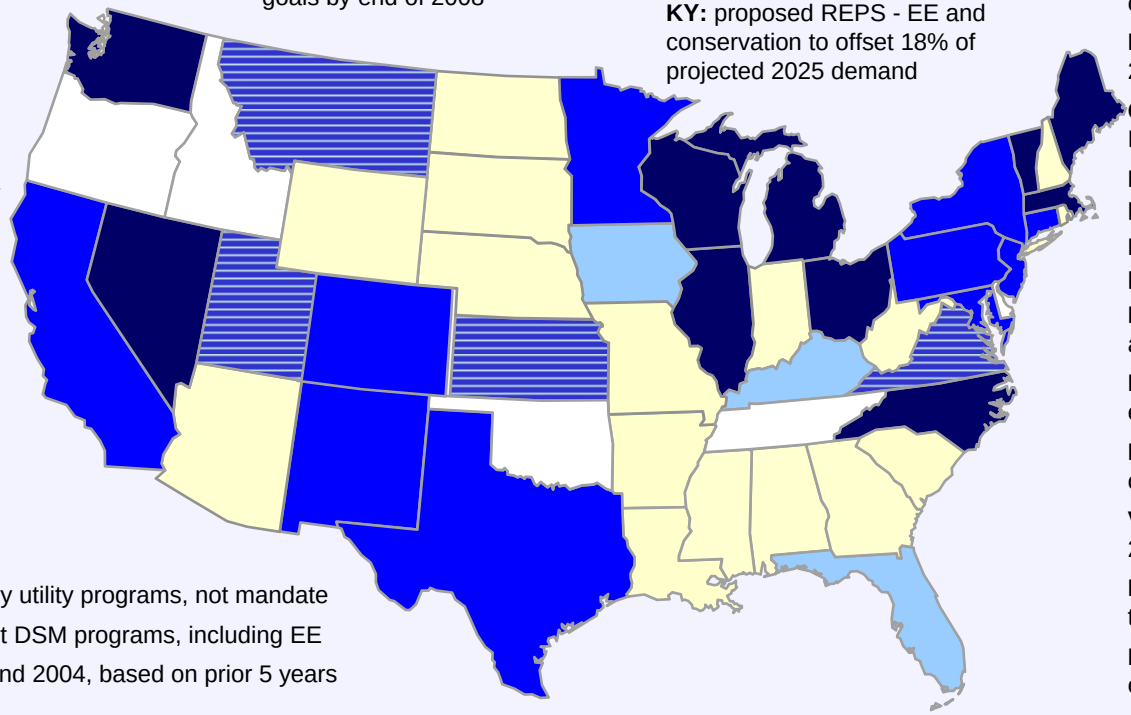
CA: IOUs reduce MW 10%, peak demand (MWh) 12% by 2013; munis 10% by 2017

NV: use EE for up to 25% of RPS by 2015

UT: EE incentives in RPS goal

CO: save 40 MW and 100 GWh annually to 2013

NM: use EE and DR to save 10% of 2005 retail electric sales by 2020



KS: Order advocates voluntary utility programs, not mandate

OK: PSC approved quick-start DSM programs, including EE

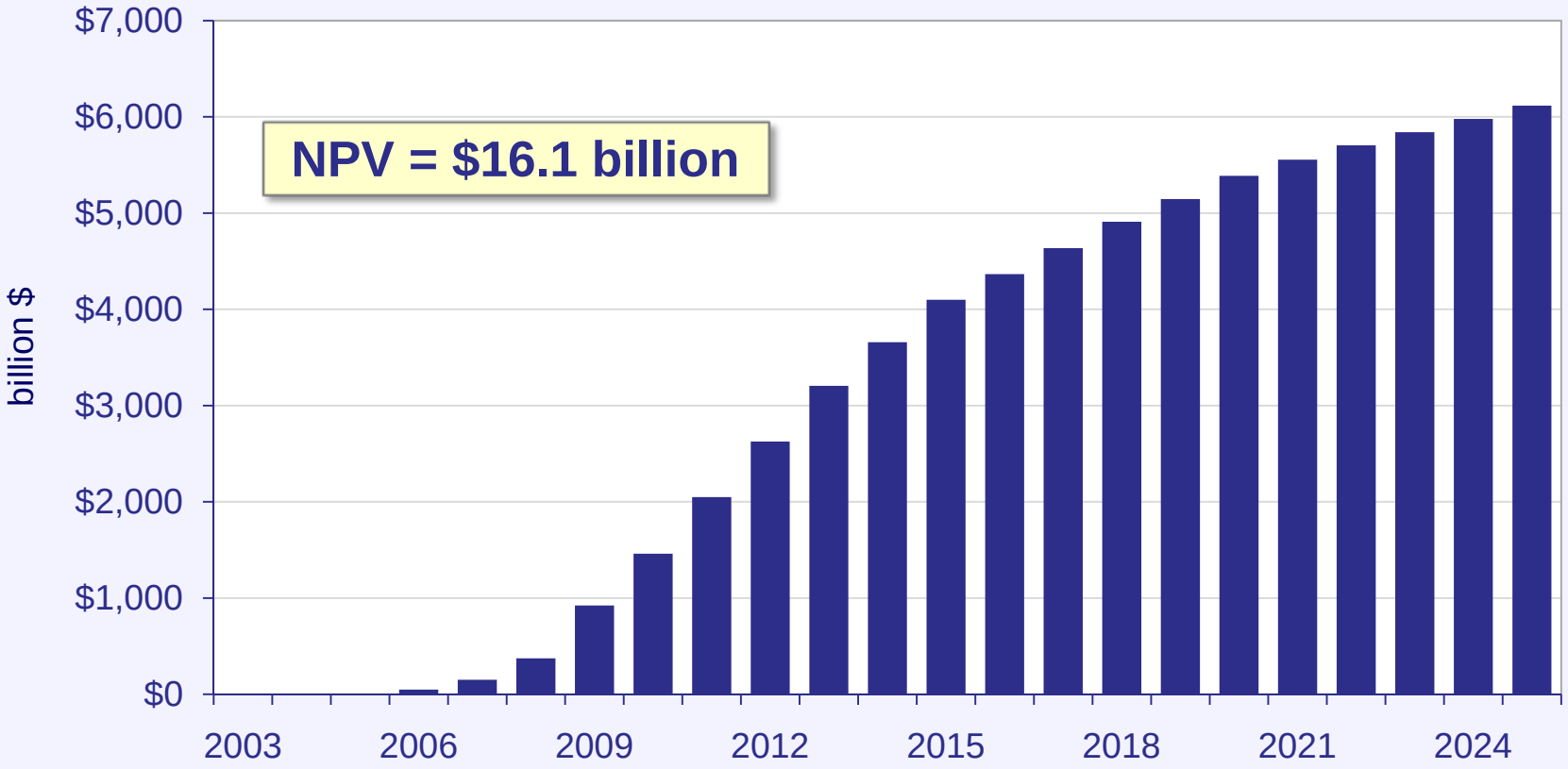
TX: 10% of load growth, beyond 2004, based on prior 5 years

- EE only as part of an RPS law, rule or goal
- EERS by regulation or law (stand-alone)
- Voluntary standards (in or out of RPS)
- EE goal proposed/being studied
- Other EE or DSM rule or goal

Source: Federal Energy Regulatory Commission

Estimated Cost of Energy Efficiency Resource Standards

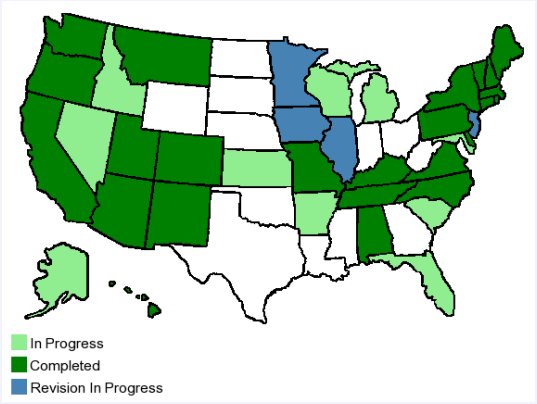
Equally large potential increases on energy efficiency investments.



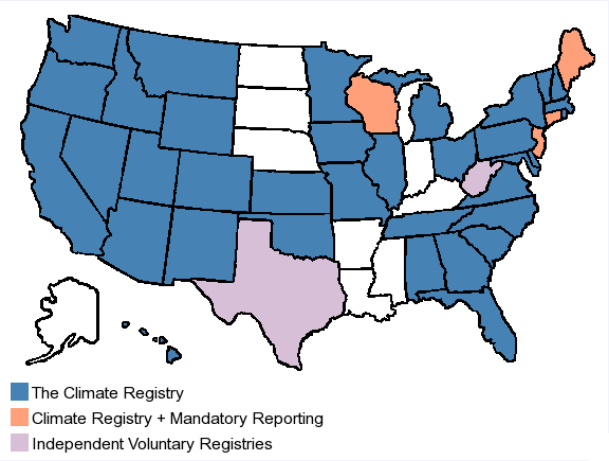
Climate Change

State Initiatives on Climate Change Policies & Activities

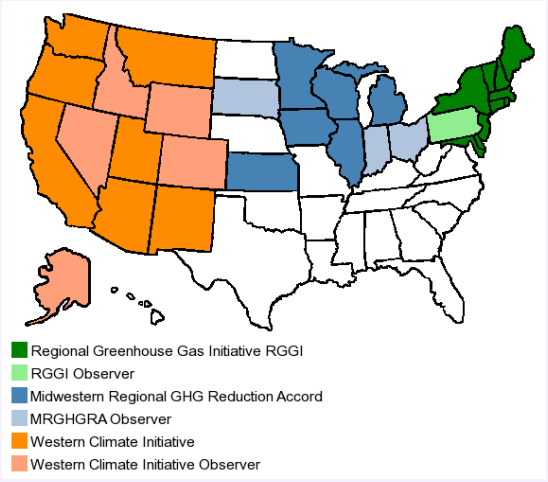
States with Climate Plans

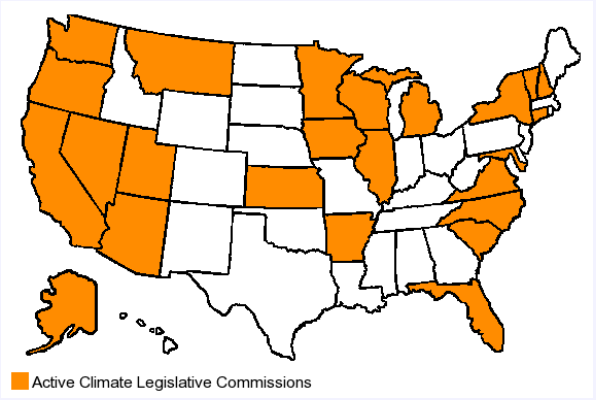


States with GHG Registries

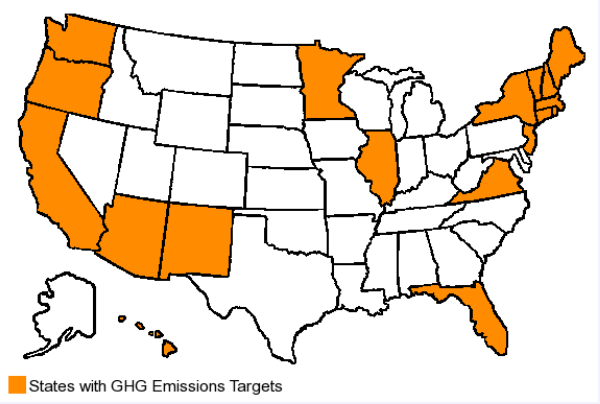


Regional Initiatives





States with Climate Policy Groups



States with GHG Emissions Targets

Source: Pew Center on Global Climate Change

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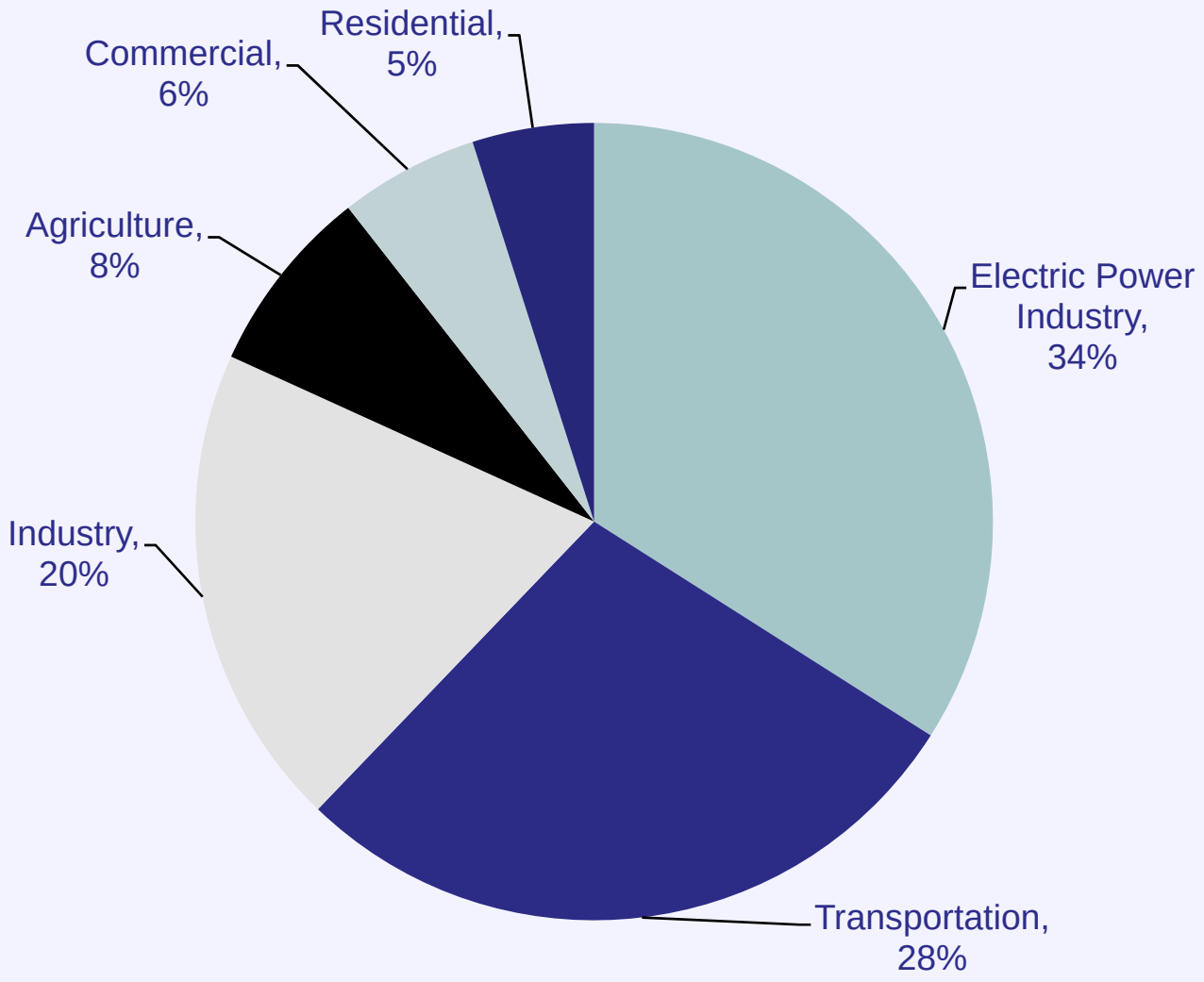
U.S. Greenhouse Gas Emissions Allocated to Economic Sector (Tg CO_2 Eq.)



Source: U.S. Environmental Protection Agency

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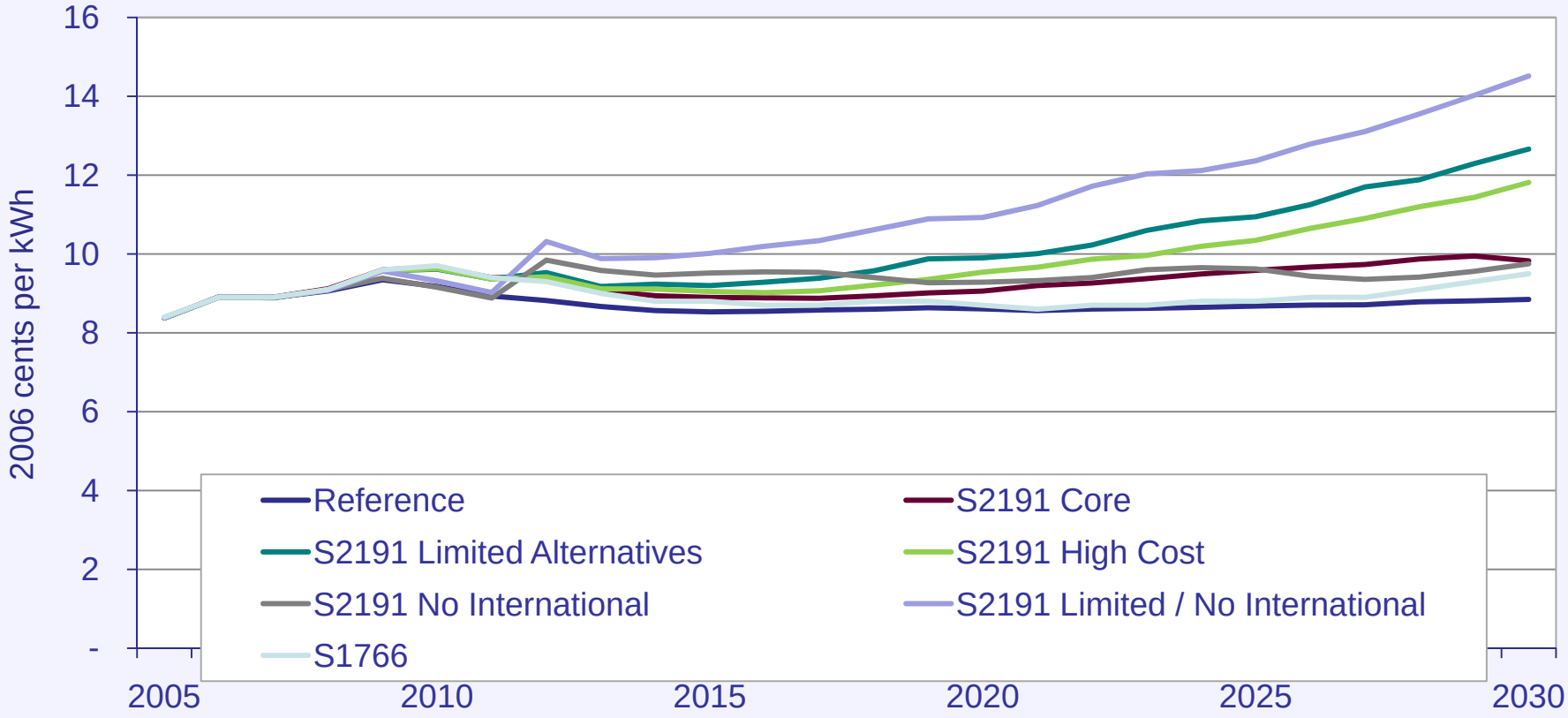
S 2191 Electricity Prices (2006 cents per kWh)

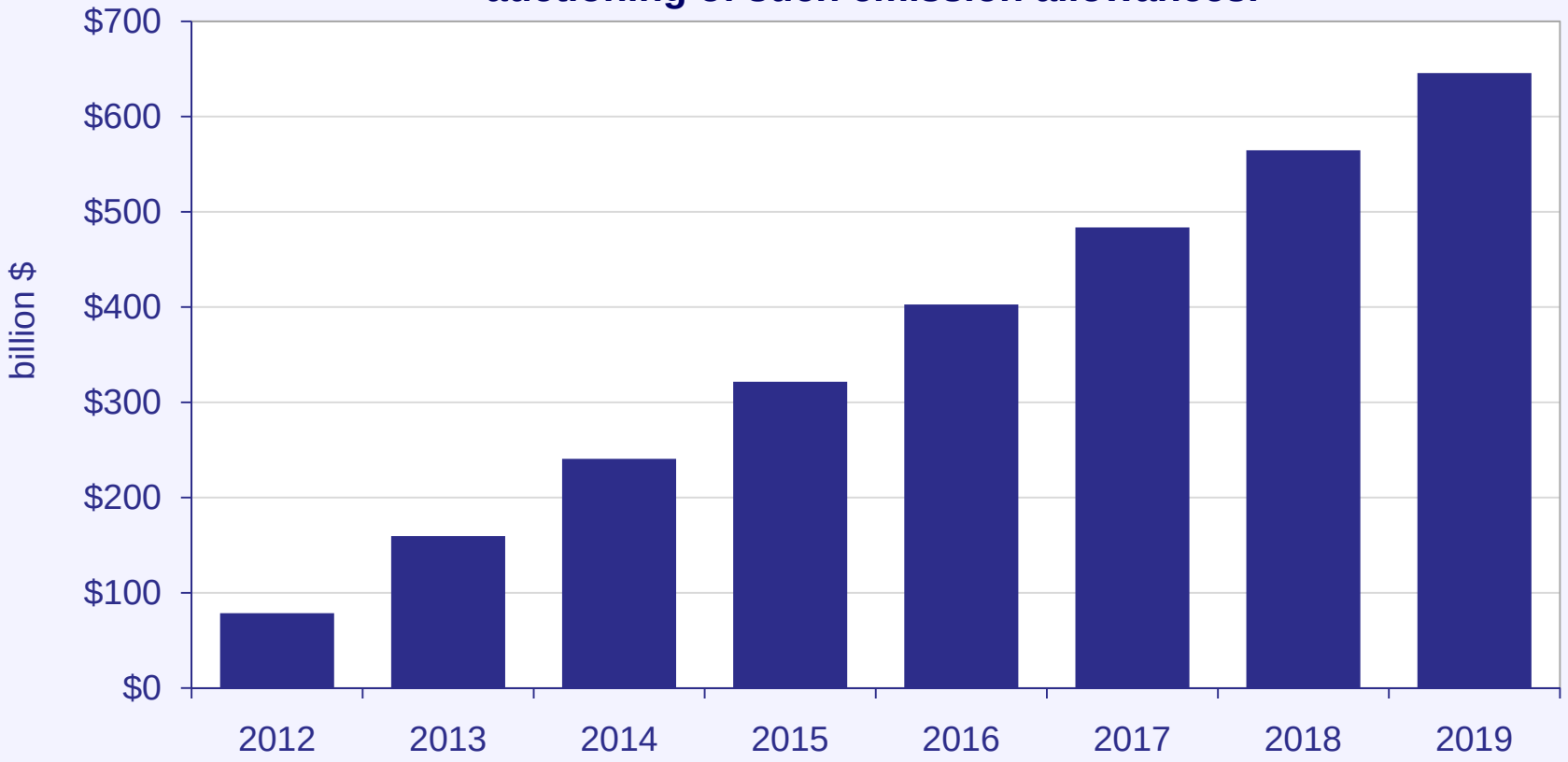
Legislation like S. 2191 would lead to higher electricity prices. In the S. 2191 Core Case, electricity prices are 5% higher in 2020 and 11% higher in 2030 than the prices in the reference case. This increases total consumer expenditures for electricity by $126 billion.



Source: Energy Information Administration, U.S. Department of Energy

Revenue Projections in Budget for Cap and Trade

The Obama budget assumes that by 2012, the Treasury will collect $78.6 billion in new revenue from carbon emissions permits. From 2012 to 2019, it envisions that a total of $645.7 billion would be raised from auctioning of such emission allowances.



New Changes in Natural Gas and Oil Taxes

The IPAA estimates that taken together, these tax changes would strip over $30 billion from US natural gas and oil production investment.

Intangible Drilling and Development Costs (IDC) – Tax treatment designed to attract capital to natural gas and oil production. Eliminating this option would remove $3 billion that would have otherwise been invested in new U.S. production.

Percentage Depletion – Provides capital for independents and is important for marginal well operators. Removal is estimated to cost $8 billion in investment.

Geological and Geophysical (G&G) Amortization – Early recovery of G&G costs allows for more investment in finding new resources. Extending the amortization period would remove over $1 billion from efforts to find and develop new U.S. production.

Marginal Well Tax Credit – Countercyclical tax credit that creates a safety net for marginal wells during periods of low prices. Enacted in 2004, the marginal well tax credit has not been needed, but it remains a key element of support for U.S. production.

Enhanced Oil Recovery (EOR) Tax Credit – Designed to encourage oil production using technologies that are required after a well passes through its initial phase of production. Currently, the oil price threshold for the EOR tax credit has been exceeded and the oil value is considered adequate to justify EOR efforts. But, at lower prices EOR becomes uneconomic and these costly wells would be shutdown.

Manufacturing Tax Deduction – Another tax provision that provides capital to U.S. independent producers to invest in new production.

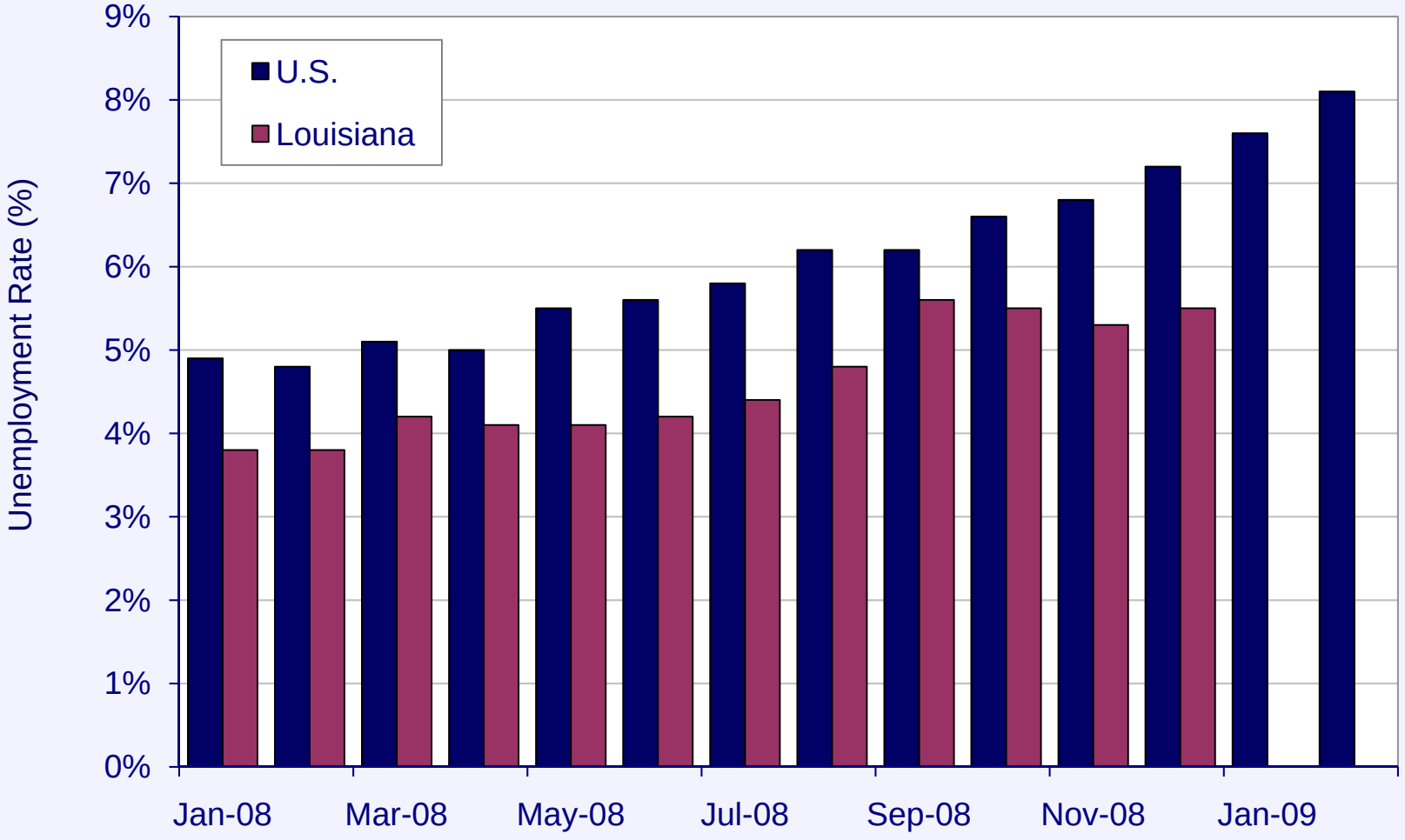
Excise Tax on GOM Production – Creating a new tax designed to add a $5 billion burden on U.S. offshore development will drive producers from the GOM, reducing new U.S. production of natural gas and oil.

Passive Loss Exception for Working Interests in Oil and Gas Properties – If, in the future, income/loss arising from the ownership of oil and natural gas working interests, is treated as passive income/loss, the primary reason for individuals to invest in oil and gas working interests would be significantly diminished.

Louisiana Issues

Unemployment Rate – U.S. & Louisiana

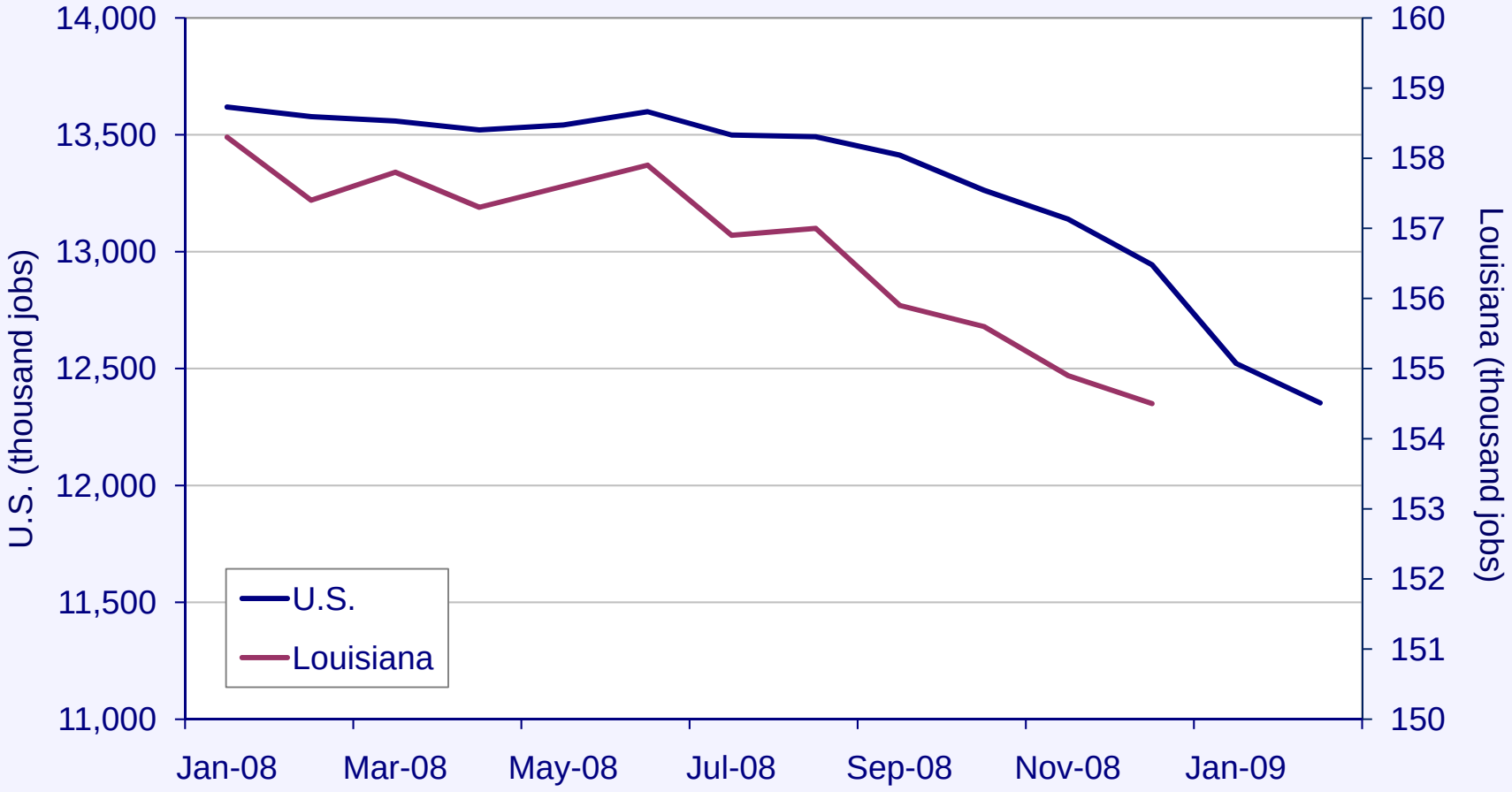
Louisiana employment compares well with national average on aggregate basis.



Source: Bureau Labor Statistics, U.S. Department of Labor.

Manufacturing Employment – U.S. & Louisiana

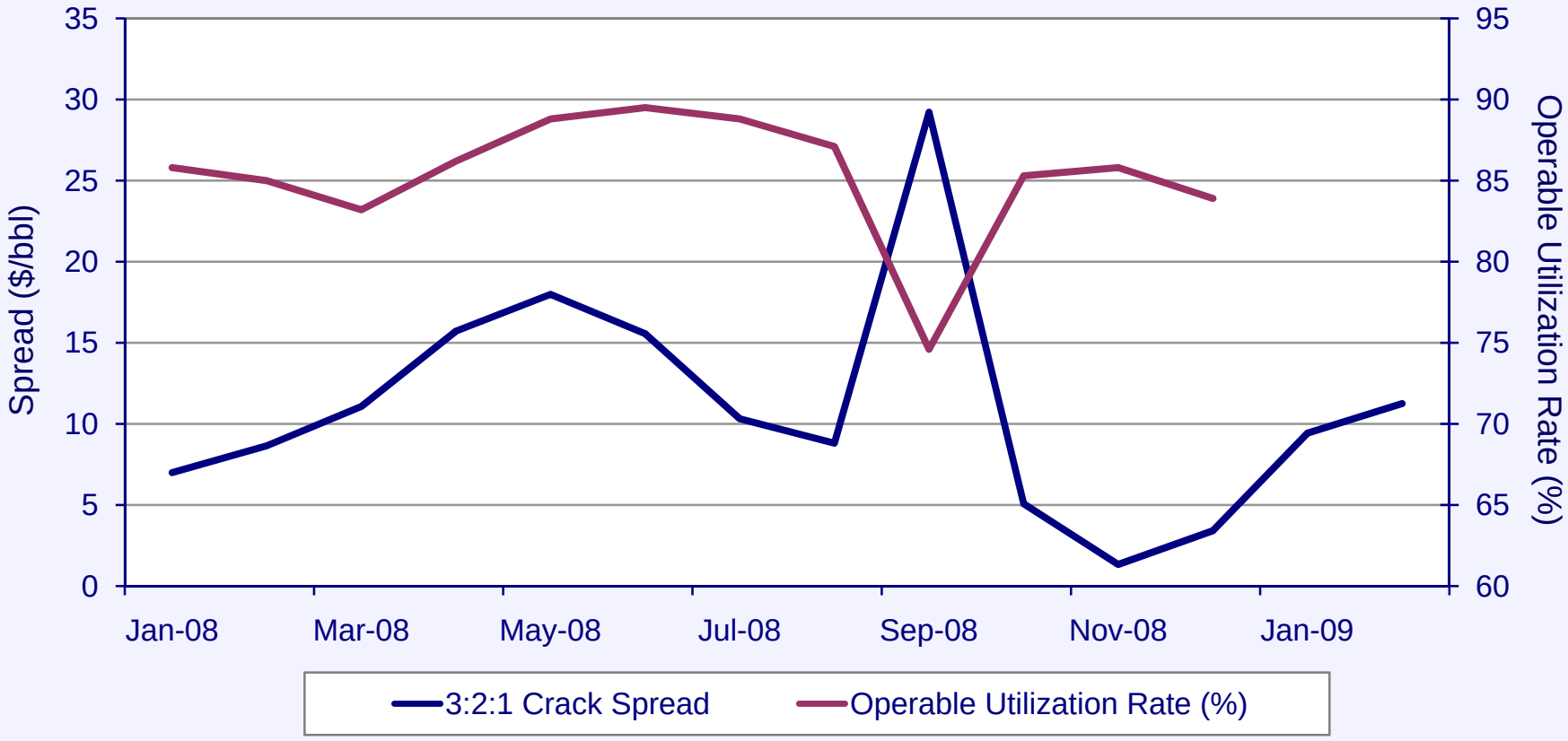
However, manufacturing trends have been disturbing and following similar trends to the national averages.



Source: Bureau Labor Statistics, U.S. Department of Labor.

U.S. Refinery Crack Spreads and Capacity Utilization

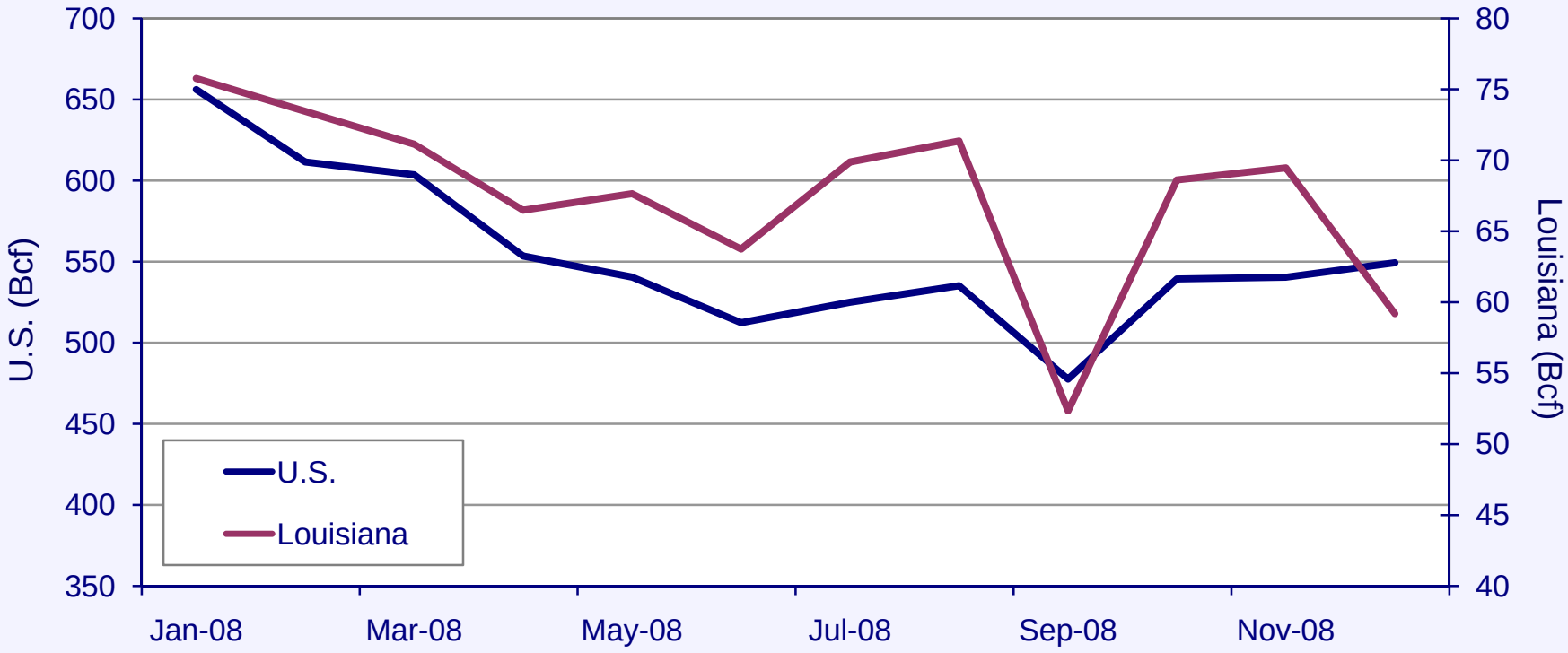
Refining is showing signs of contraction due to lower profits and demand.



Source: Energy Information Administration, U.S. Department of Energy

Industrial Natural Gas Consumption

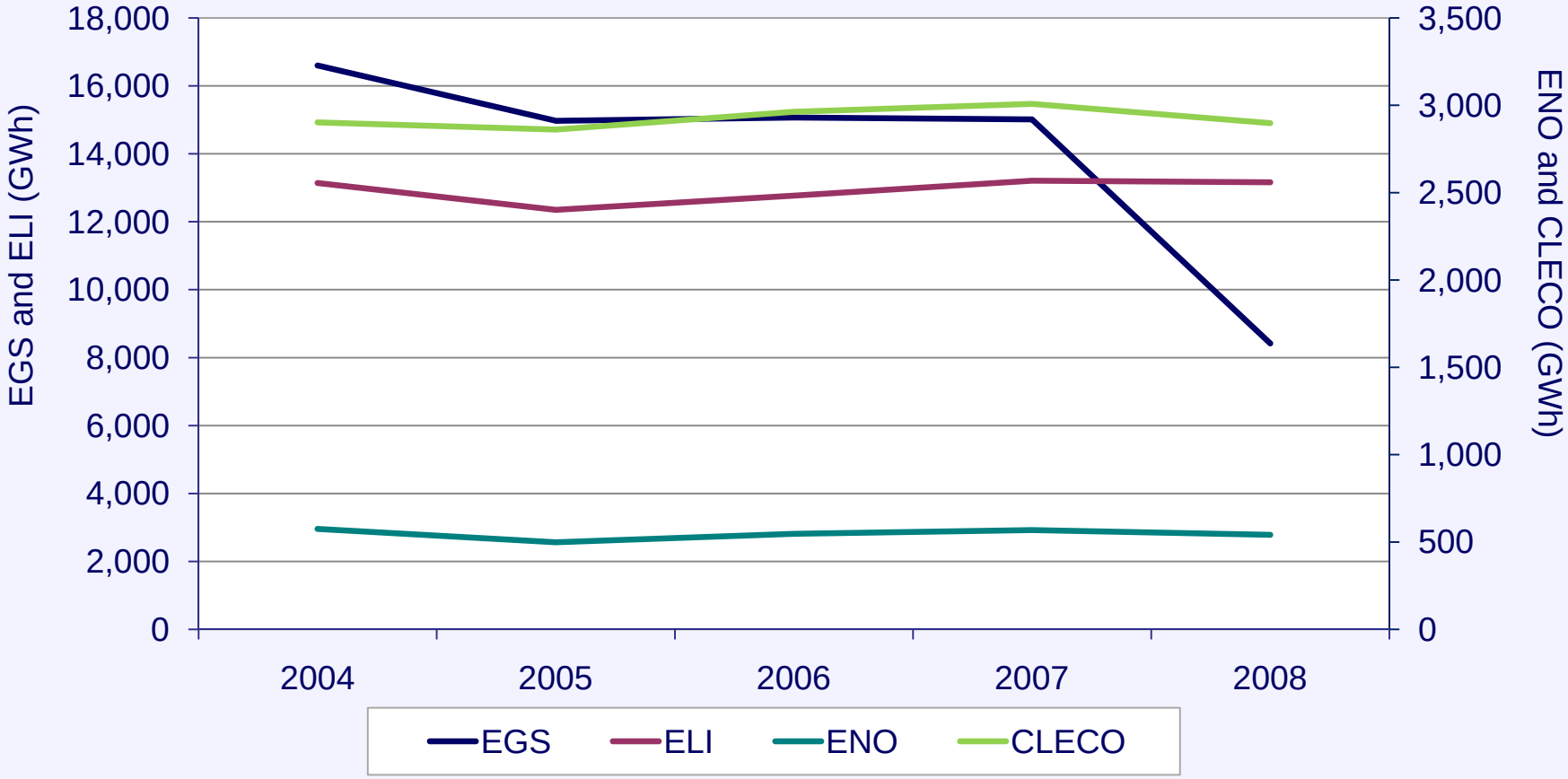
Starting to see significant reductions in industrial gas demand.



Source: Energy Information Administration, U.S. Department of Energy

Industrial Power Sales

Similar decreases in industrial demand for power.



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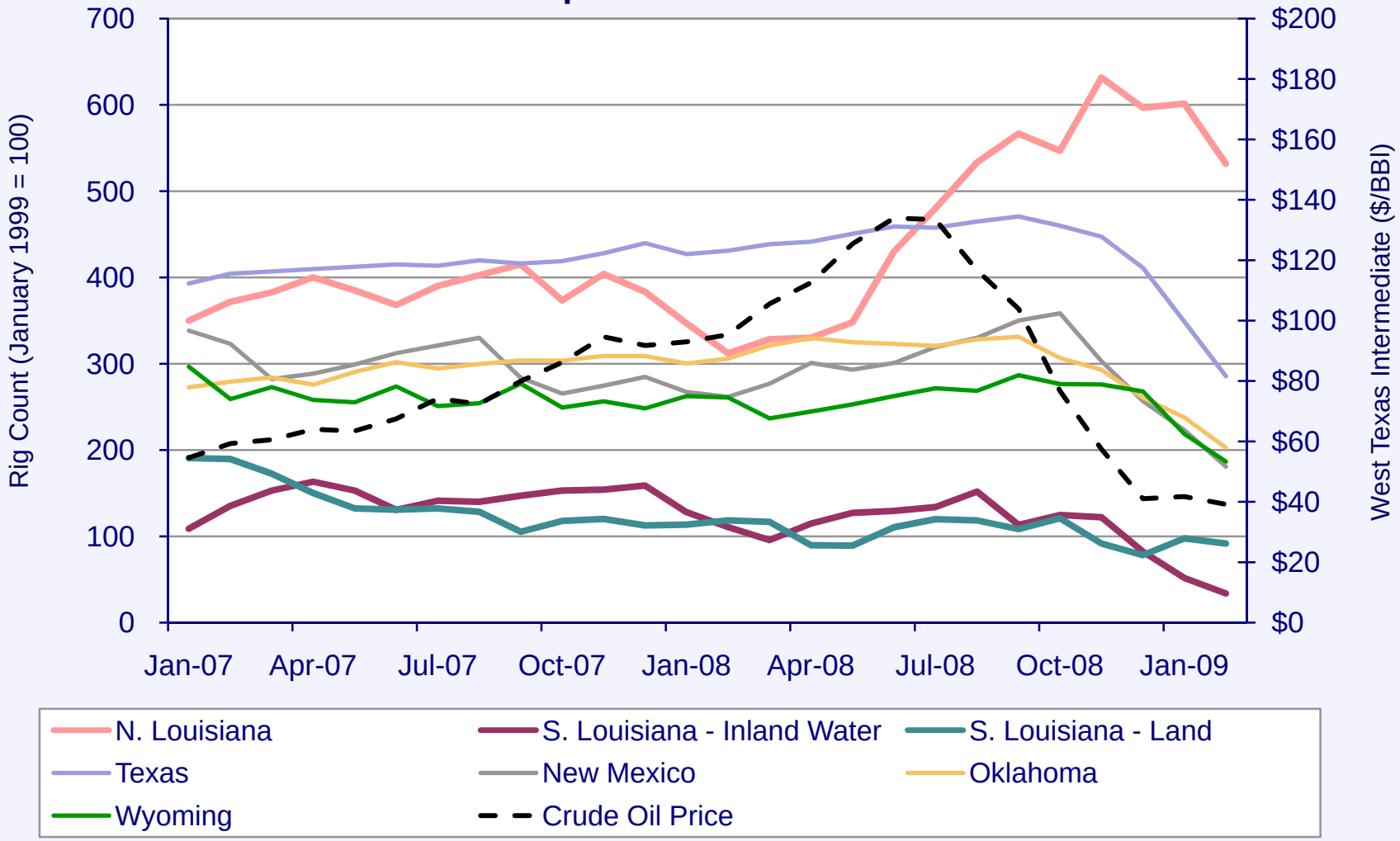
Rig Count and Crude Oil Price
(Each State Measured Relative to 1999 Activity)

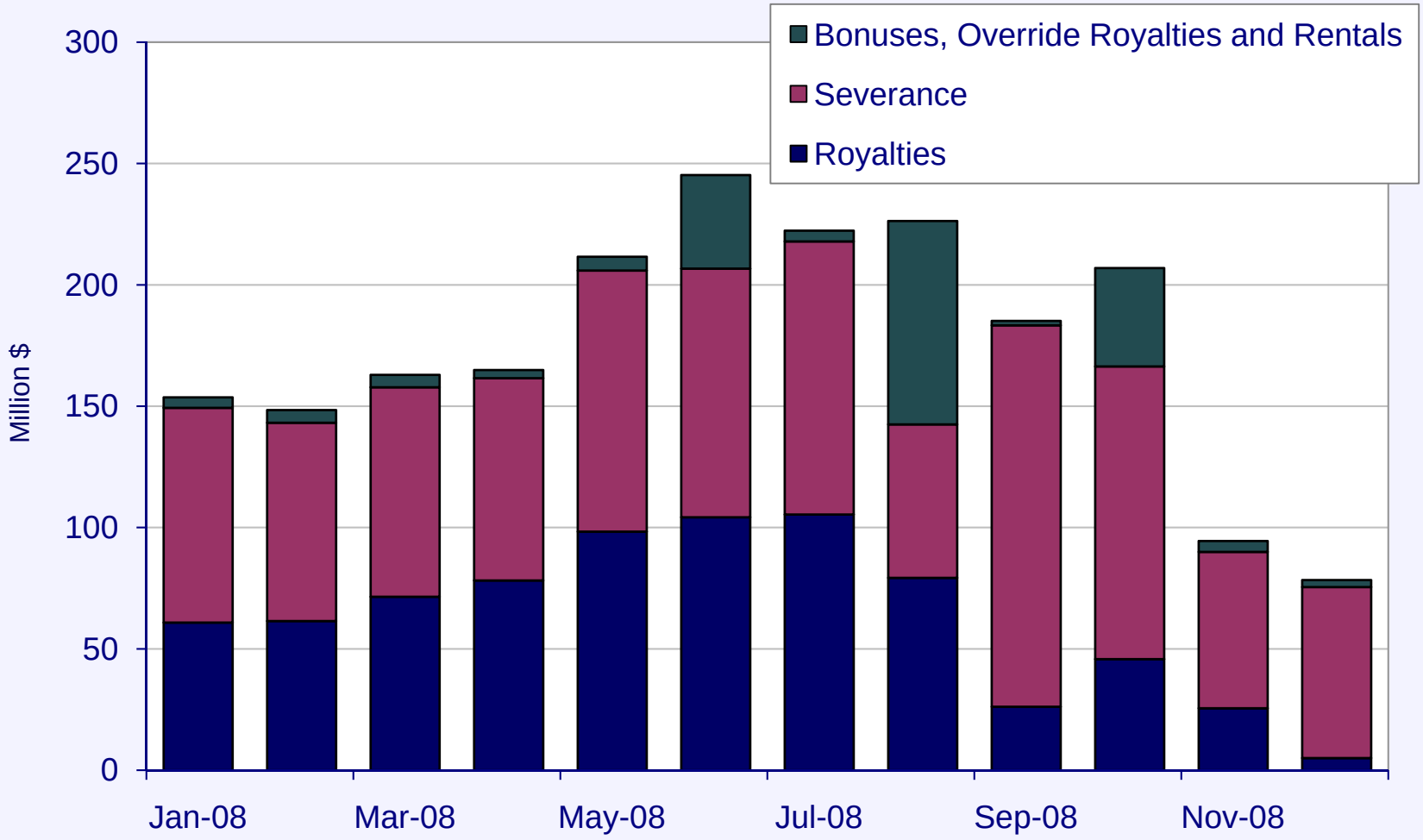
Drilling activity in the state has been challenged in South Louisiana, but almost explosive in North Louisiana.



Source: Baker Hughes

Trends in Mineral Revenues

State mineral revenues, which were growing at rapid rate, have fallen off considerably due to price decreases.



Conclusions

Conclusions

- Other things equal, the next year should have been optimistic in outlook.
- Policy is taking a turn that will be potentially punitive to oil and gas drilling and production, as well as coal mining and production. (renewables are in, minerals are out)
- Economy and credit crisis will have impacts on capital formation, whether this will result in a “status quo ante” in any future recovery is not clear – probably not very likely.
- Very likely the outlook could look similar to the 1980s where it took over a decade for the industry to recover.
- Even if the economy recovers, there will overhang of costly new investments for renewables and climate change that will work like an anchor if set too high.

Questions, Comments, & Discussion

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