



Council of Industrial Boiler Owners

The Shale Gale

October 11, 2012
San Diego
Bob Ineson, IHS CERA Senior Director



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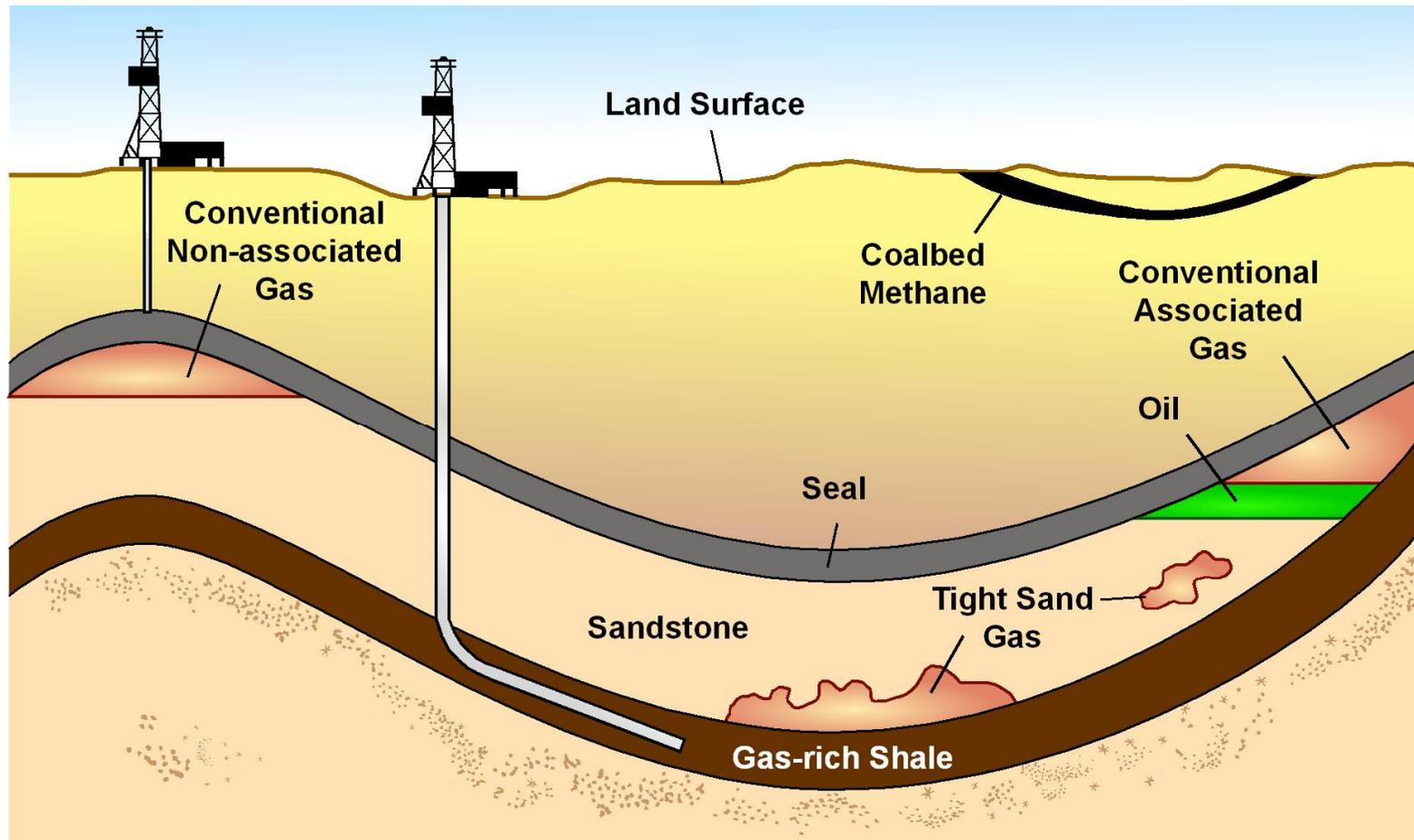
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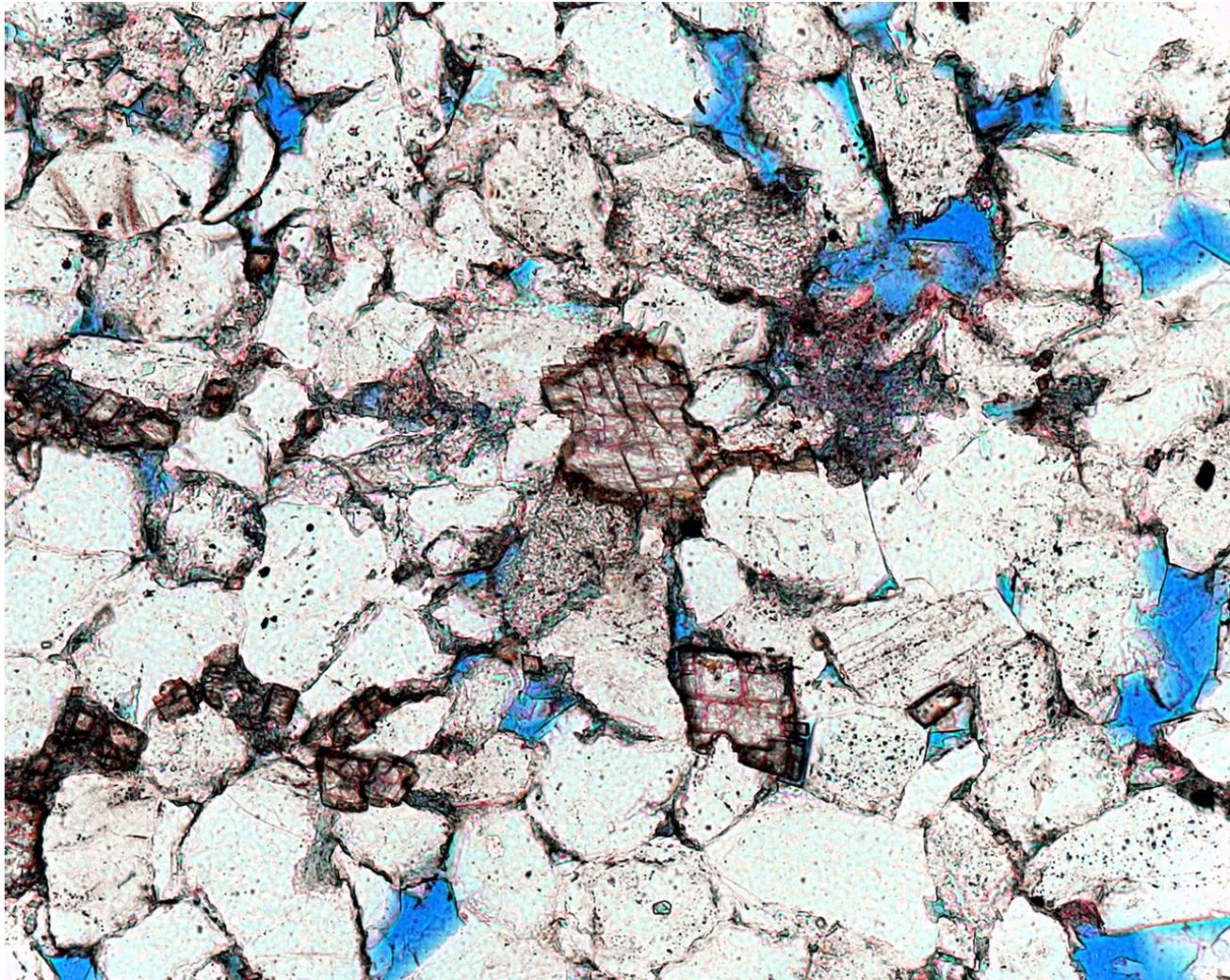
Schematic Geology of Natural Gas Resources



Source: IHS CERA.
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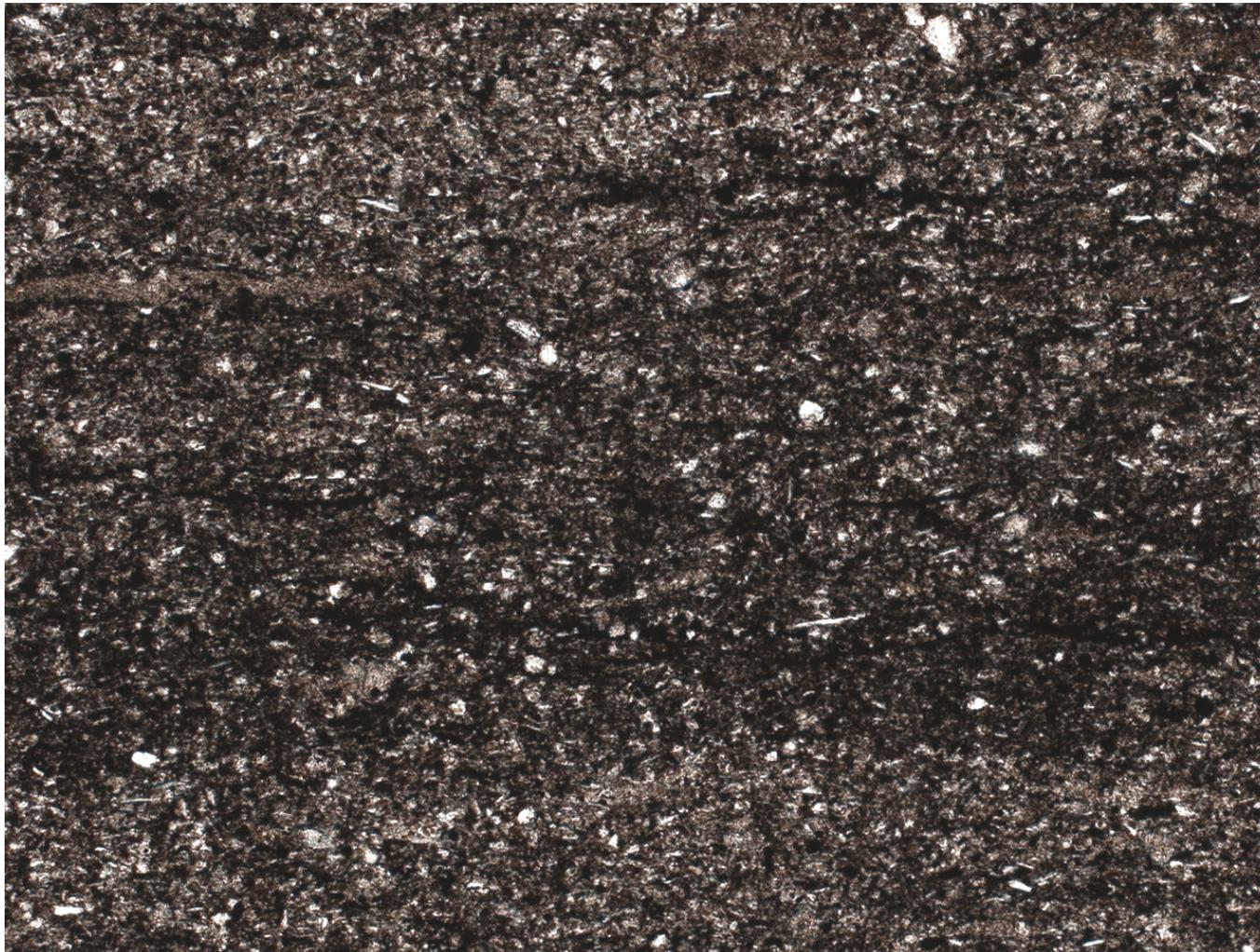
Conventional Sandstone



Source: CoreLab.



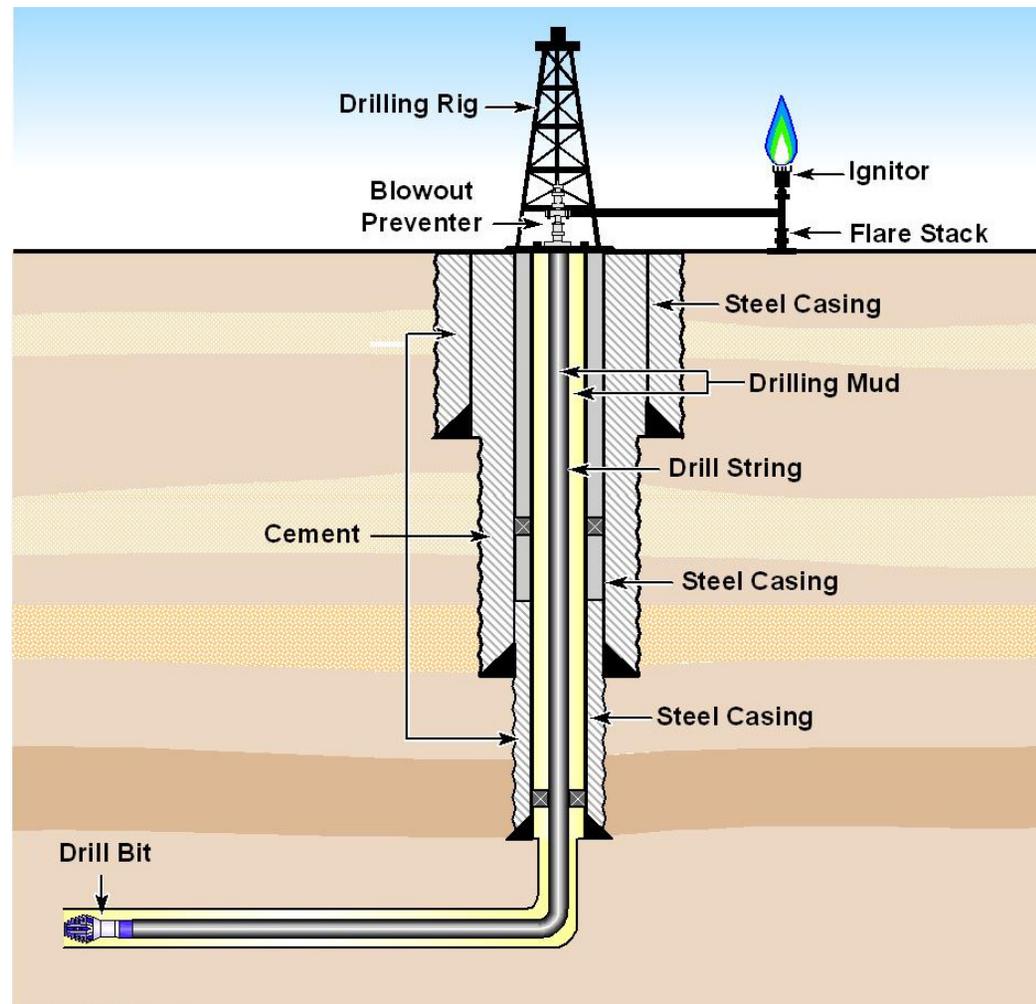
Shale



Source: CoreLab.

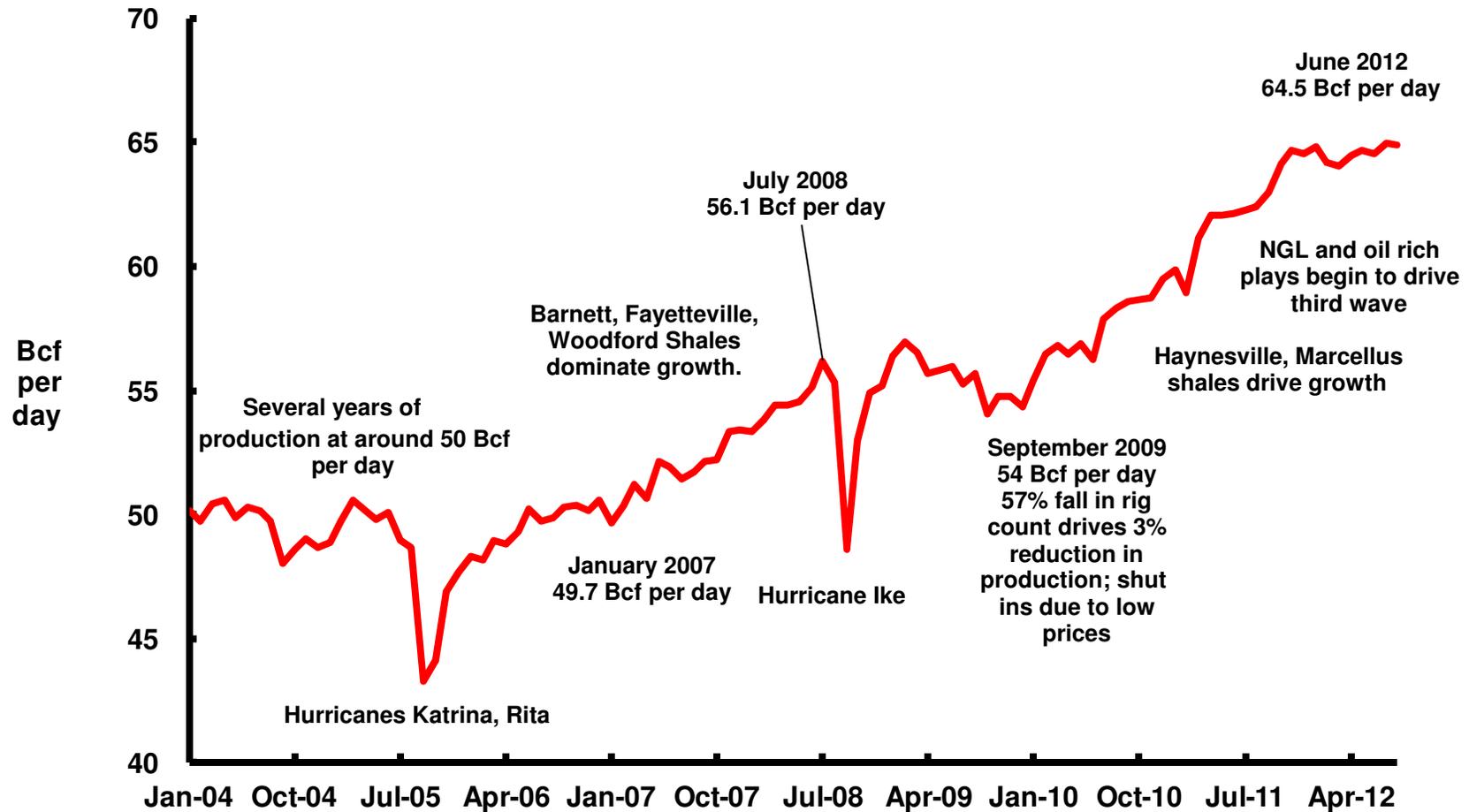


Drilling a Shale Well



Source: IHS CERA.

Unconventional Gas Has Led to Very Rapid Production Increases in the US Lower 48

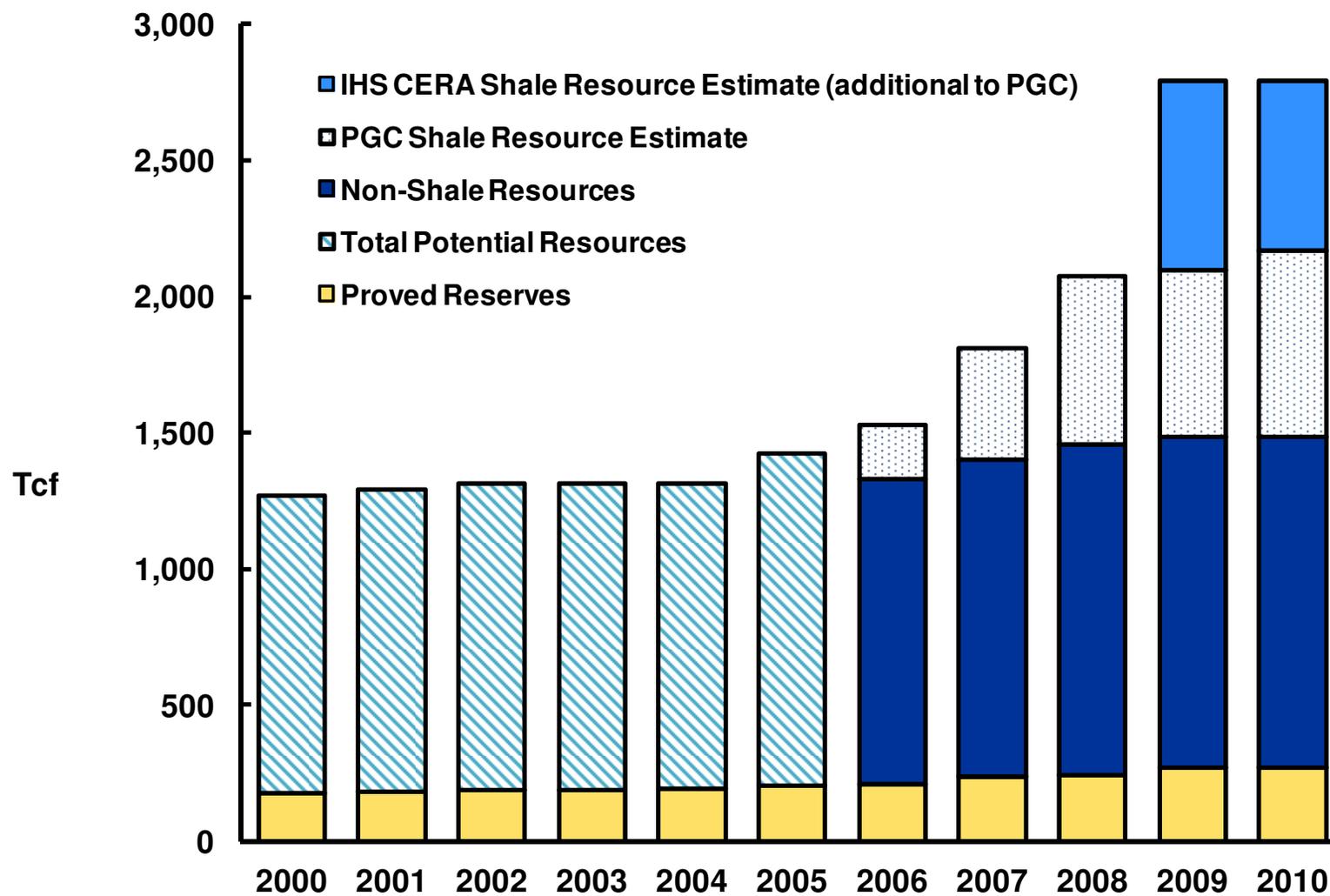


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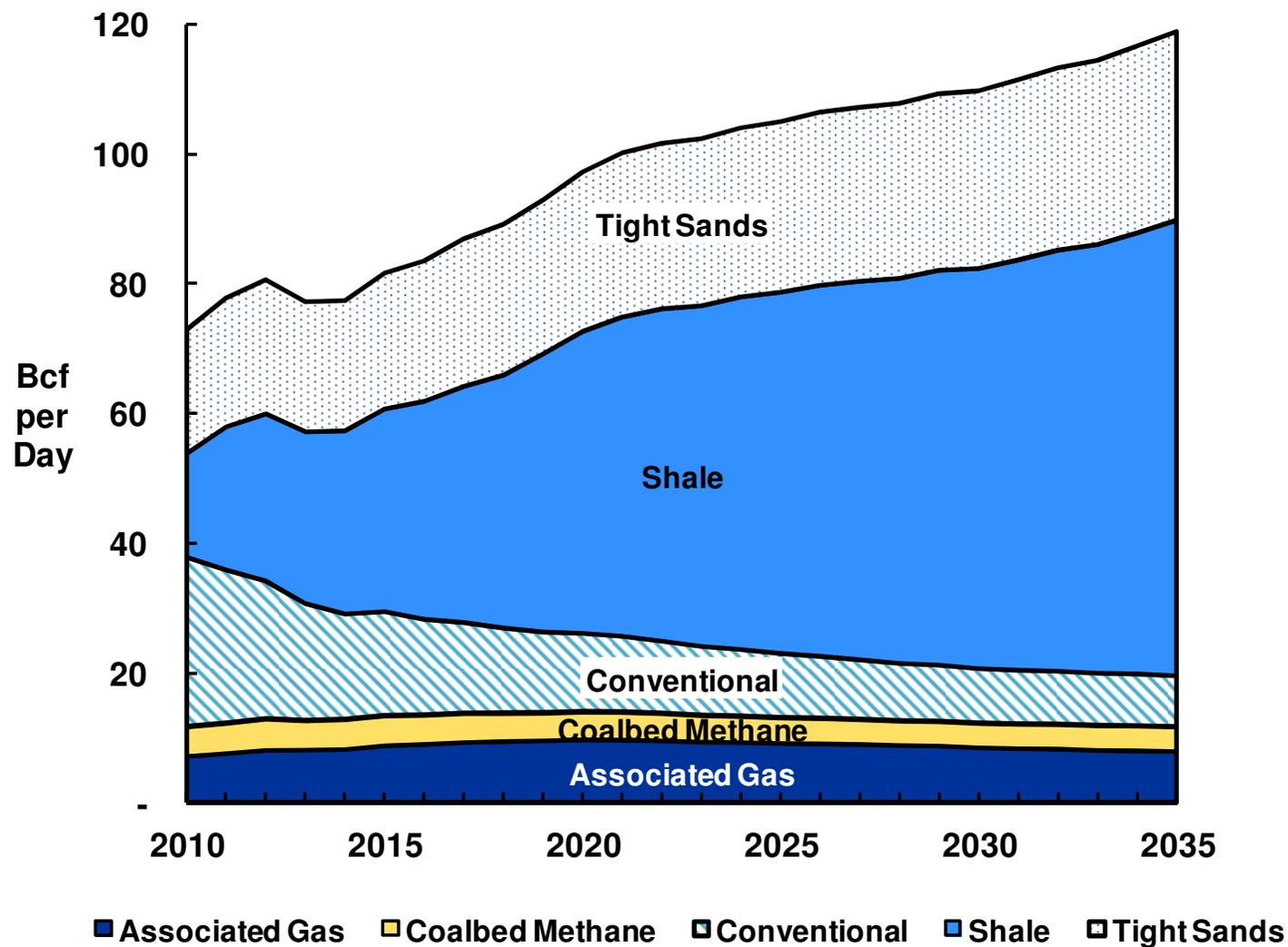
US Natural Gas Reserves and Resources



Source: EIA, PGC, IHS CERA.
Note: Tcf = trillion cubic feet.



Productive Capacity by Type



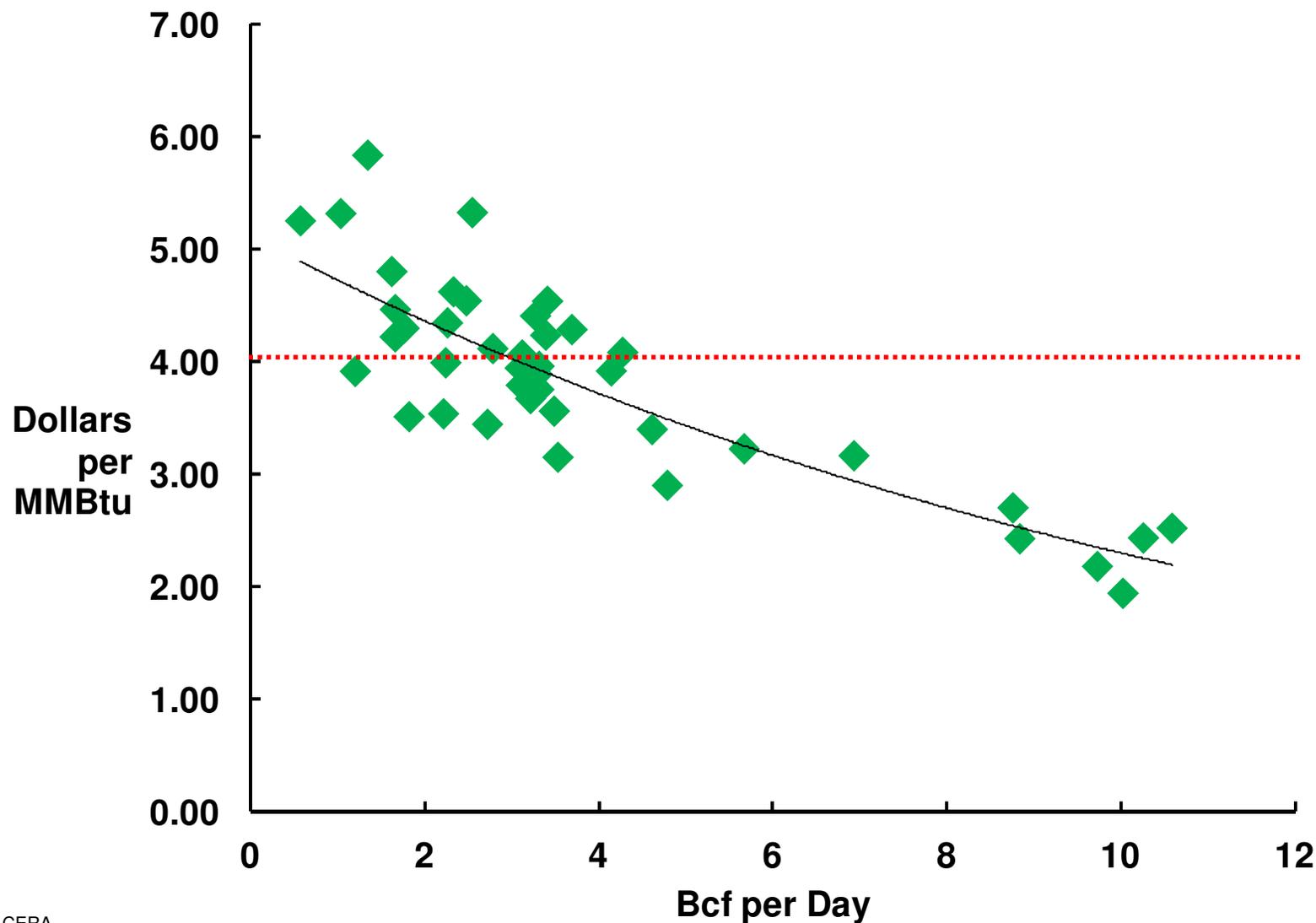
Source: IHS CERA.

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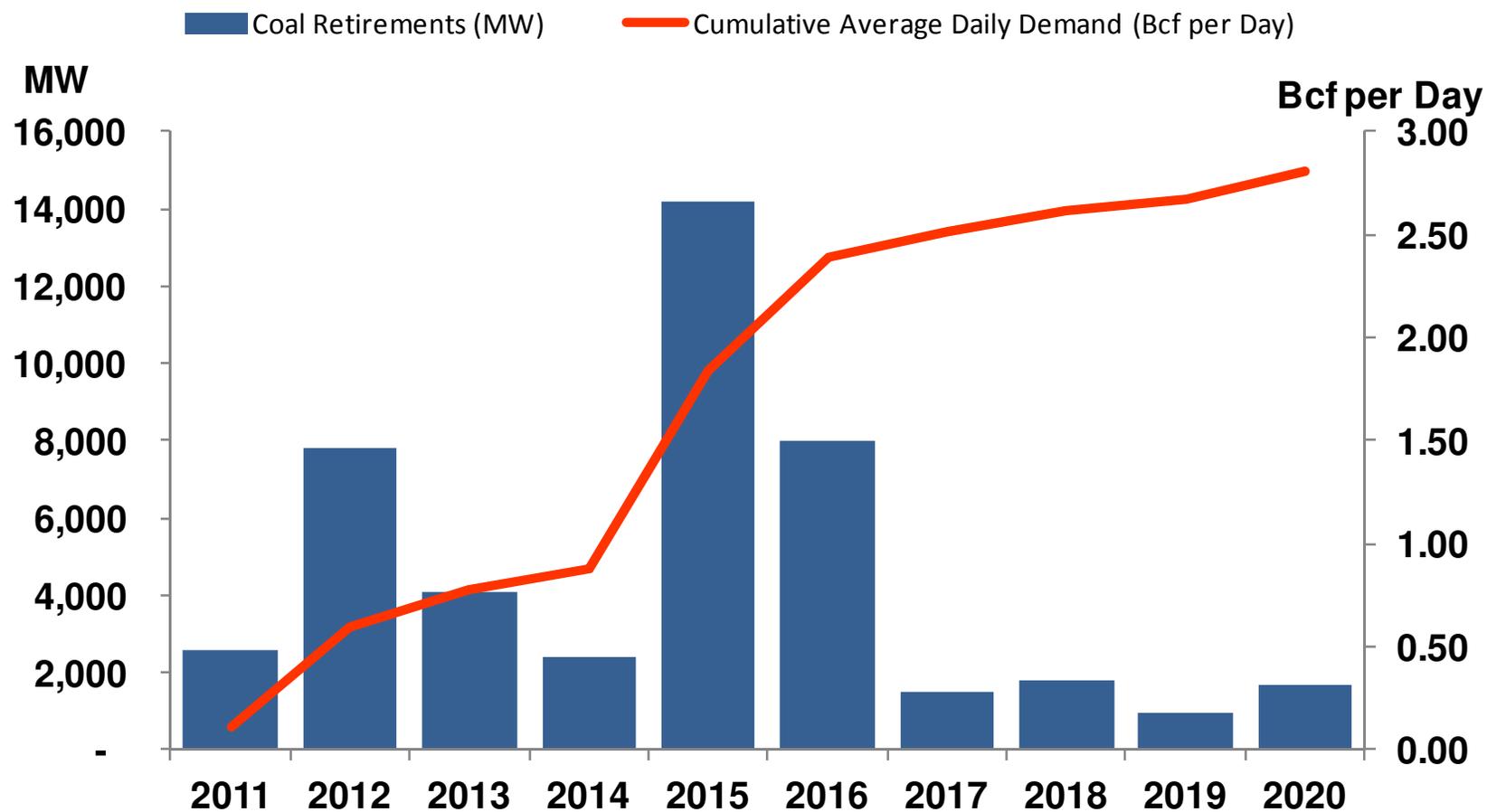
Coal Displacement and Natural Gas Prices, 2009 to Date



Source: IHS CERA.



US Coal Retirements



**Relative to 2011 Generation*

Source: IHS CERA.



Chemical Plants, 000 metric tons

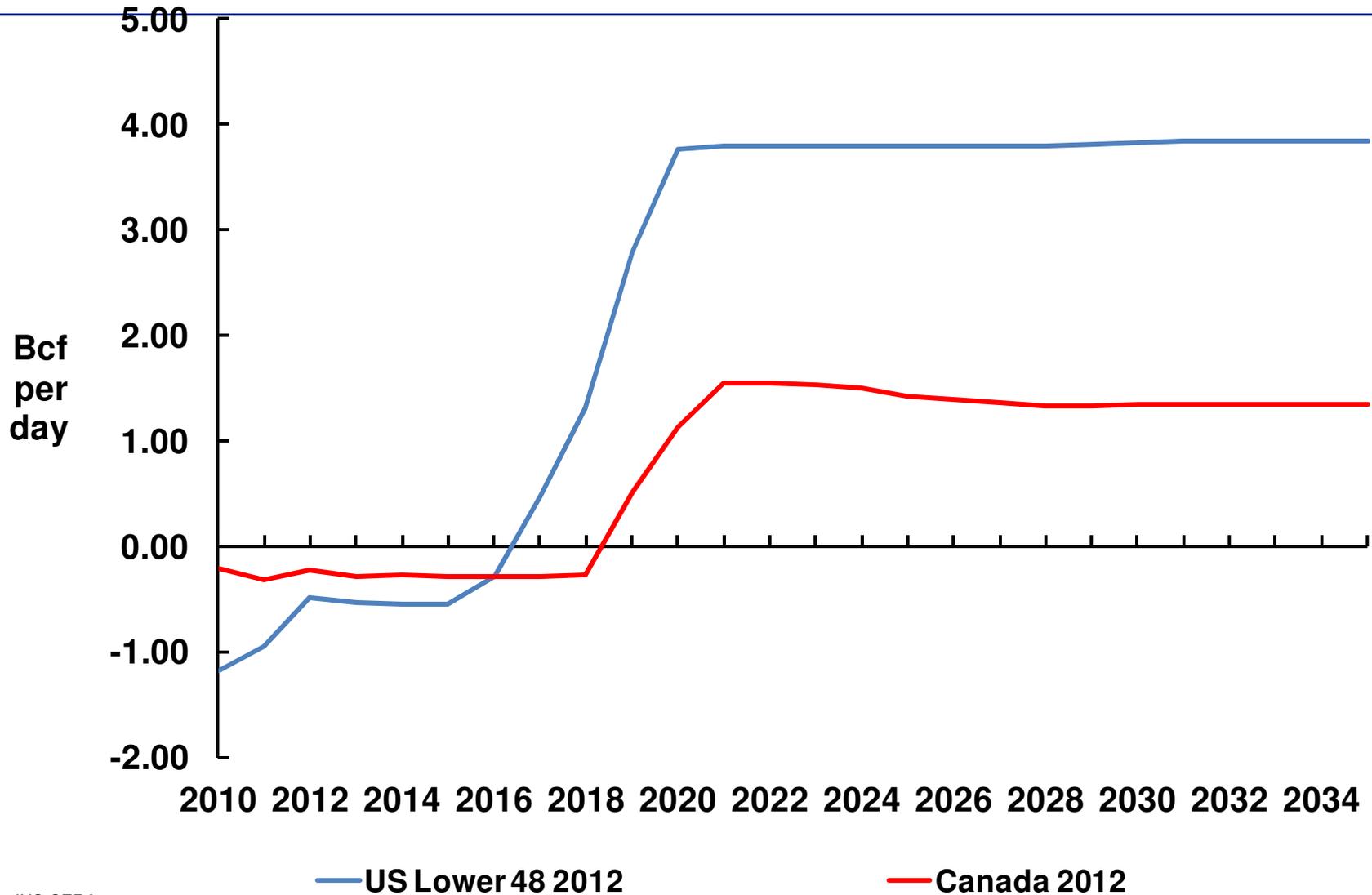
		2012	2013	2014	2015	2016	2017	2018	Total
<i>Ethylene</i>									
Braskem-Idesa JV	Coatzacoalcos, Ver					1,000			1,000
Chevron Phillips	Cedar Bayou, TX	-42					1,000	500	1,458
	Sweeny, TX	12							12
Dow	Taft, LA		386						386
	Freeport, TX							1,500	1,500
Equistar	La Porte, TX		75	310					385
	Morris, IL		46						46
ExxonMobil	Baytown, TX					750	750		1,500
FPC USA	Point Comfort, TX					200	600		800
Ineos	Choc. Bayou, TX	54	60						114
Westlake	Lake Charles, LA	30	80	30	80				220
Williams/SABIC	Geismar, LA	20	70	210					300
		74	717	550	80	1,950	2,350	2,000	7,721
<i>Ammonia</i>									
Yara International	Belle Plaine, SK					350	350		700
Yara Belle Plaine Inc.	Belle Plaine, SK					250	500		750
OCI Beaumont	Beaumont, TX	200							200
CF Industries	Donaldsonville, LA			88					88
Dyno Nobel	Waggaman, LA					750			750
PCS Fertilizer	Geismar, LA	100	400						500
Rentech Energy	East Dubuque, IL			92					92
SCS Energy	Bakersfield, CA							460	460
Agrium	Borger, TX					120			120
	Rogers, ND							760	760
Terra Industries	Woodward, OK	120							120
		420	400	180	0	1,470	850	1,220	4,540
<i>Methanol</i>									
Methanex	Medicine Hat, AB	157							157
Celanese	Clear Lake, TX				650	650			1,300
Lyondell MOH jv	Channelview, TX		195	585					780
Methanex	Geismar, LA			495	505				1,000
OCI Beaumont	Beaumont, TX	425	425						850
		582	620	1,080	1,155	650	0	0	4,087

Source: IHS CERA.

Existing Regasification and Filed Liquefaction Projects, US Lower 48 and Canada



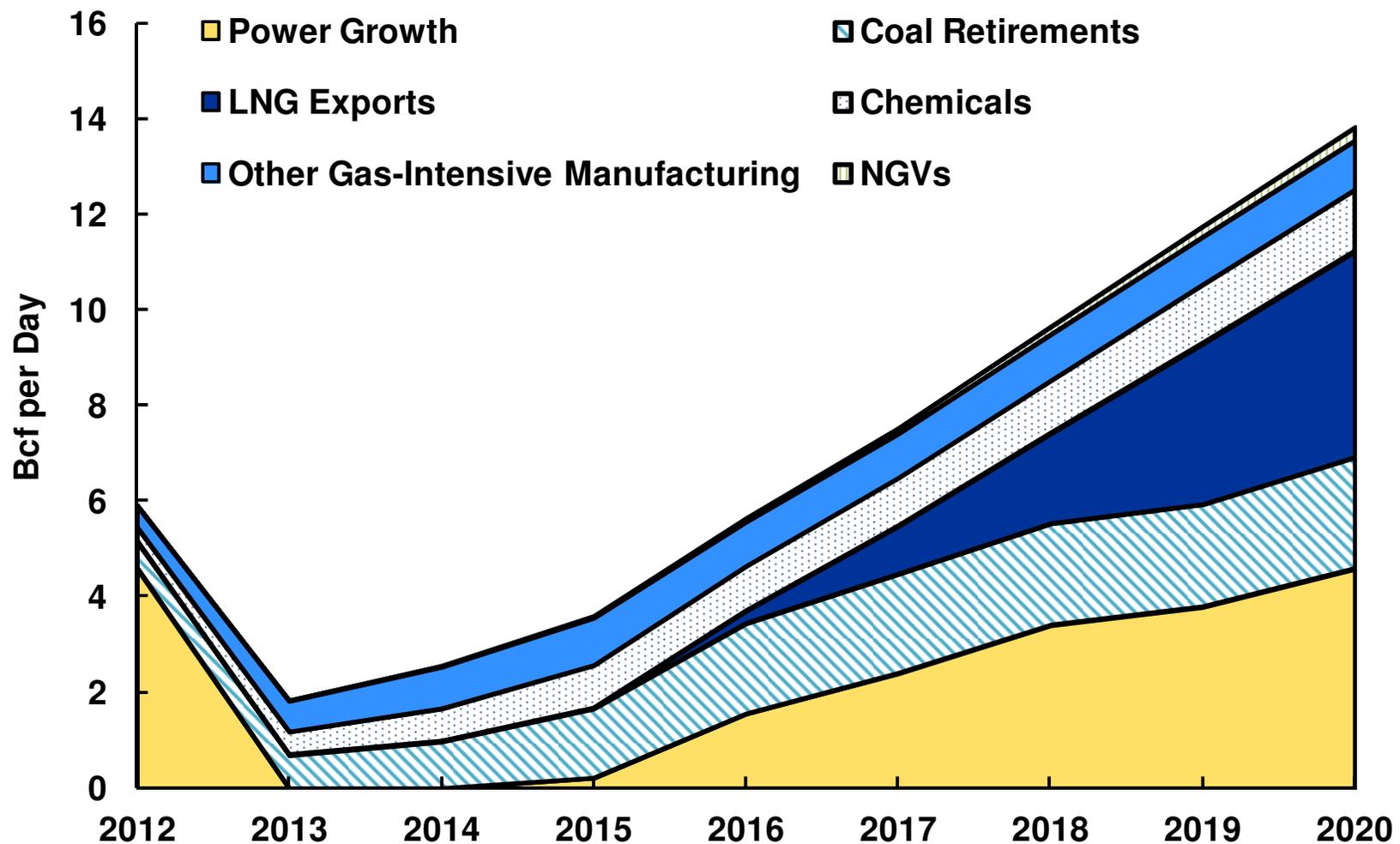
United States Lower 48 and Canada, Net LNG Exports



Source: IHS CERA.
Excludes US lower-48 re-exports.



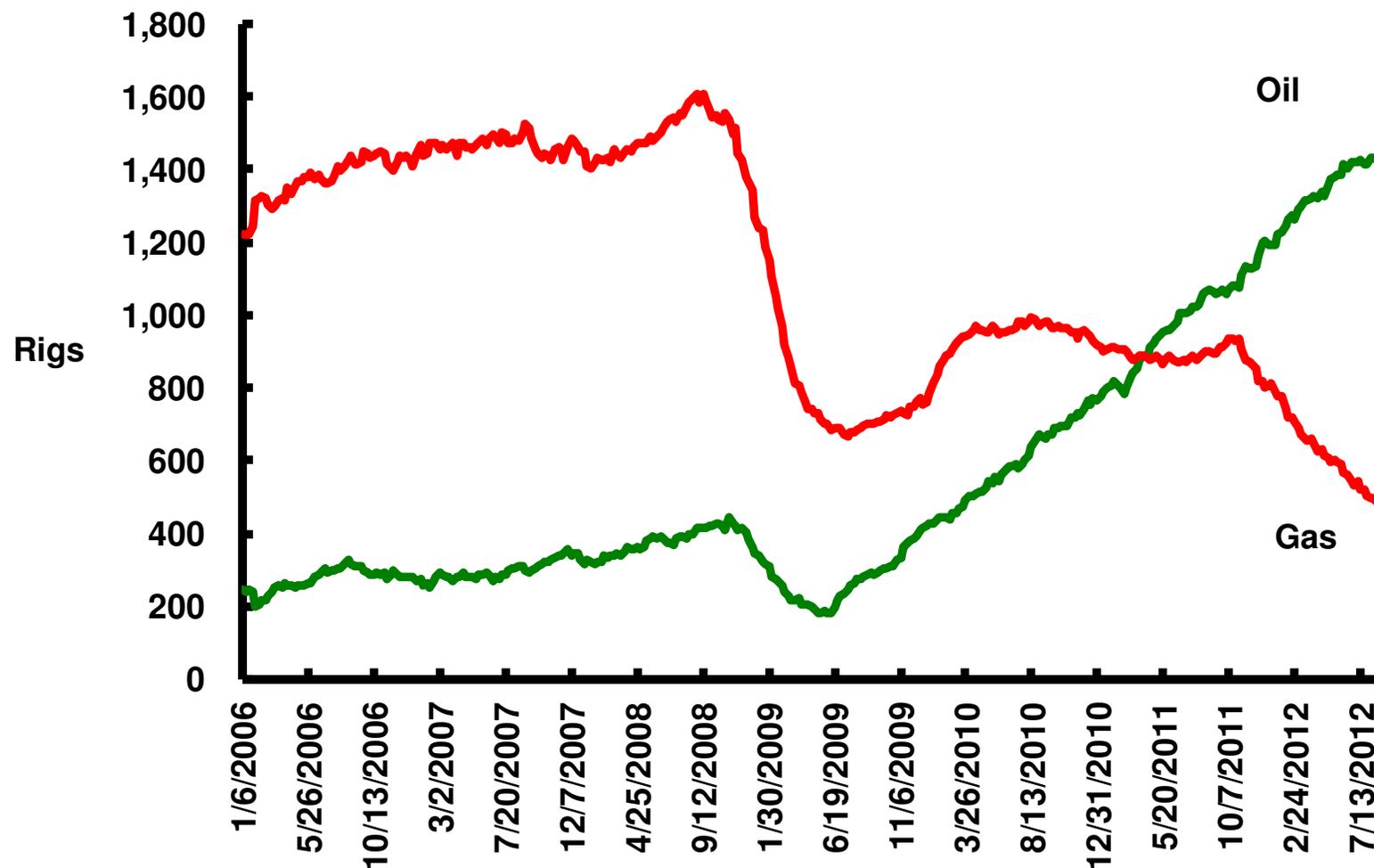
US Lower 48 Demand Growth



Note: Other gas-intensive manufacturing includes iron and steel, aluminum, petroleum refining, cement and glass and others.

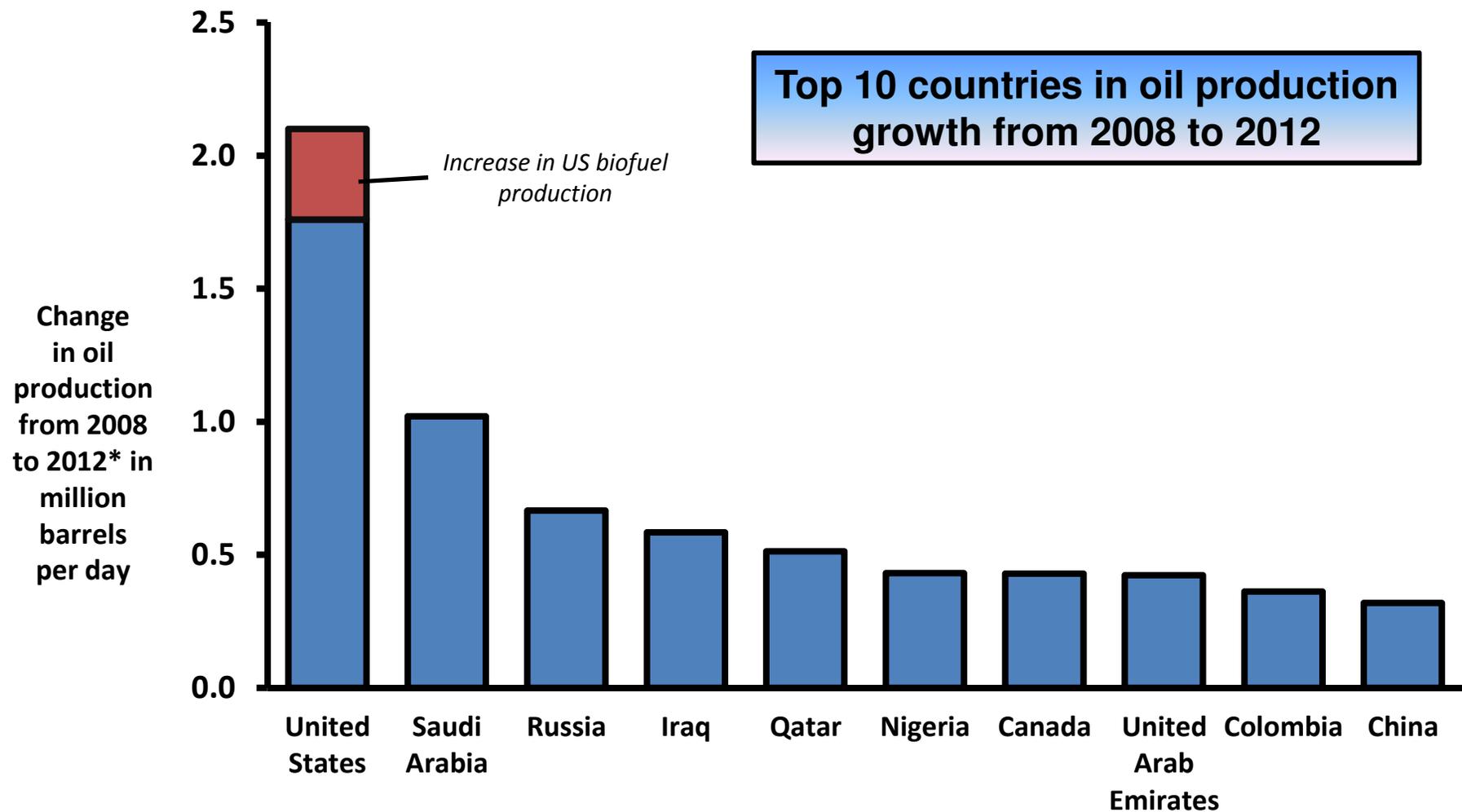


Oil- and Gas-directed Rig Counts: Shifting Towards Oil



Source: Baker Hughes, IHS CERA.

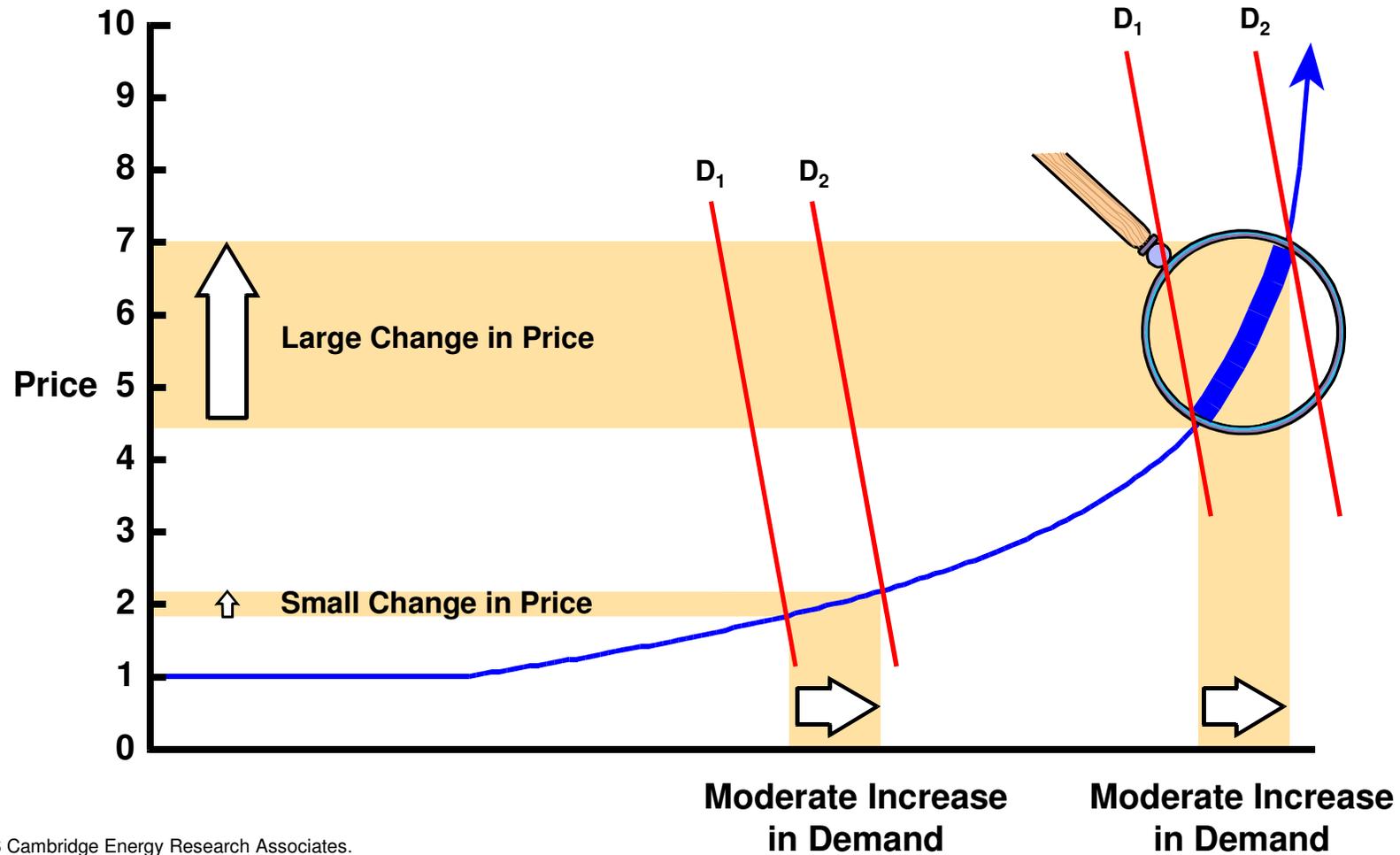
The US is the largest source of oil production growth since 2008



Note: Except as noted for biofuels in the United States, the growth figures include crude oil, condensate and natural gas liquids.

Sources: IHS CERA, US Energy Information Administration, International Energy Agency. *First half 2012 production compared to full year 2008 production.

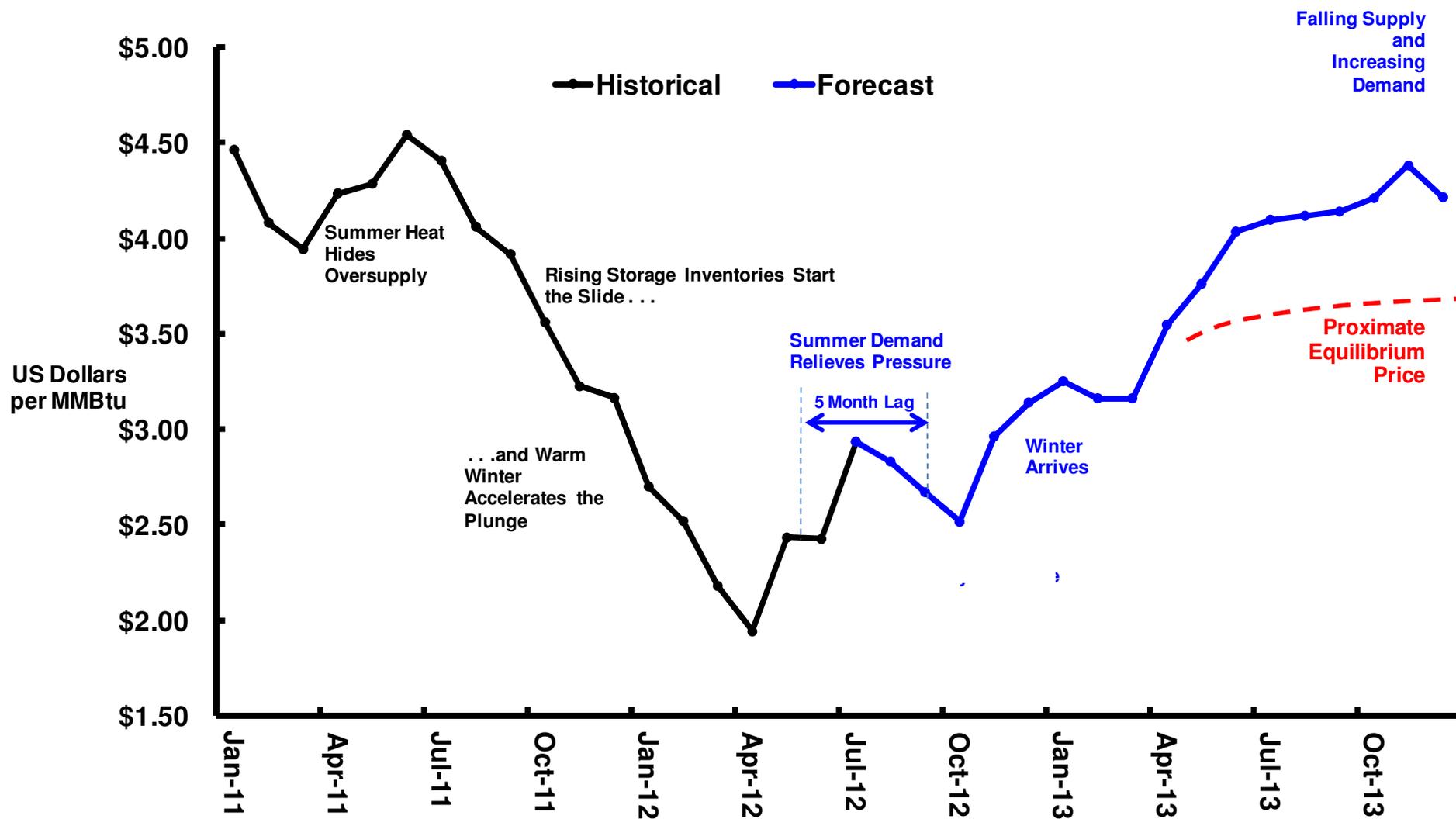
Tight Supplies (Capacity Utilization) Magnify Changes in Demand



Source: IHS Cambridge Energy Research Associates.
30302-2



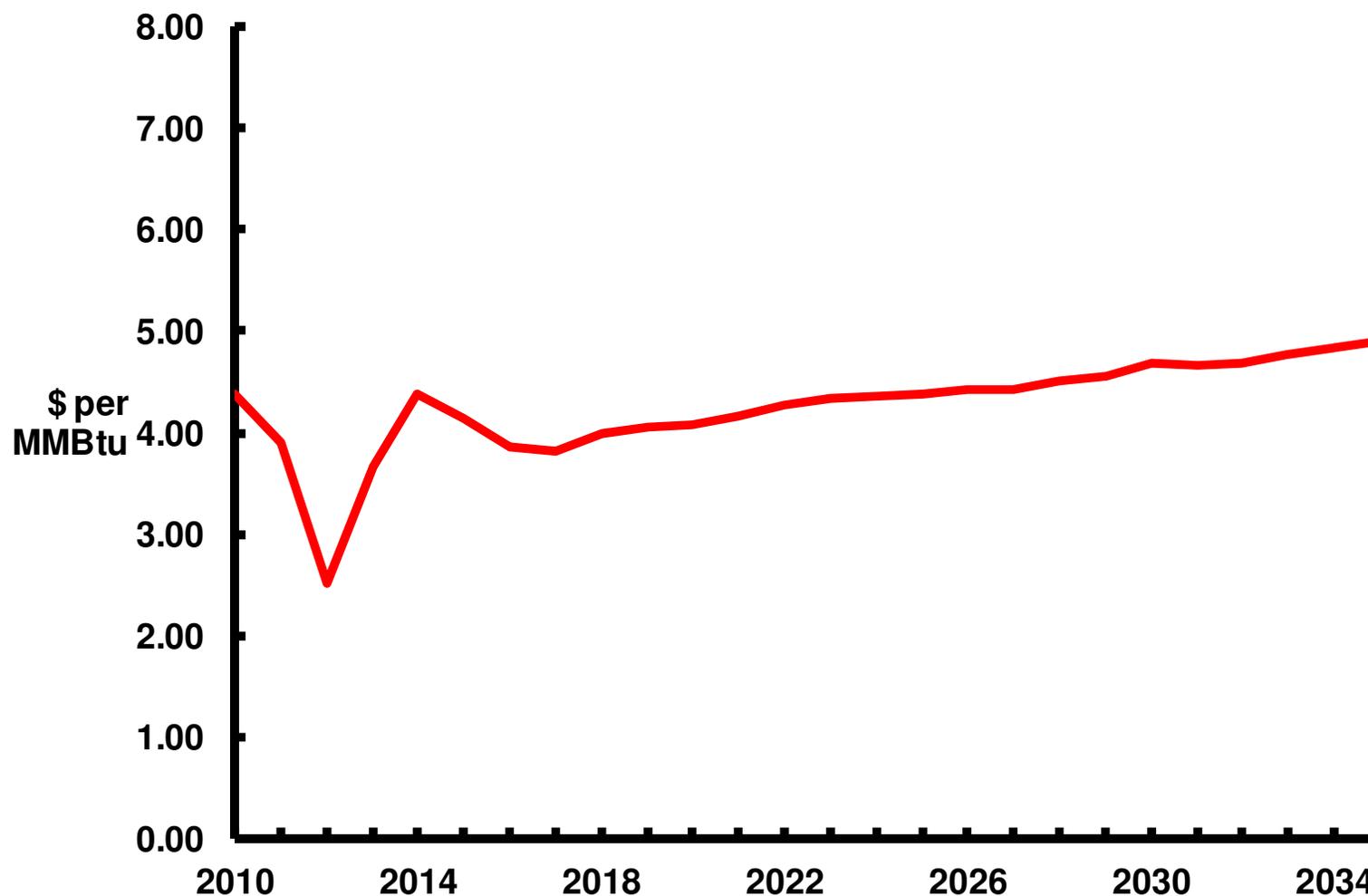
Henry Hub Natural Gas Price Outlook



Source: IHS CERA.



Long Term Price Outlook, 2010 Dollars



Source: IHS CERA.



North America Natural Gas Market Implications

- The North American natural gas market is moving through a correction.
- Gas-directed drilling activity has fallen sharply, but production has not. Time lags and associated gas obscure this linkage.
- Gas behind pipe in the Marcellus and Eagle Ford will add new supply in the fall.
- Prices will begin to rise this winter and will continue to rise until prices reach the \$3.50 to \$4.00 per MMBtu range where dry gas drilling becomes economically viable.
- In a \$4.00 per MMBtu price world, coal displacement will continue.

For more information about this presentation or
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