



Energy Market Trends and Policies: Implications for Louisiana

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Take Away Points: Outlooks and Issues

- **Recession coupled with increases in production led to relatively large capacity overhangs, particularly in natural gas.**
- **As the economy has recovered, markets show a new period of crude oil and natural gas price decoupling based upon current and anticipated changes in market fundamentals.**
- **Crude oil is king over the next few years and energy policy needs to appreciate and be mindful of those changes.**
- **GOM continues to be a large contributor to overall energy production. While there is a growing appreciation regarding the region's production contributions in natural gas (shales), few appreciate the considerable crude oil contribution made by the GOM, particularly from the deepwater areas.**
- **Energy policy needs to be mindful of the role that new production techniques play in facilitating new energy supply opportunities in hydrocarbons. The Deepwater Horizon accident has already imposed significant impacts for deepwater GOM activities as well as conventional shallow-water activities. Potential state and/or EPA regulations on hydro fracturing could have equally important implications.**

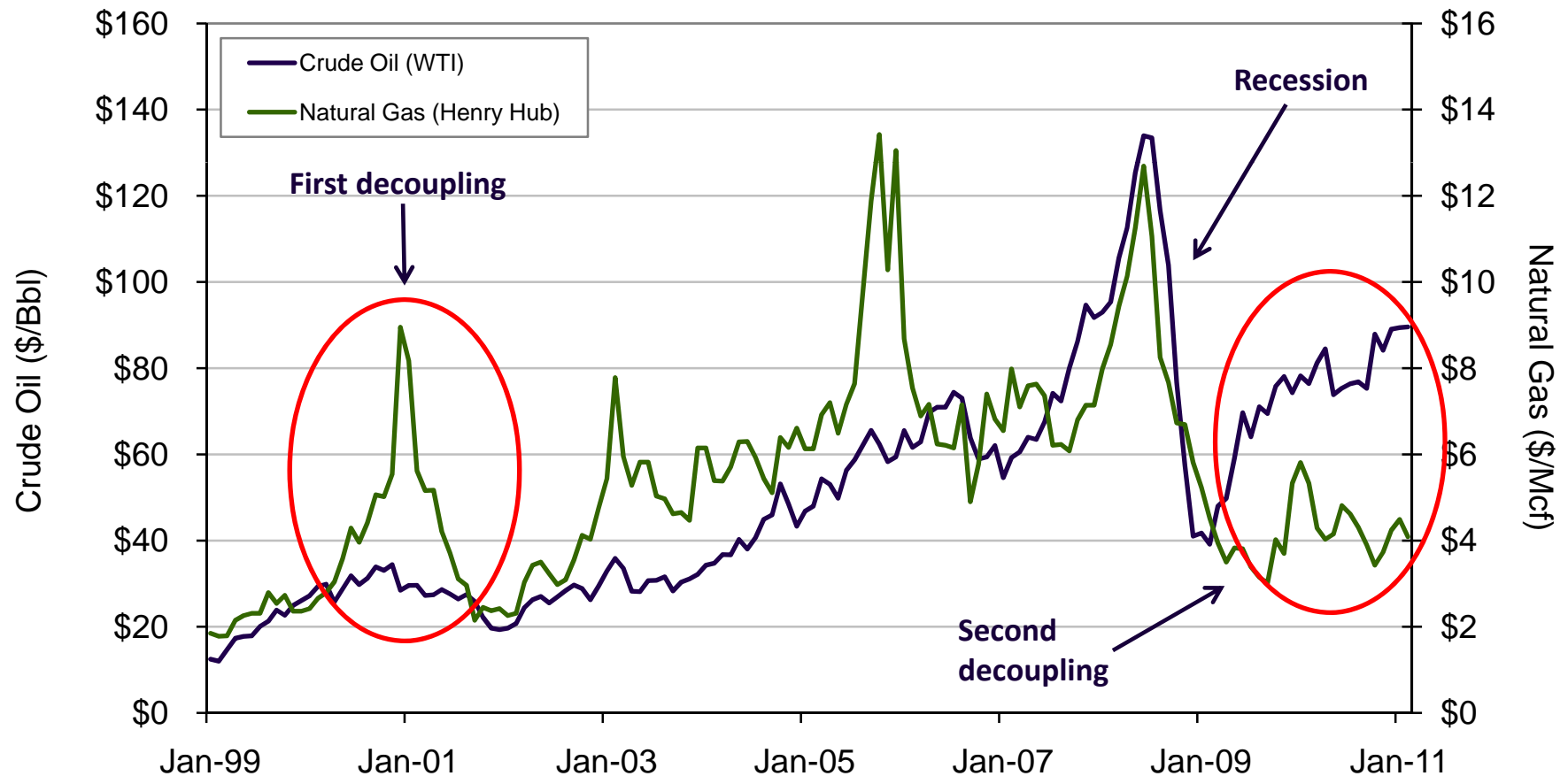


Crude Oil Trends



Crude Oil and Natural Gas Prices

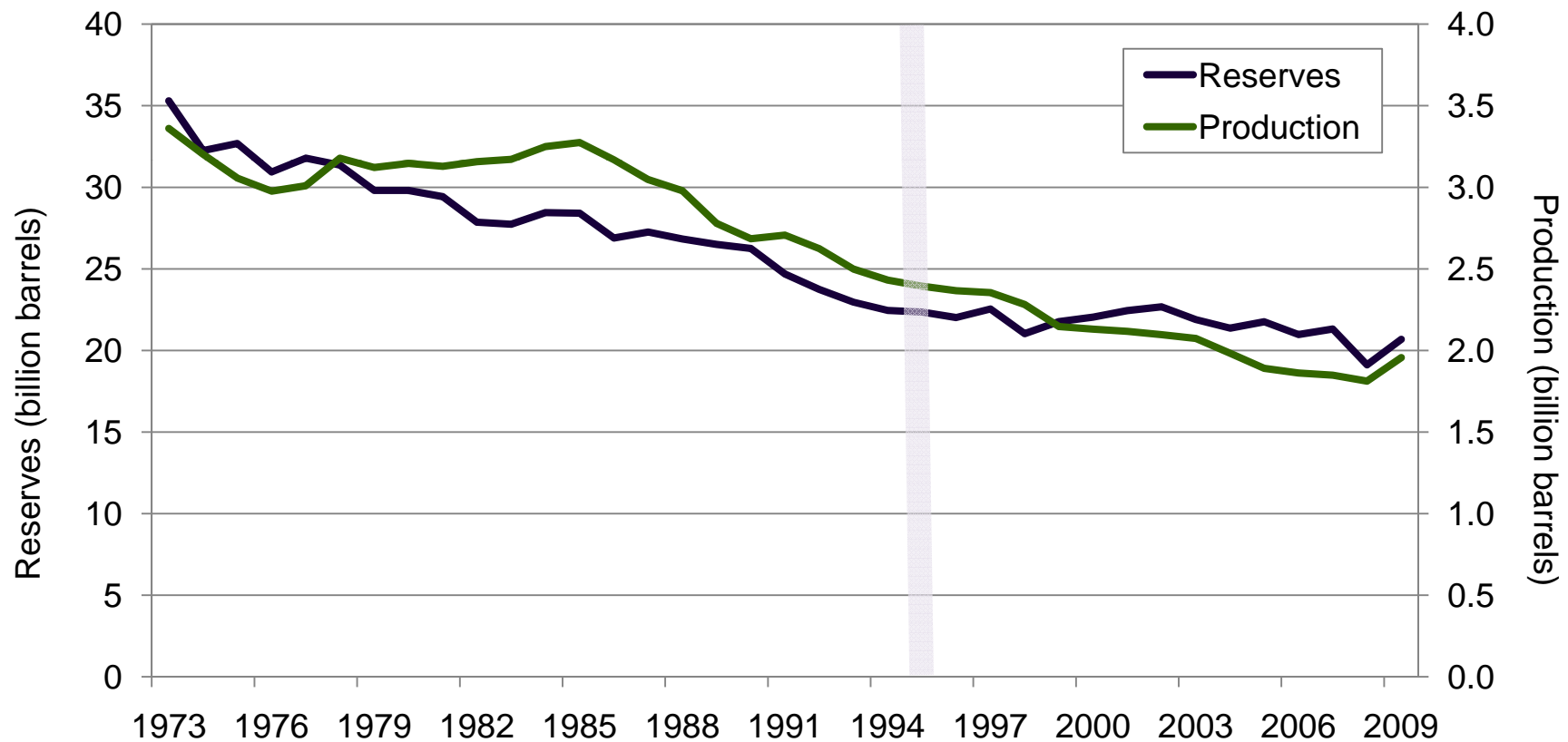
Prices say a lot about what has been going on in energy markets over the past decade.





U.S. Crude Oil Proved Reserves and Production

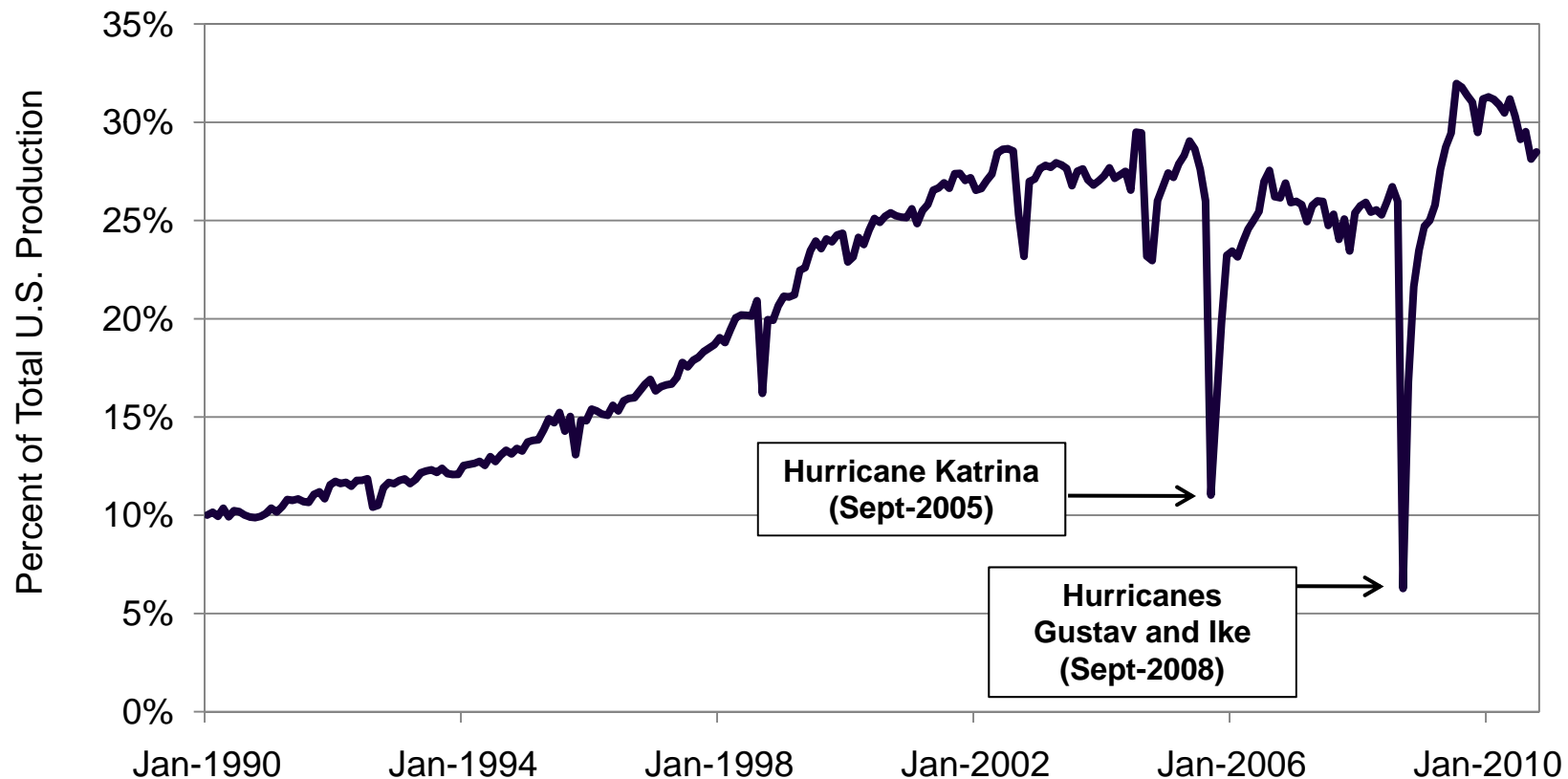
Reserves holding steady between 22 to 20 BBbls since 1995.





GOM Crude Oil Production as a Share of Total U.S. Crude Oil Production

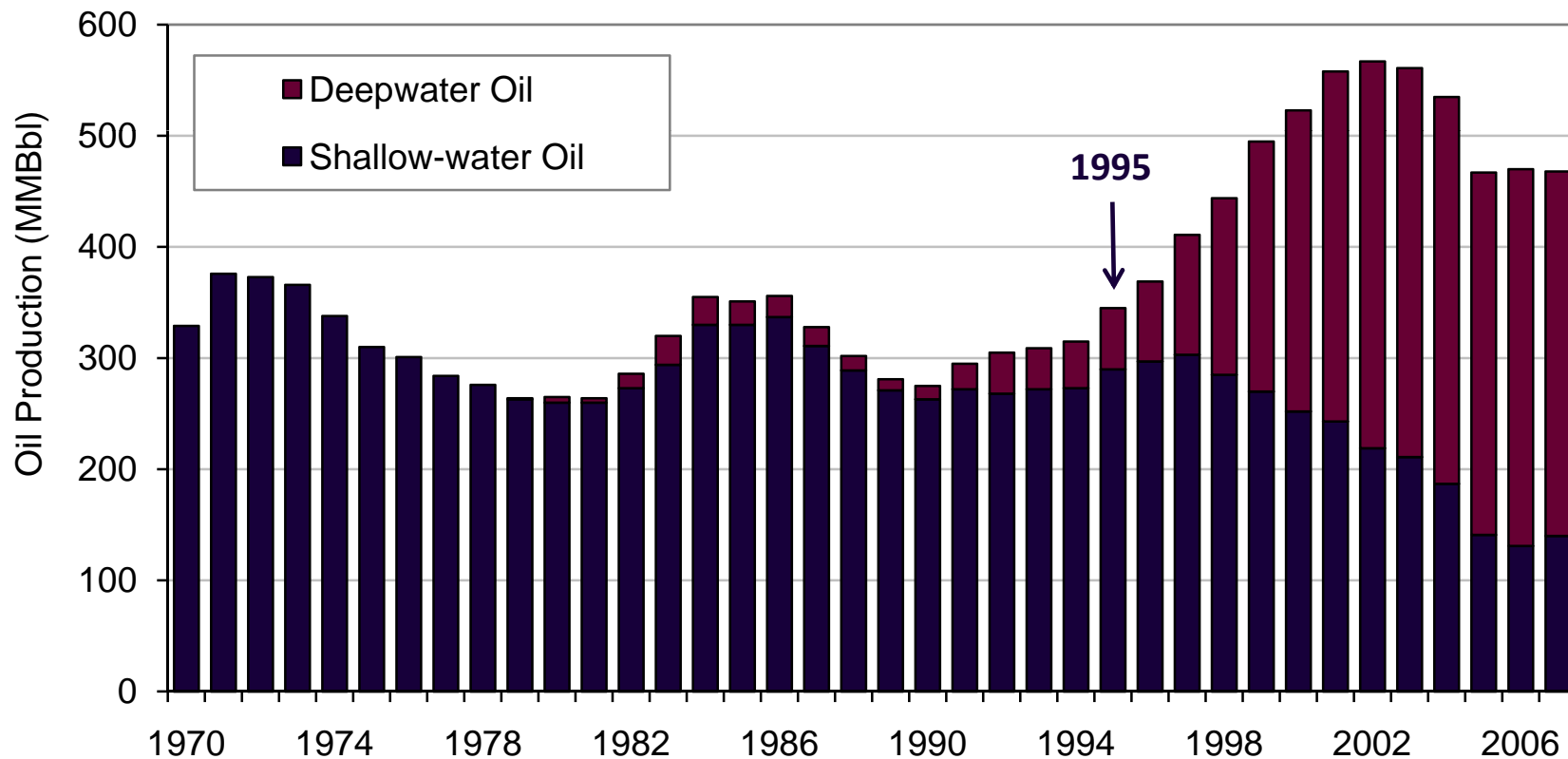
GOM is an important contributor to domestic crude oil production. The region accounts for 30 percent of domestic crude oil production and originally anticipated to contribute more in upcoming years.





GOM OCS Deepwater Crude Oil Production

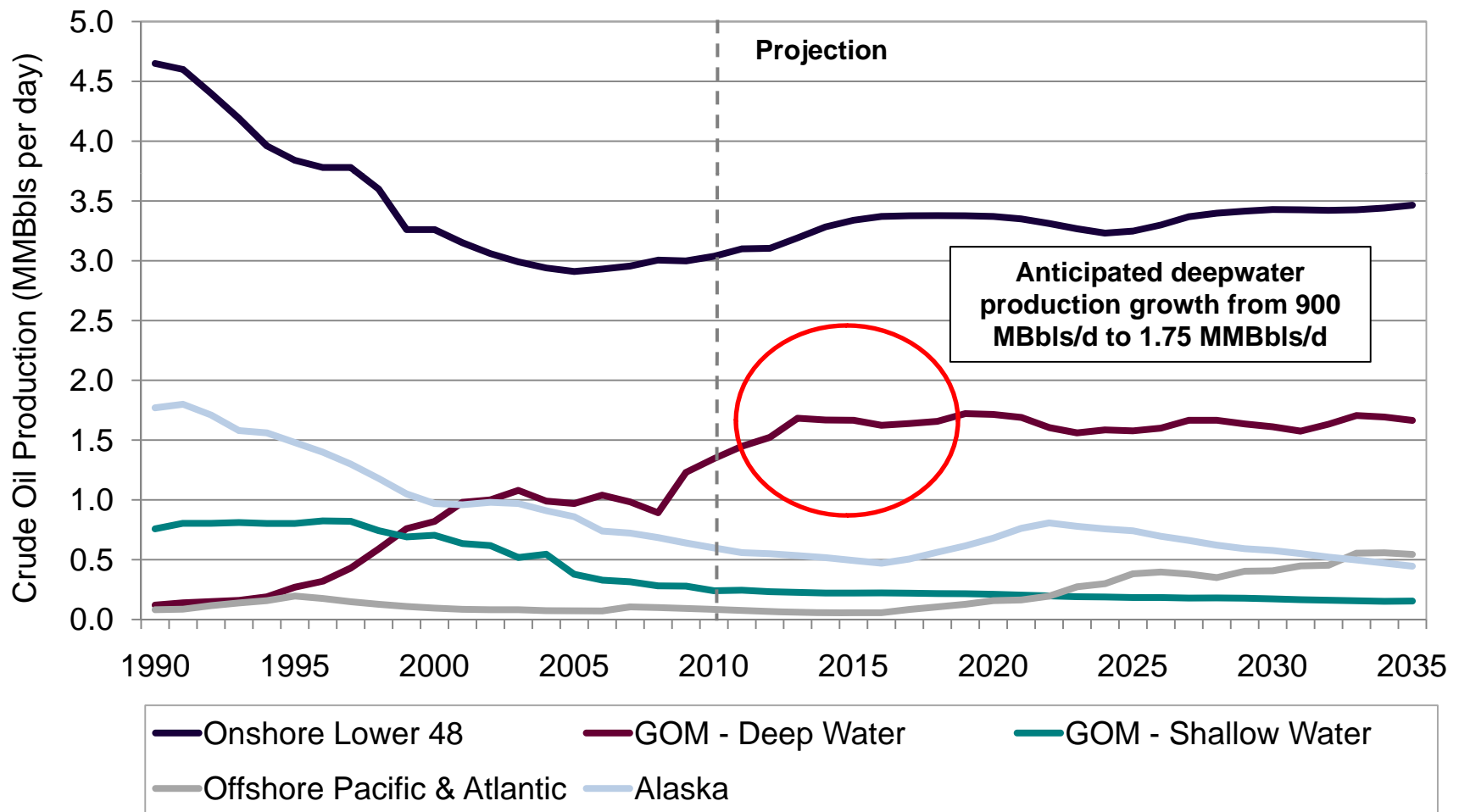
The significant increase in deepwater crude oil production has been a major new source of domestic crude oil supply.





U.S. Crude Oil Production Forecast

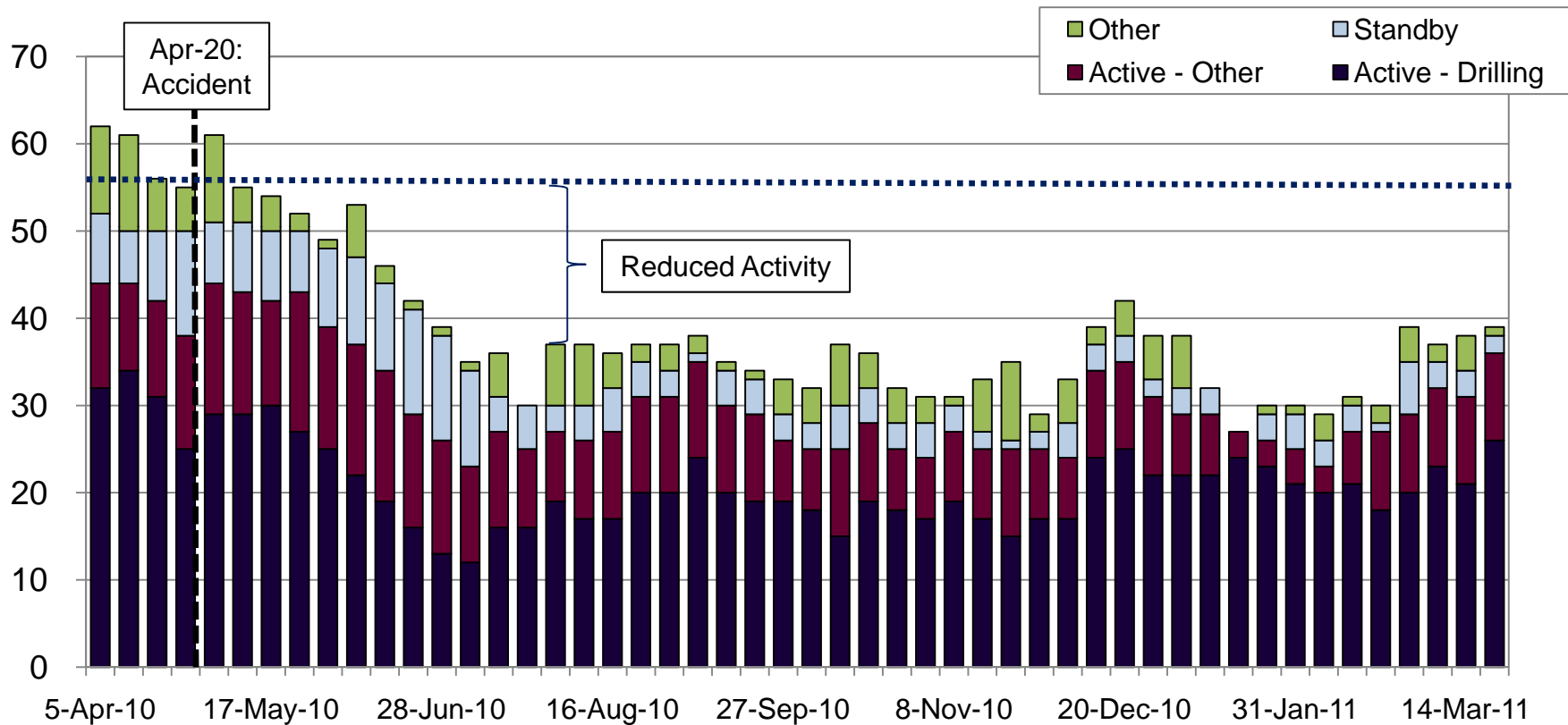
Deepwater production is forecast to increase by almost 20 percent between 2010 and 2030.





Shallow-water drilling rig activity

Total pre-spill shallow-water activity currently down by about 35 percent.

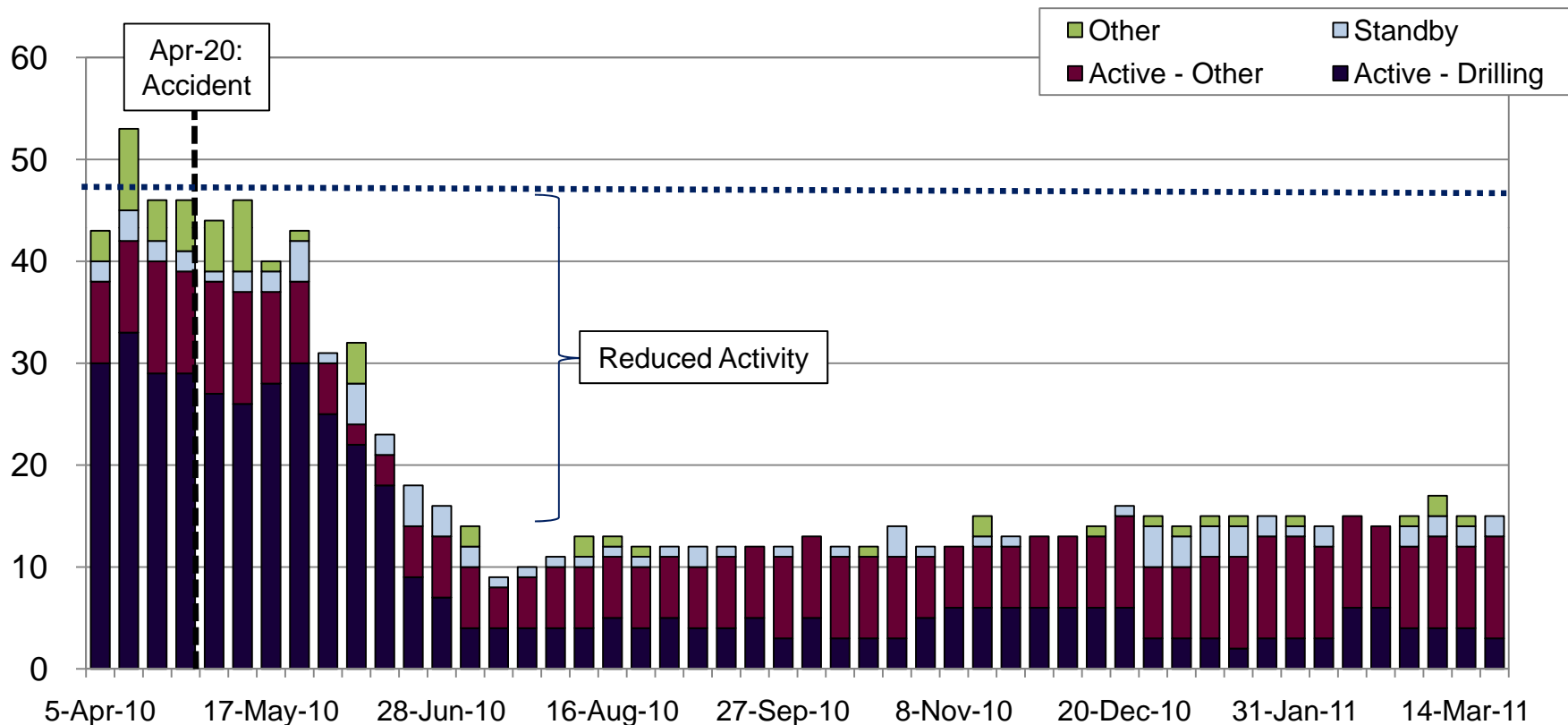


Note:
 "Active-Other" includes Completion; Recomplete; and Workover categories;
 "Standby" includes Assigned; Circulate; Under Tow; Waiting on Location; Orders or Weather; Mobilizing, Monitoring and Standby categories.
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 Source: RigData.



Deepwater drilling rig activity

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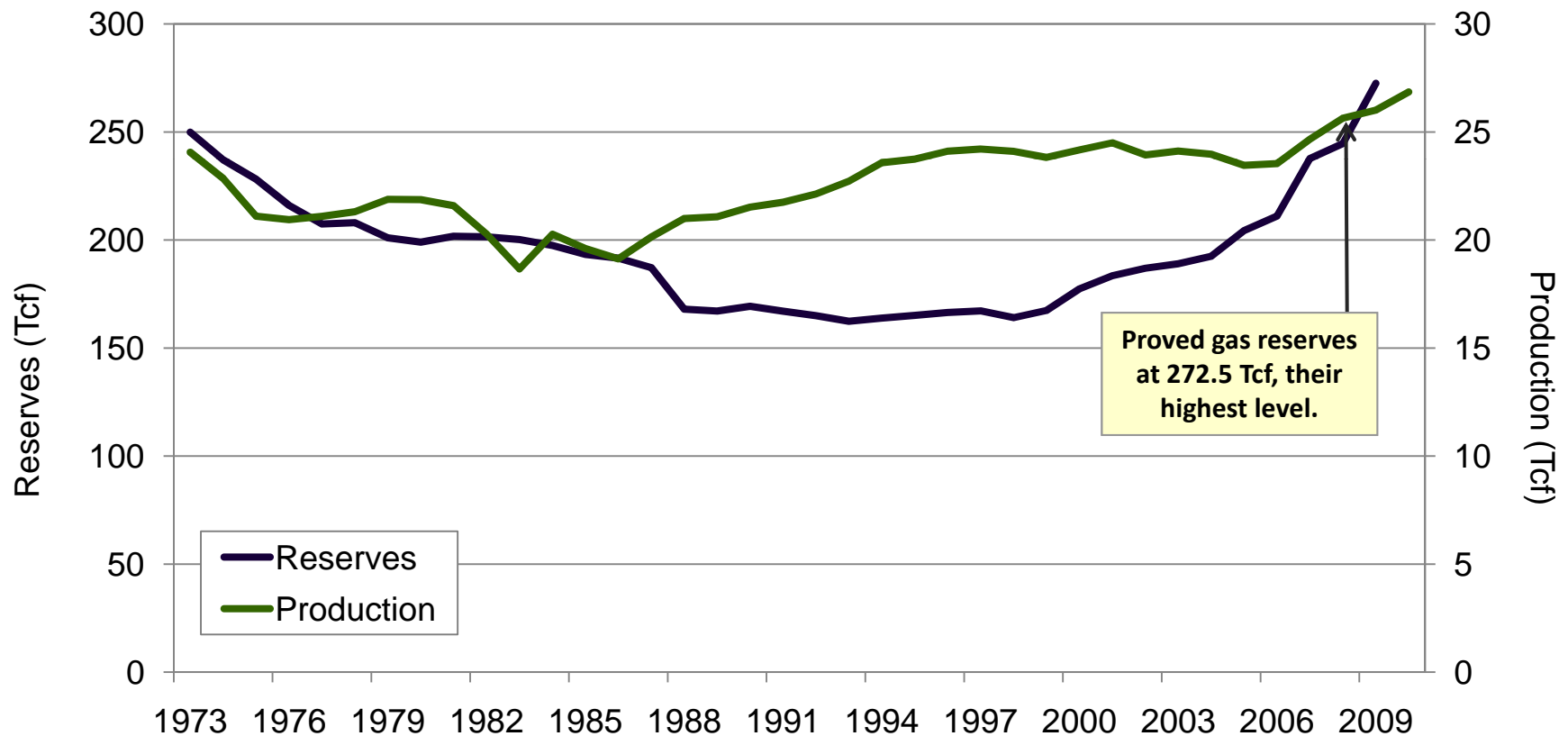
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Natural Gas Trends



U.S. Natural Gas Production and Proved Reserves, January 2007 to Present

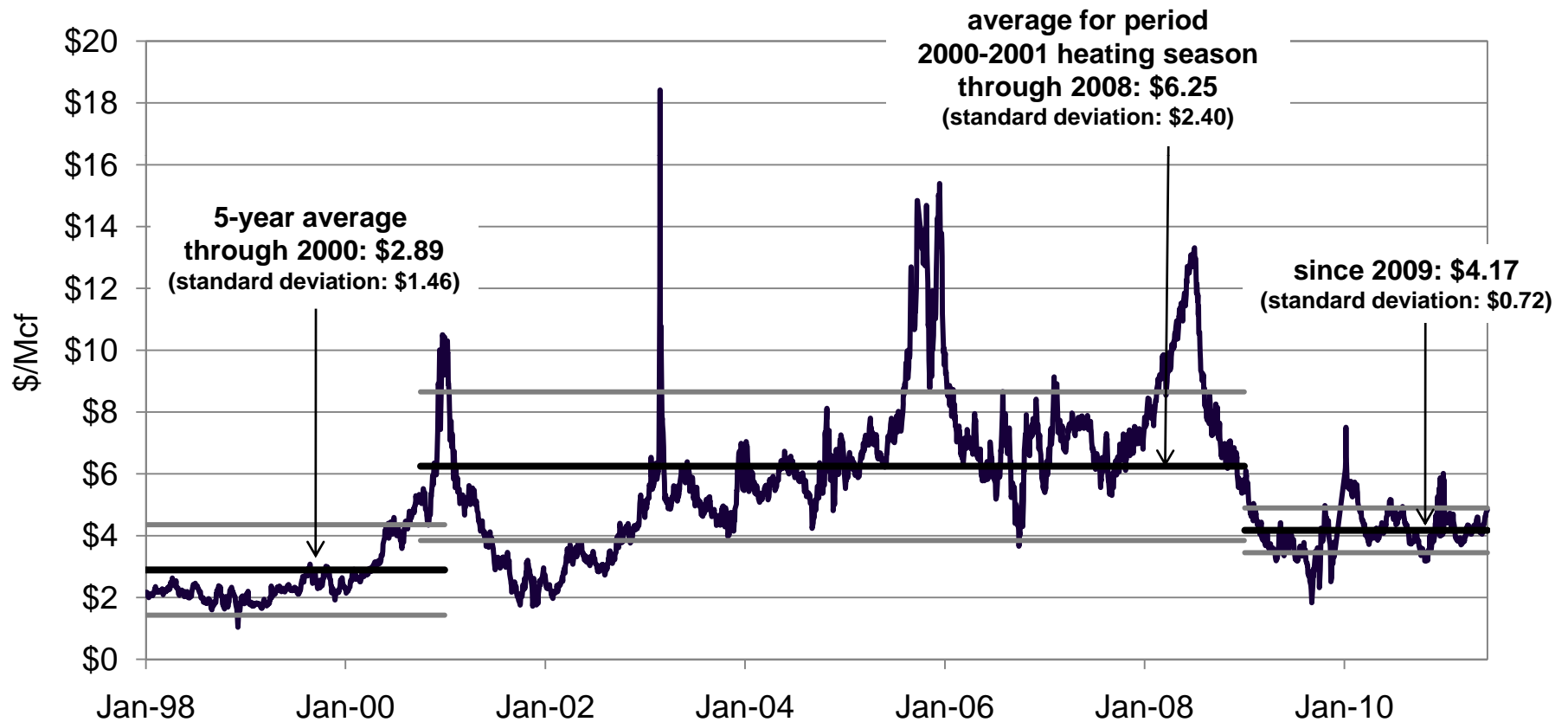
On average, natural gas reserves have been increasing by 5 percent per year since 2000 (except 2004-2005 tropical season, 2 percent).





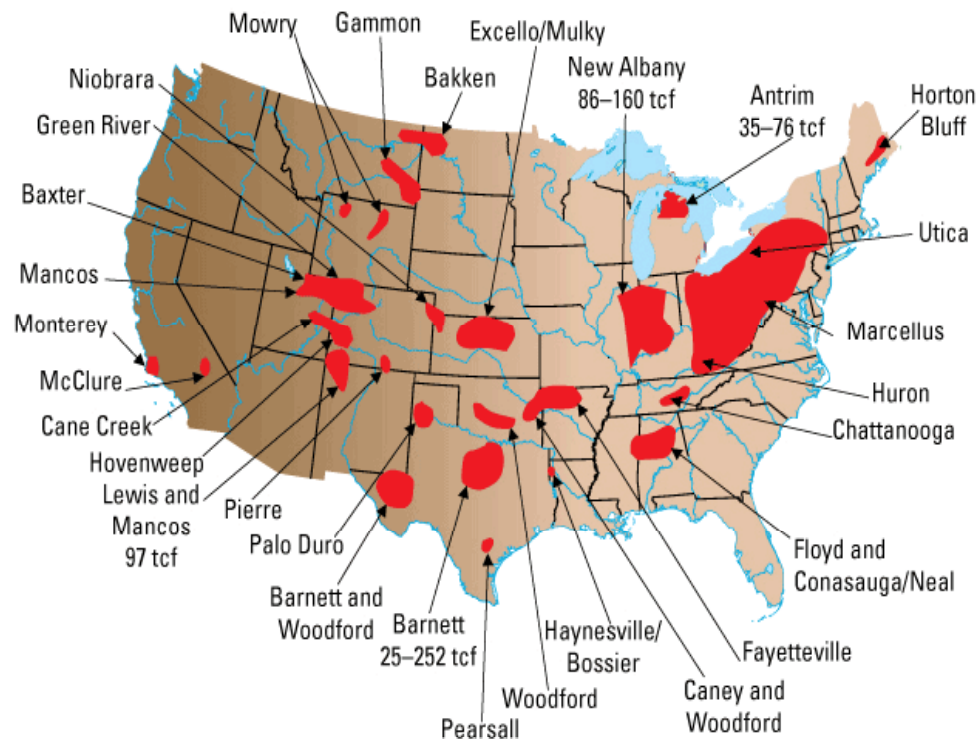
Natural Gas Prices

Customers have also seen considerable benefits from reduced natural gas pricing volatility.





Forward-Looking Challenges

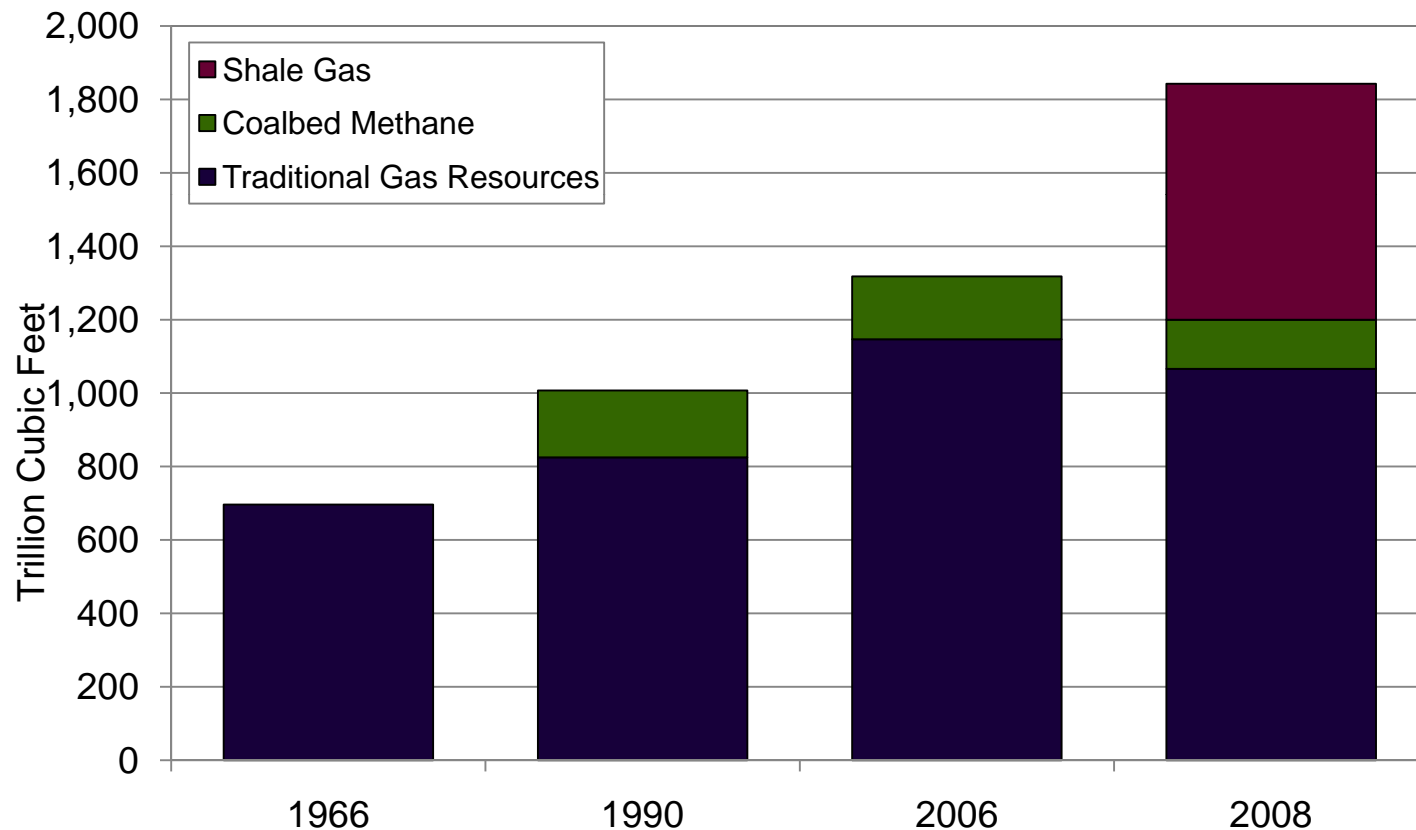


- Analysis of shale resources over the past three years has focused very heavily on identifying and characterizing the resource.
- Significant emphasis on understanding its magnitude.
- This has been an important contribution since many producers now have a good appreciation for the opportunities in shale development.
- Other stakeholder groups, such as investors, policy makers, regulators, interest groups and the general public are also starting to understand and appreciate the importance of these resources.
- Challenge over the next three to five years will be in understanding the winners and losers within the various plays.
- Can be as much variation in production within some of these plays and between them.



Estimated Size of U.S. Natural Gas Resources

Unconventional natural gas resources account for as much as conventional and is anticipated to exceed conventional resources in the future.¹

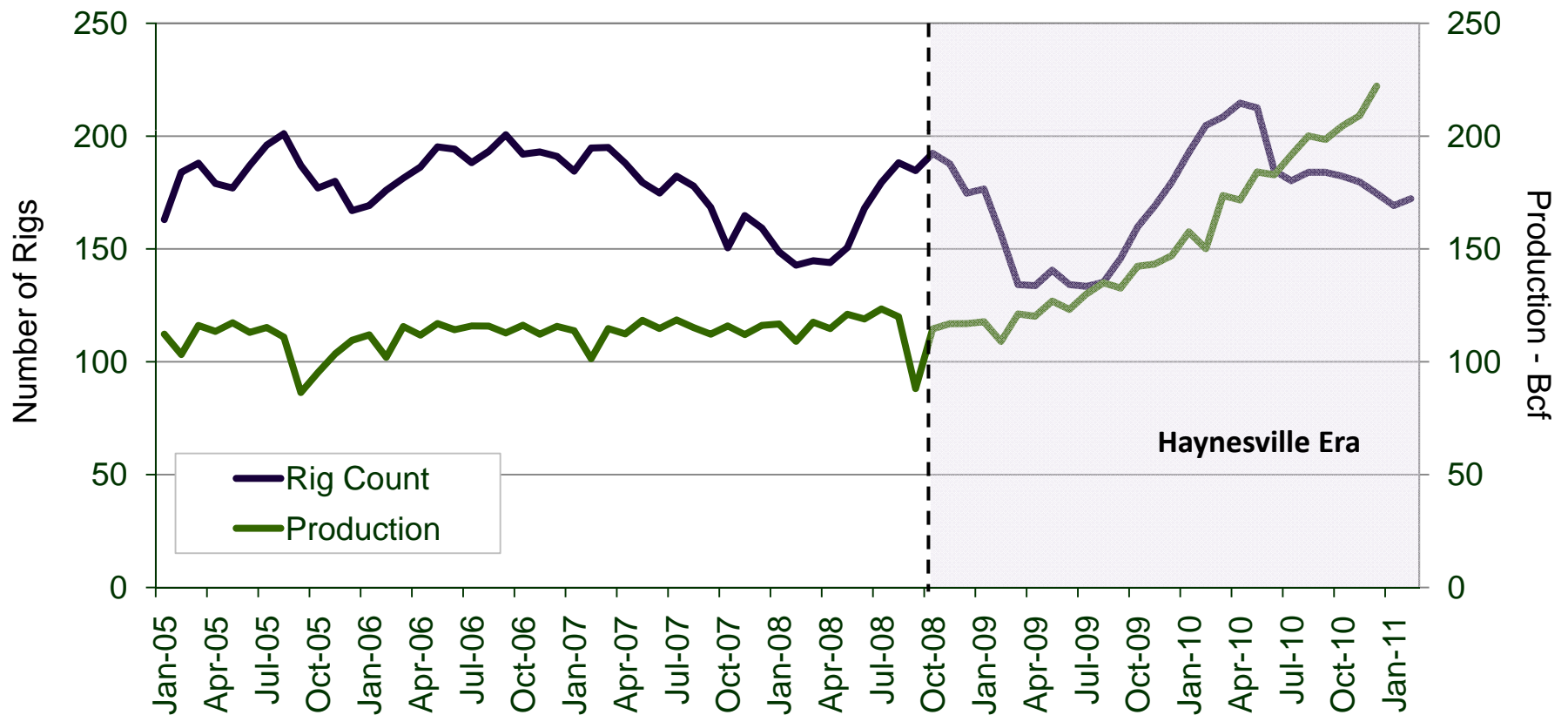


¹In 2007, unconventional natural gas production represented 48 percent of Lower-48 natural gas production. By 2020, it is forecast to be 69 percent of the Lower-48 total. Vidas, H. and Hugman, V. 2008. Availability, economics and production potential of North American unconventional natural gas supplies. Prepared for the INGAA Foundation by ICF International. November 2008.



Louisiana Rig Count and Natural Gas Production

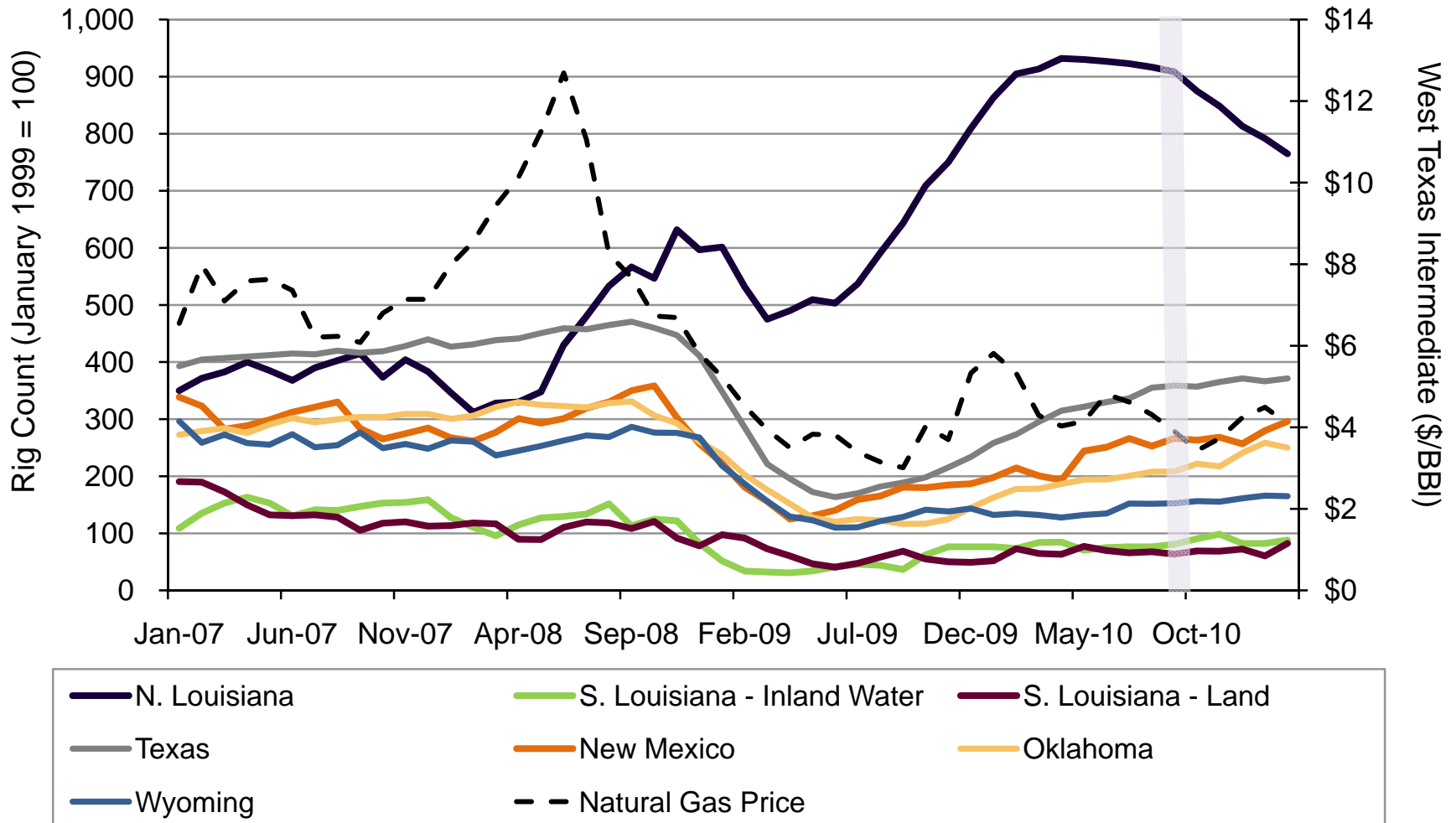
Louisiana natural gas production was relatively constant until late 2008. Production became explosive given new production from Haynesville shale parishes.





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

North Louisiana has been the shining opportunity in the industry during the recent price downturn/correction. However, that competitive advantage is starting to deteriorate.

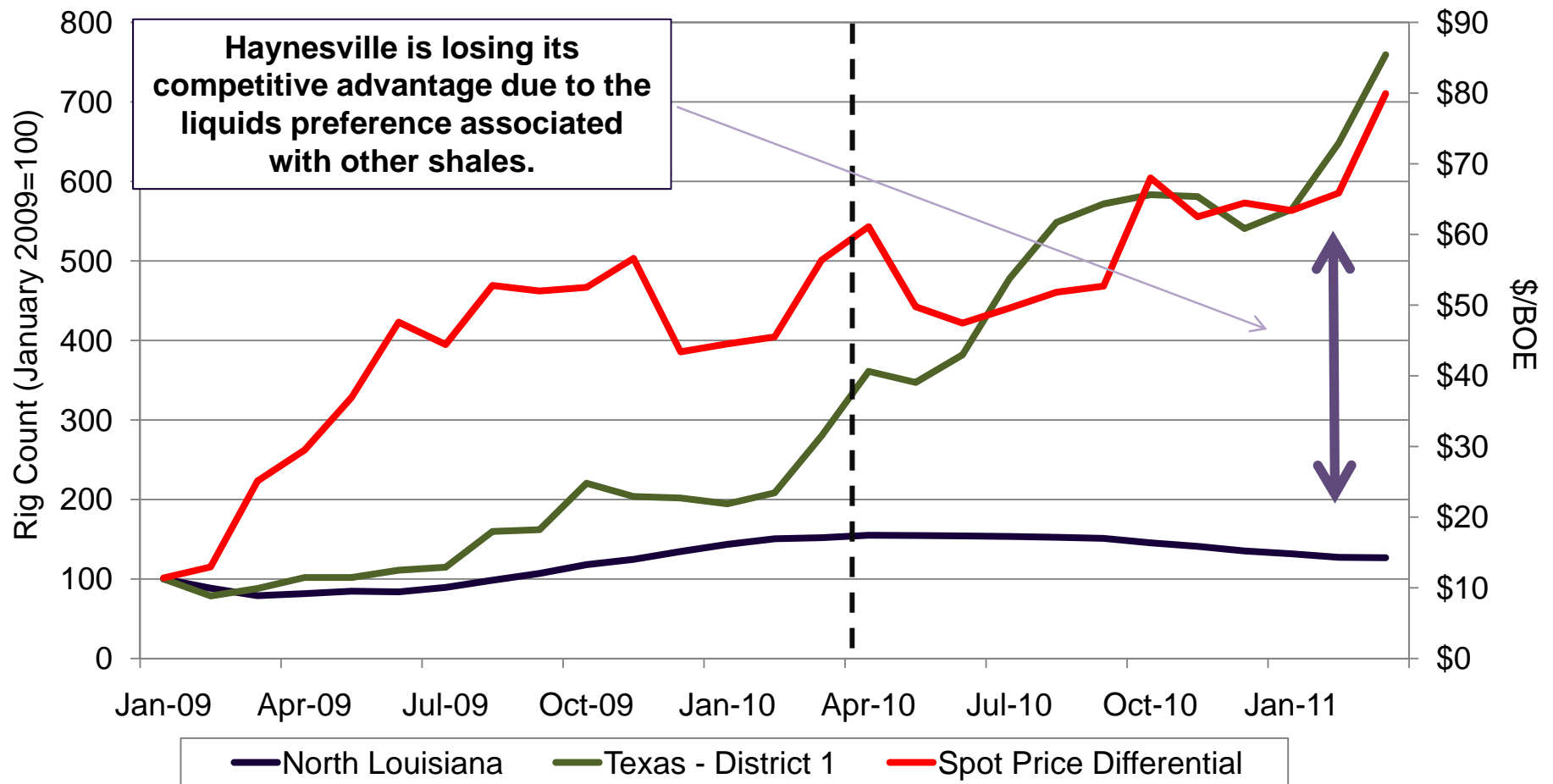


Source: Baker Hughes; and Federal Reserve Bank of St. Louis.



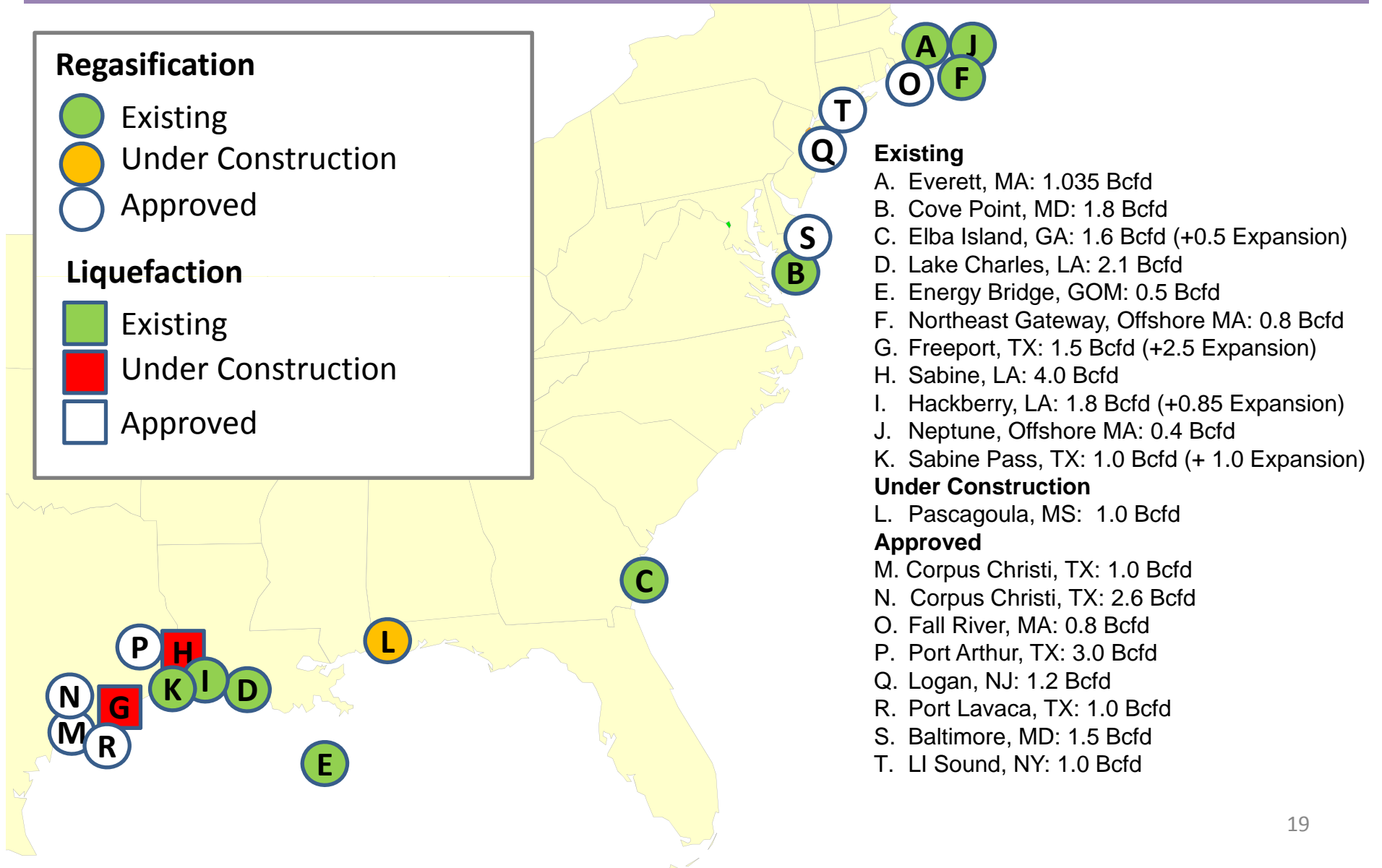
Rig Count, North Louisiana (Haynesville) and Texas District 1 (Eagle Ford)

Indexing the rig change from January 2009 highlights the recent, fast and dramatic shift in basin preference. Has less to do with incentives than markets.



Source: Baker Hughes. Rig counts are indexed to the level of active drilling rigs in each reported area as of January 2009.

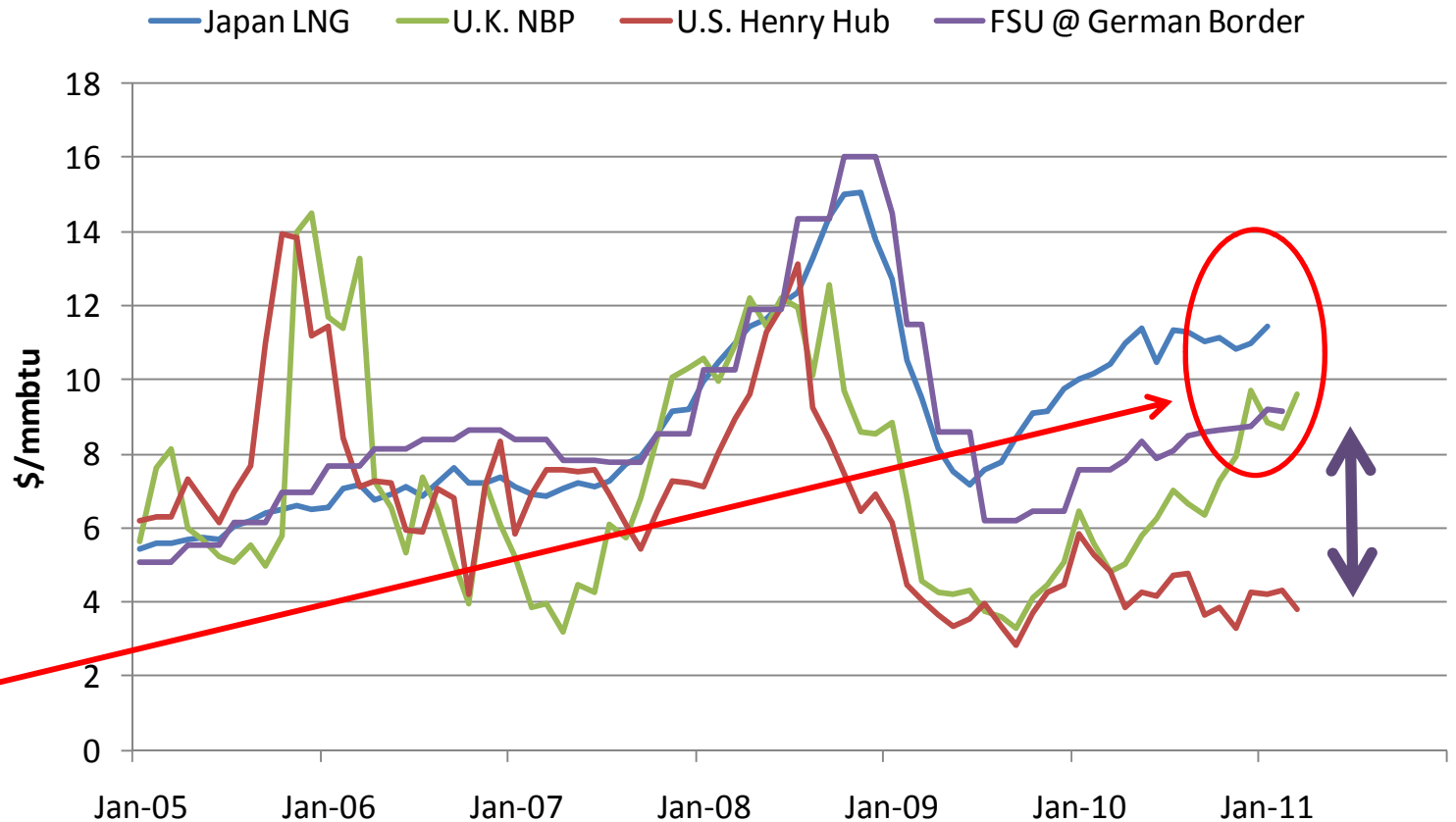
Considerable Underutilized LNG Regasification Capacity along GOM





Motivations for Moving Shale Gas to Global Consuming Areas

- Excess U.S. shale production.
- Growing global energy demand.
- Climate change issues.
- Global natural gas price differentials.



Basin Competition

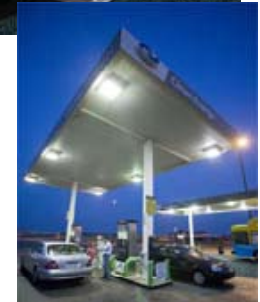
Shale production is not a domestic, “flash in the pan” supply opportunity. The opportunity spans the globe regardless of what we do in North America.

	Shale Resources (Tcf)
Asia Pacific	6,155
North America	3,842
Middle East	2,548
South America	2,117
Asia	627
Europe	549
Africa	274
Worldwide	16,112



Natural Gas Vehicles

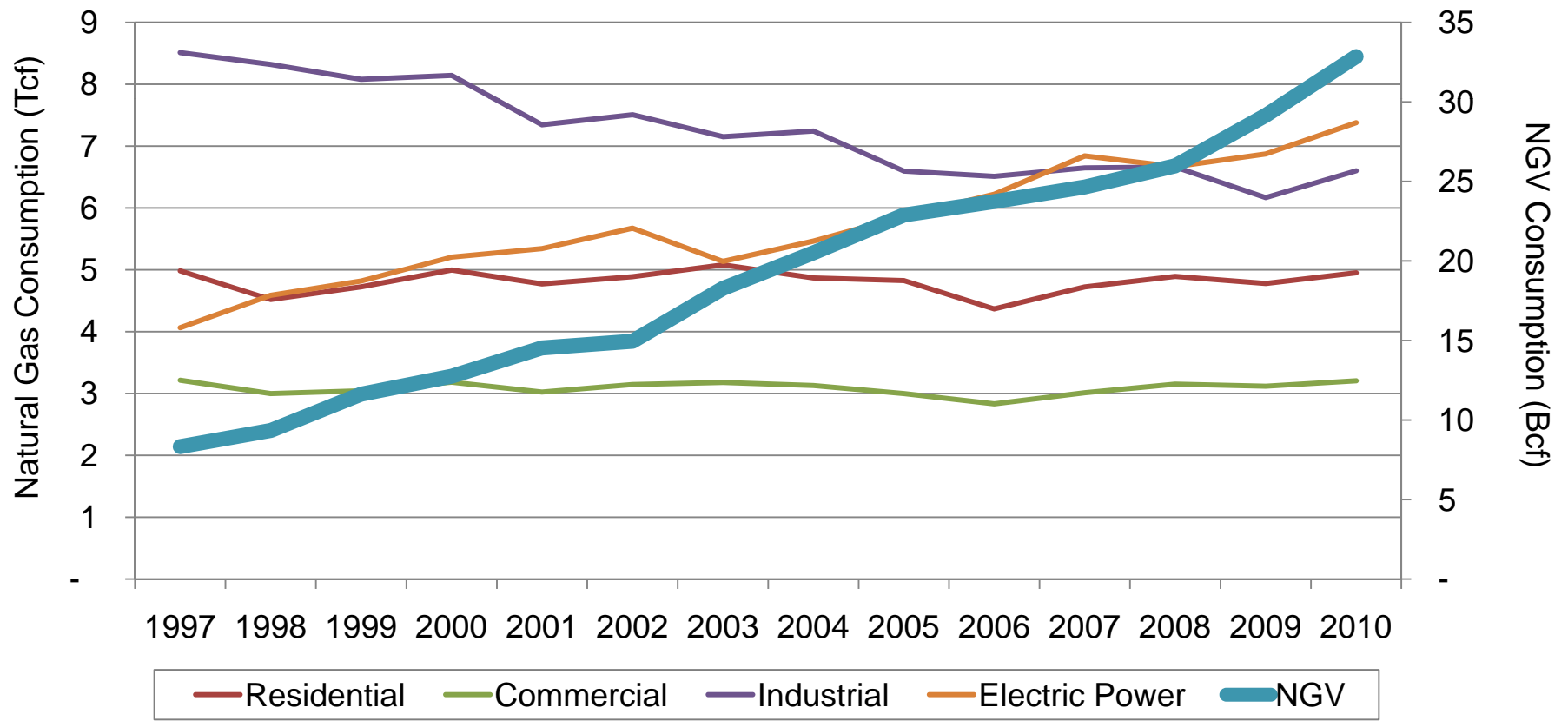
- A natural gas vehicle (“NGV”) uses compressed natural gas (“CNG”) or, less commonly, liquefied natural gas (“LNG”) as a clean alternative to other automobile fuels.
- CNG releases over 1.6 times as much energy as that released from petroleum based fuels (or for the same amount of energy, CNG produces nearly 40 percent less CO₂).
- In 2008, NGVs used 215 million gasoline-equivalent gallons. To compare, total gasoline usage in 2008 was 55 million gallons per day, or a total of 20 billion gallons.
- Currently in the U.S., about 12 to 15 percent of public transit buses in run on natural gas (either CNG or LNG).
- States with the highest consumption of natural gas for transportation are California, New York, Texas, Georgia, Massachusetts and D.C.
- One major limitation is that CNG vehicles require a greater amount of space for fuel storage.





Natural Gas Consumption by Sector

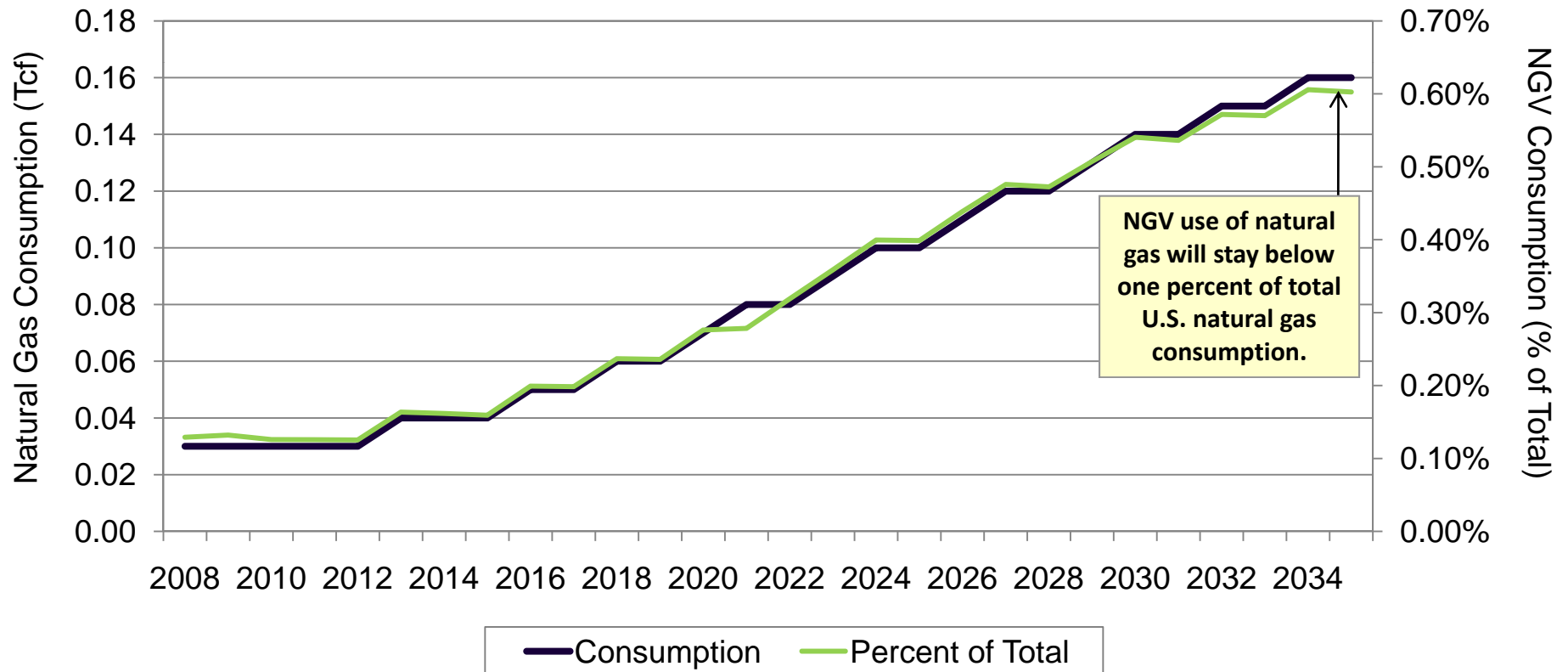
Currently, NGVs account for less than 0.18 percent of U.S. natural gas consumption, but the rate of growth in consumption (158 percent) over the past decade has surpassed all other end-uses.





Potential Natural Gas Consumption – NGV

NGV consumption of natural gas is estimated to increase at an average annual rate of 7 percent through 2035. At best, this usage will be considerably less than 1 Tcf and slightly over one-half of one percent of total natural gas market.





Conclusions



Conclusions

- **Understatement to note shale is a game changer – the large unknowns are to what extent, and how far, these opportunities can spread – particularly abroad. LNG will always provide discipline to the market (margin cost of importing can be very low).**
- **Existing opportunities (Rockies, Alaska, deepwater) are still there and new opportunities (frontier areas, deep drilling) continue to materialize (i.e., substitutes and alternatives). Unfortunately, the Deepwater Horizon accident has already imposed a significantly negative impact on deepwater GOM activities and is likely to prevent drilling in offshore frontier areas in the foreseeable future.**
- **Demand (recovery) big unknown at this point. New technologies likely to have significant and unknown impacts on markets. Environmental regulation likely to have a big impact.**
- **Policy still has an impact, several initiatives that could unwind resource gains. Opportunities for big gains, big contractions.**
- **Renewables and alternative fuel vehicles all put pressure on gas resources if developed to anticipated levels.**



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