Effects of low oil prices

February 12, 2015 | Washington, DC

By
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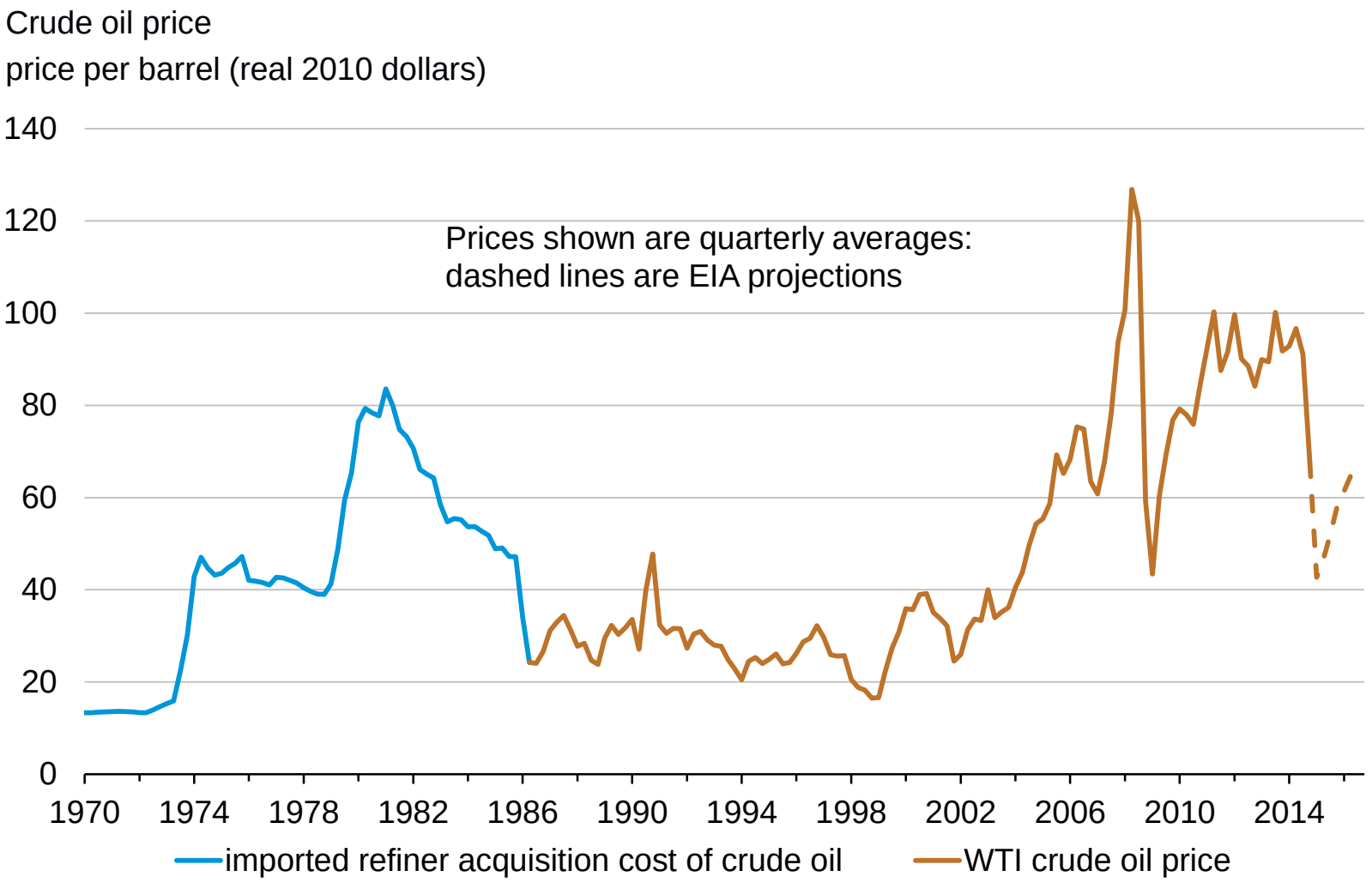
U.S. Energy Information Administration

Historical and projected oil prices



Sources: U.S. Energy Information Administration, Thomson Reuters

Key takeaways

Oil prices: EIA's forecast for Brent averages $58/b in 2015 and $75/b in 2016. The market-implied 95% confidence band for Brent (estimated from WTI futures and options prices) is extremely wide – with a range from $35/b to $100/b across 2015-2016.

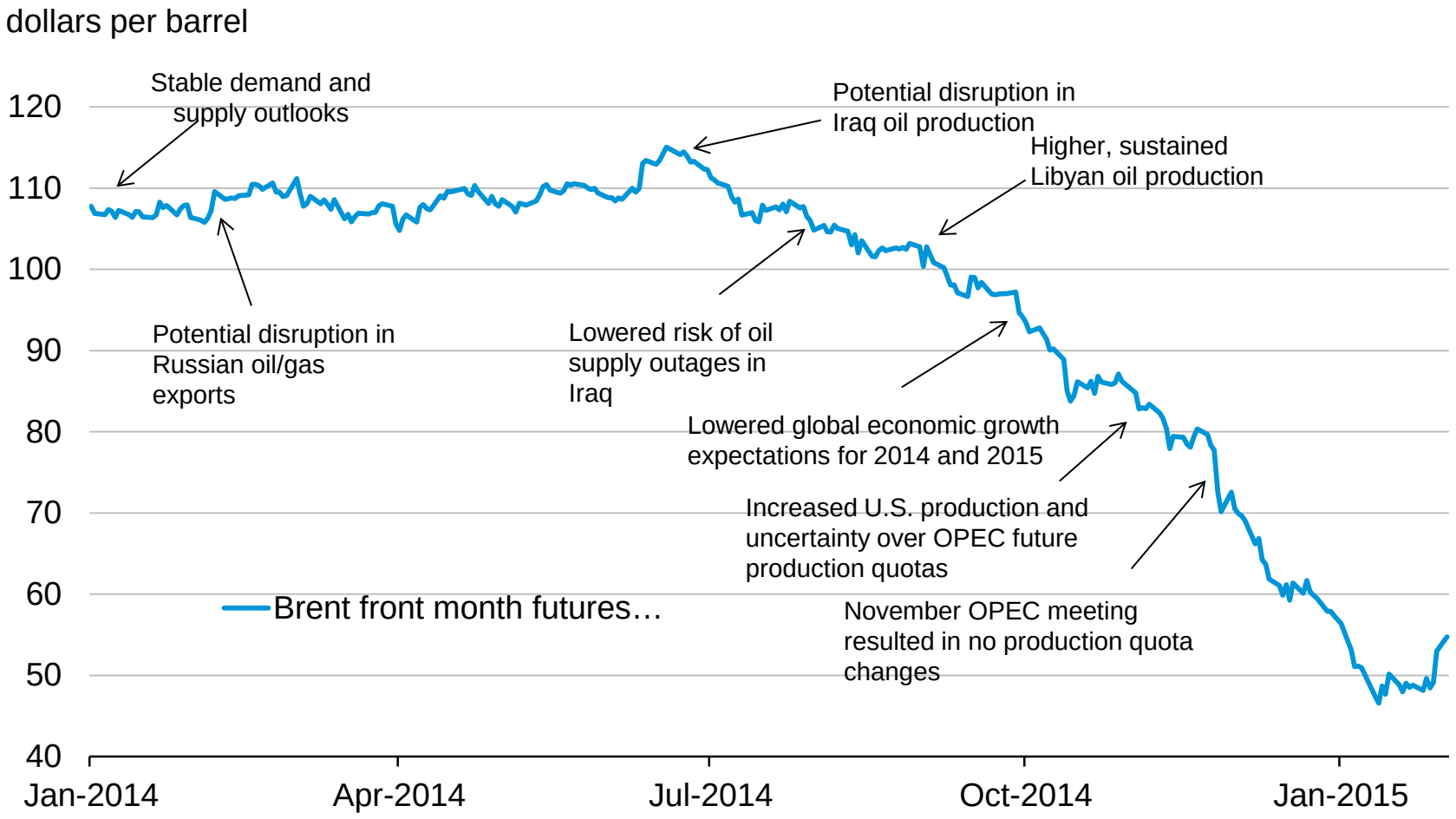
Demand: Non-OECD Asia accounts for more than 50% of forecast liquids consumption growth of roughly 1 million b/d both 2015 and 2016; lower demand growth is a major a downside risk to the price forecast

U.S. oil production: Lower-48 oil production in 4Q2015 and 1Q2016 is only slightly above its 4Q2014 level; however, offshore production continues to grow steadily

The economy and consumers: EIA's energy forecast reflects a U.S. economic growth outlook for 2015-16 that is somewhat stronger than 2013-14 experience.

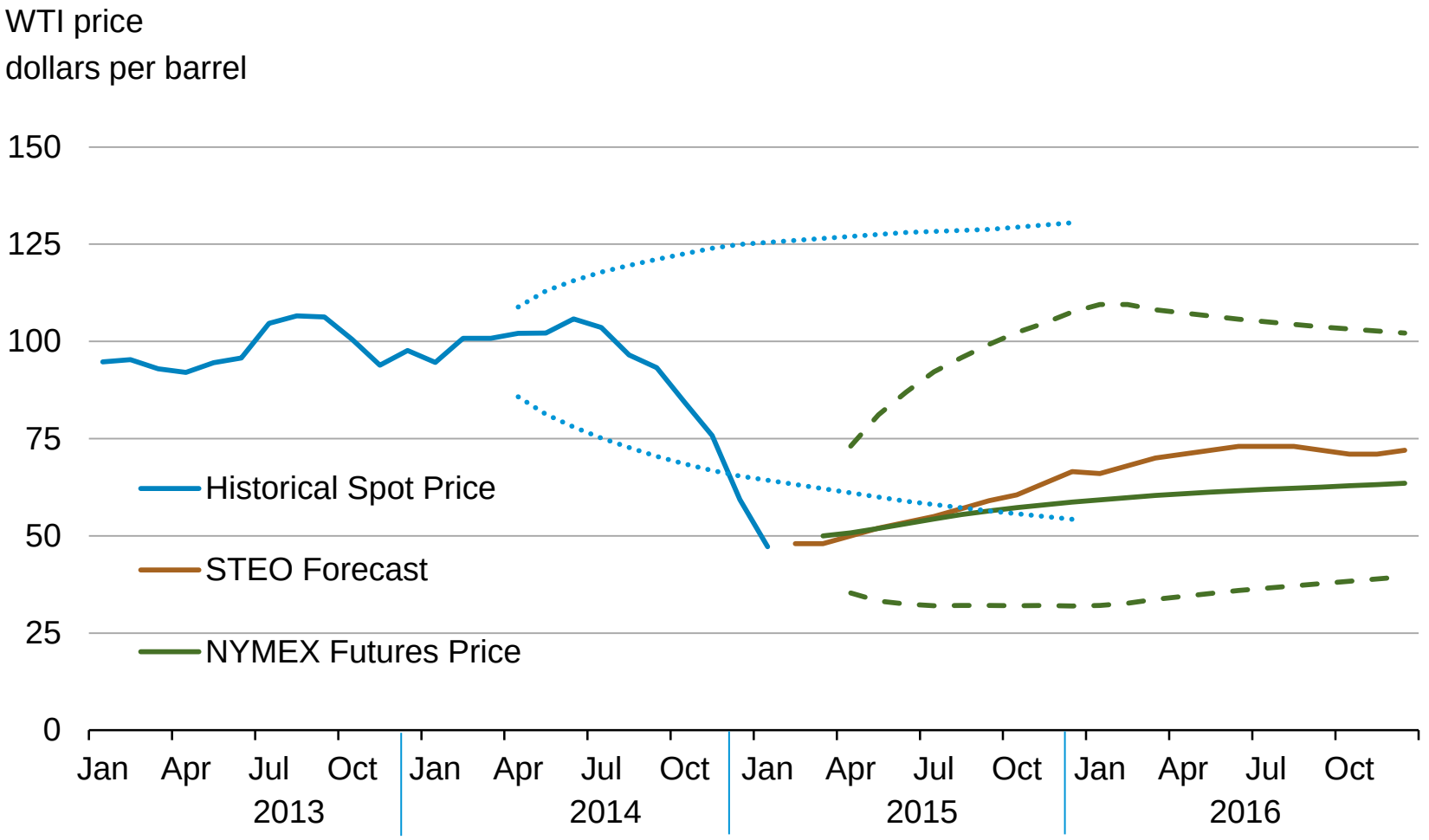
- Relatively low oil prices and increased energy efficiency Energy expenditures as a share of GDP are forecast at 6.2% in 2015, their lowest level since 2002, reflecting both lower oil prices and energy efficiency.
- Average U.S. household (20,800 miles of vehicle travel) projected gasoline spending is $750 less in 2015 than in 2014, and about $450 less in 2016 than in 2014.

Brent crude oil prices were relatively stable through the first half of 2014; increased oil supply and lower global economic growth expectations lowered prices from July 2014 to January 2015



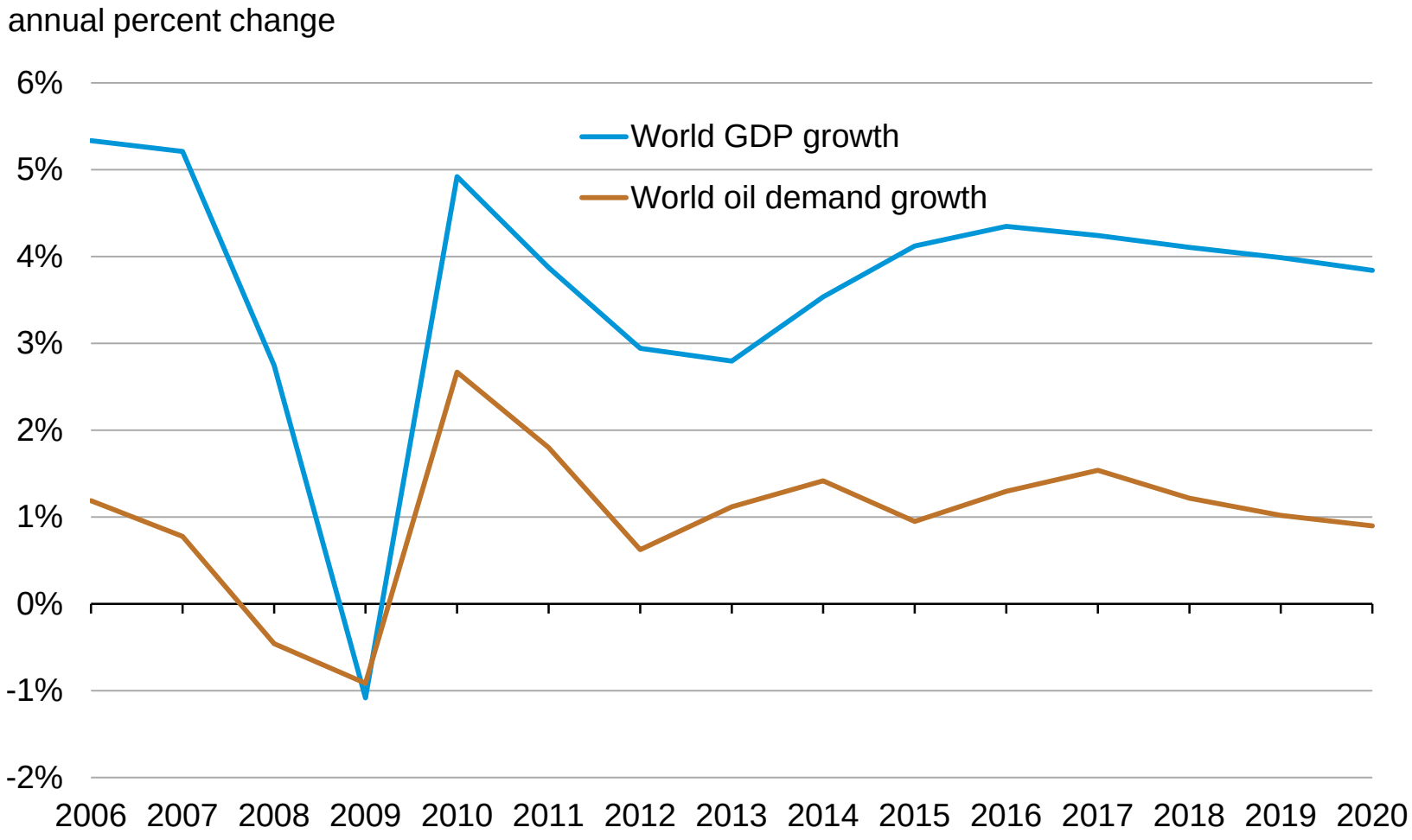
Source: EIA, Bloomberg

Oil prices rise from mid-2015 through mid-2016 in EIA's forecast – however, the market-implied confidence band is very wide



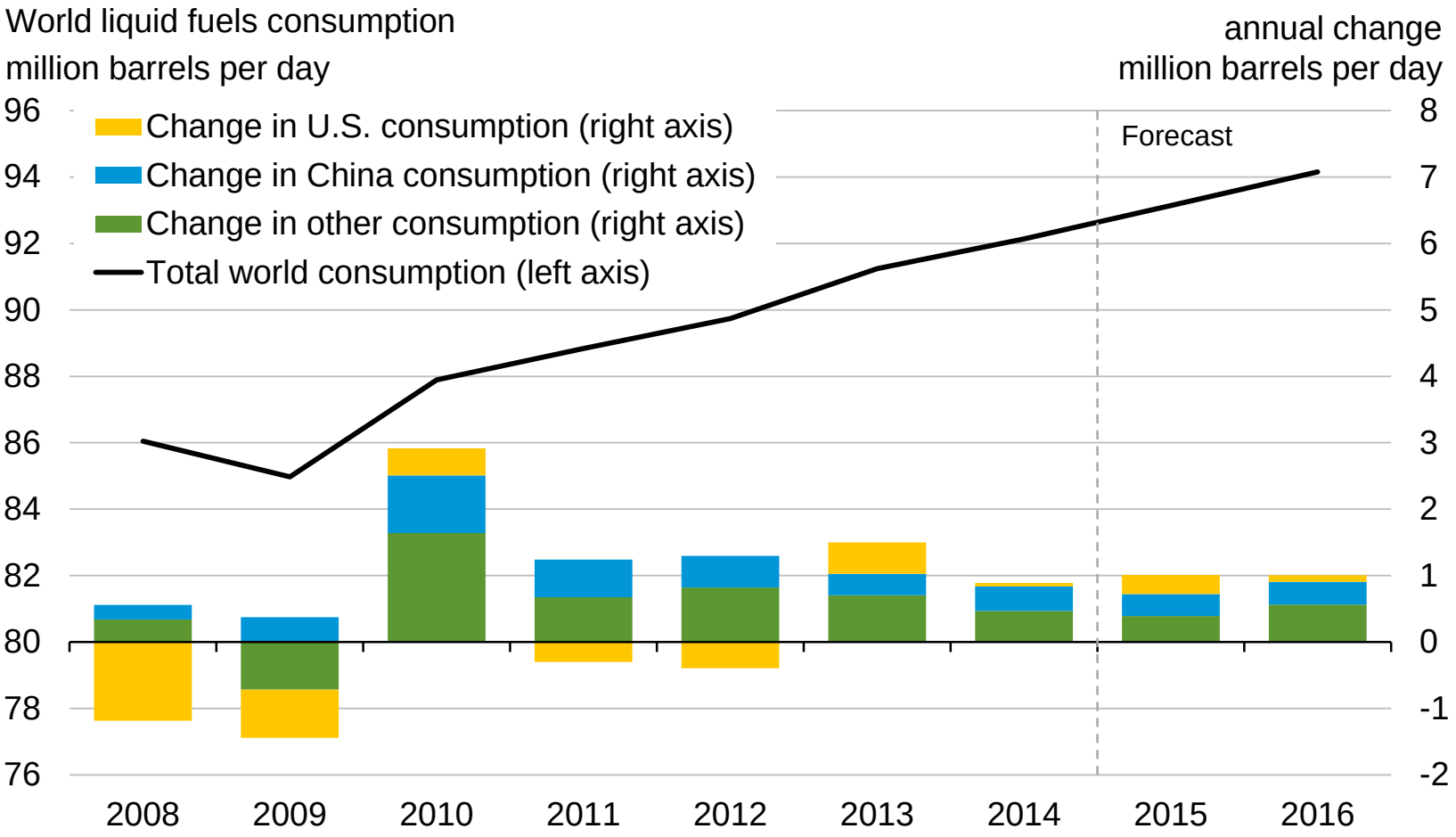
Source: EIA, Short-Term Energy Outlook, February 2015

Global oil demand tracks world GDP growth



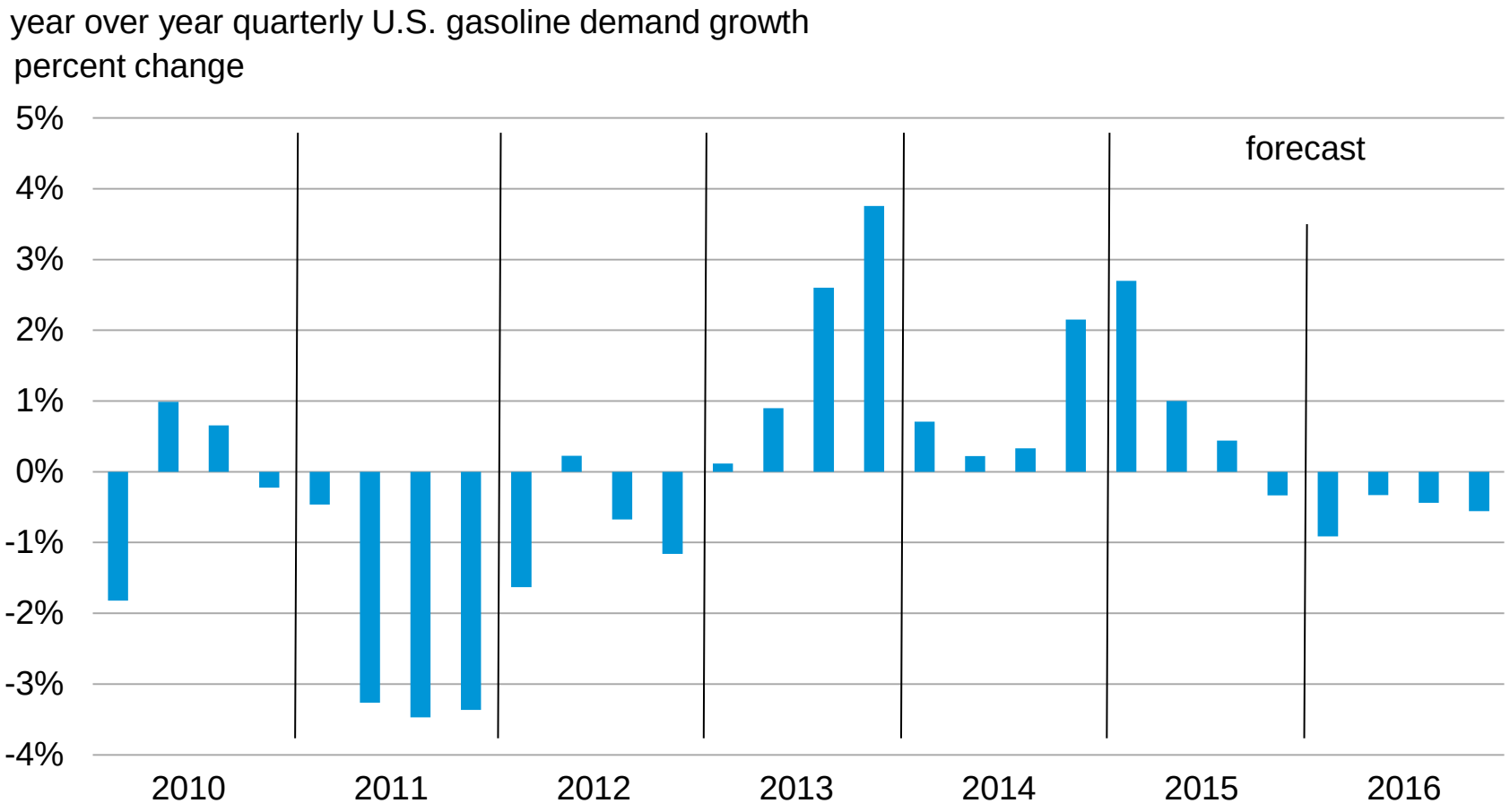
Source: U.S. Energy Information Administration, International Energy Outlook 2014

Global liquids consumption growth is forecast at 1.0 million bbl/d in both 2015 and 2016



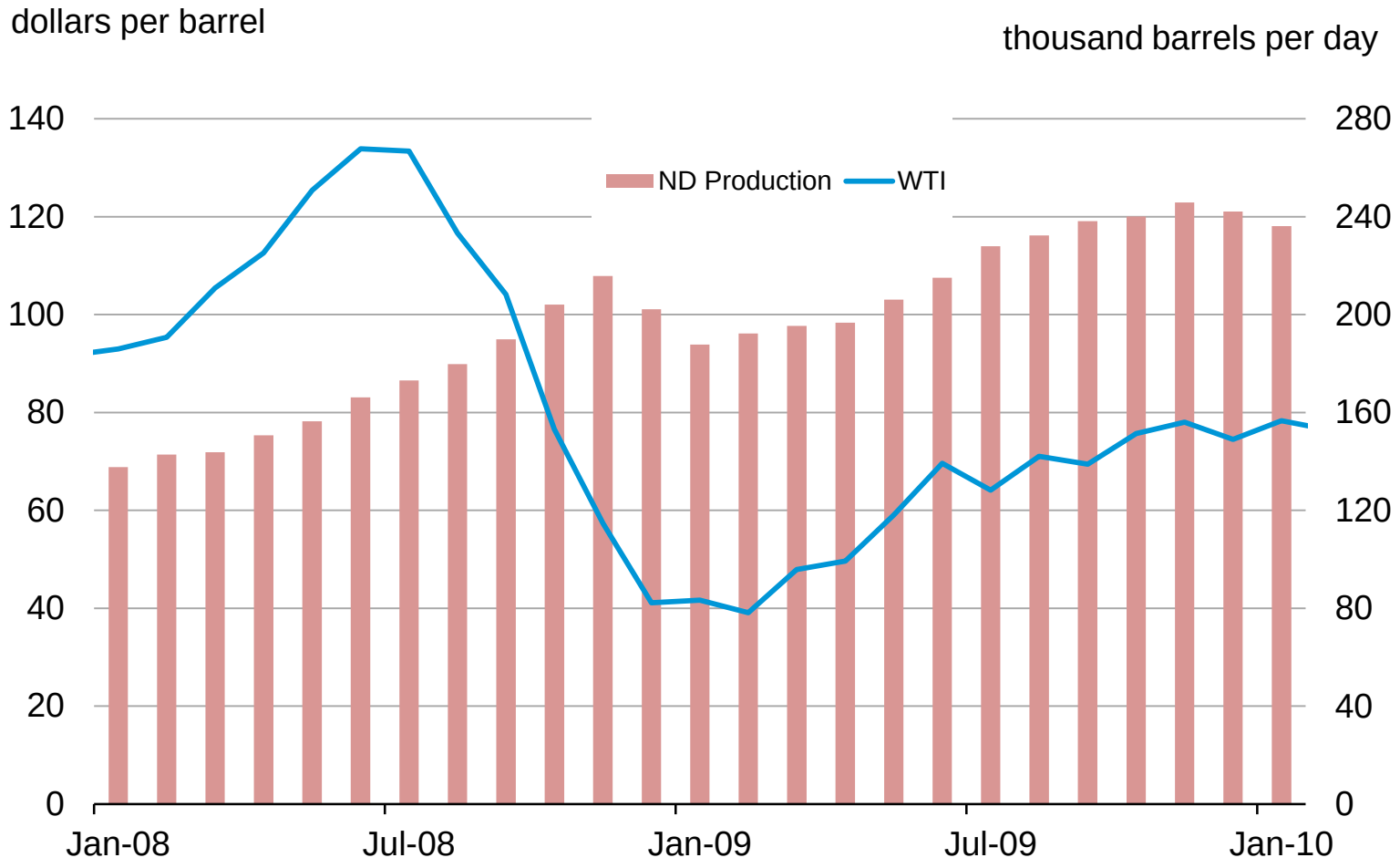
Source: EIA, Short-Term Energy Outlook, February 2015

U.S. gasoline demand to increase by about 1% in 2015



Source: U.S. Energy Information Administration, February Short-Term Energy Outlook

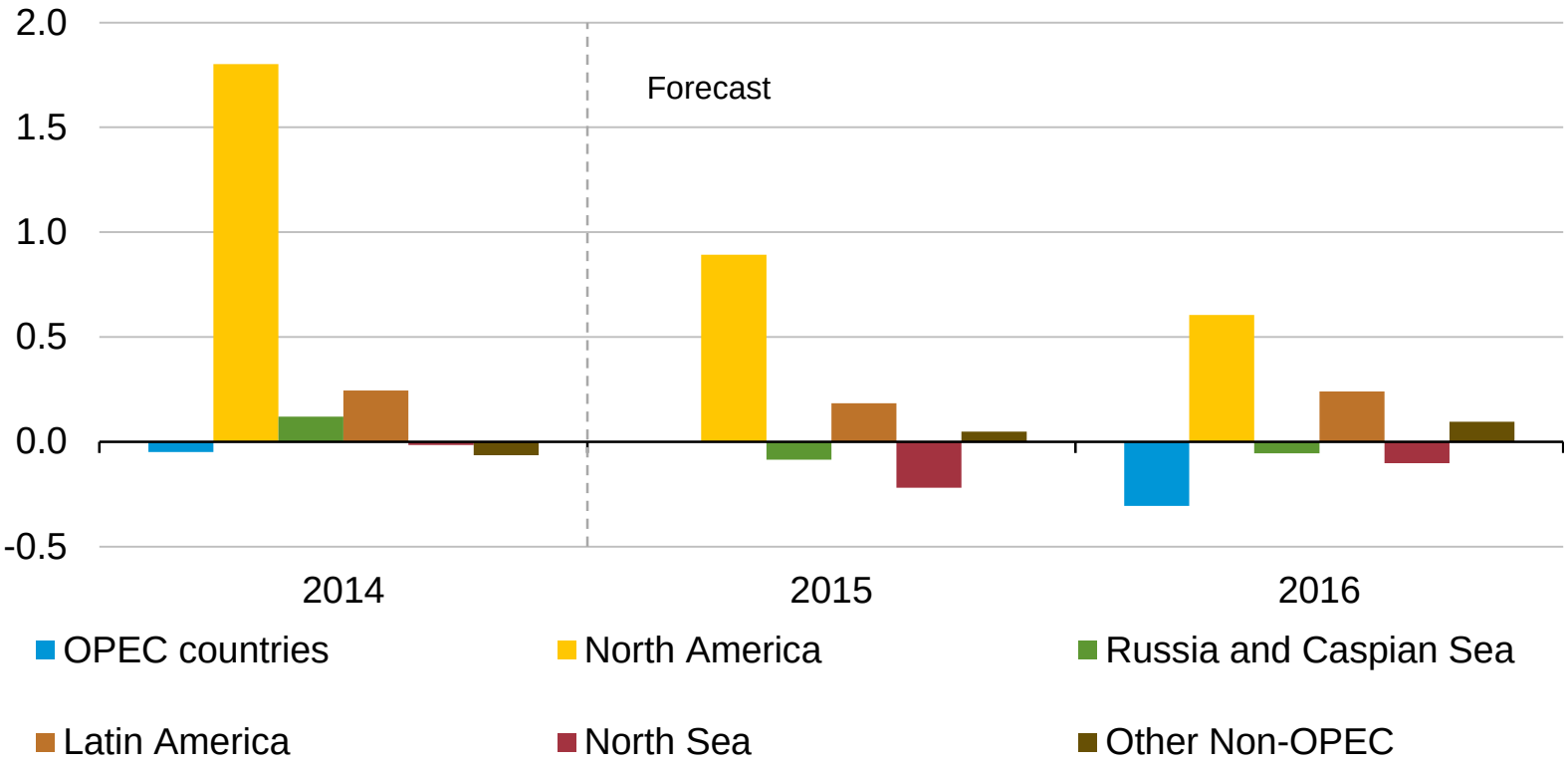
Experience during the 2008-09 suggests only a modest shale oil production response to a short-term decline in oil prices



Sources: Department of Mineral Resources, State of North Dakota, Bloomberg

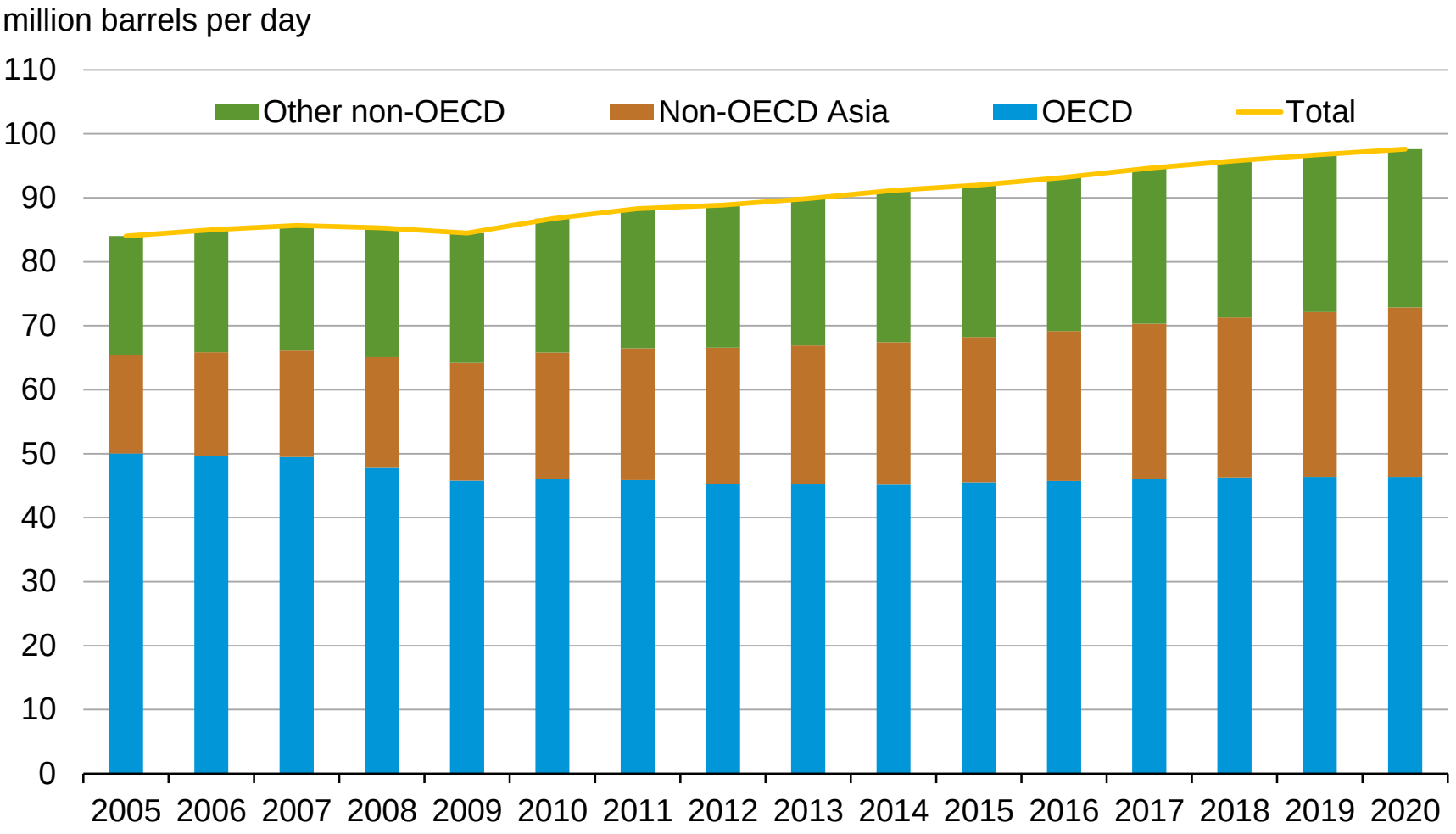
North American oil production growth slows with lower oil prices but remains the main driver of global production growth

World crude oil and liquid fuels production growth
million barrels per day



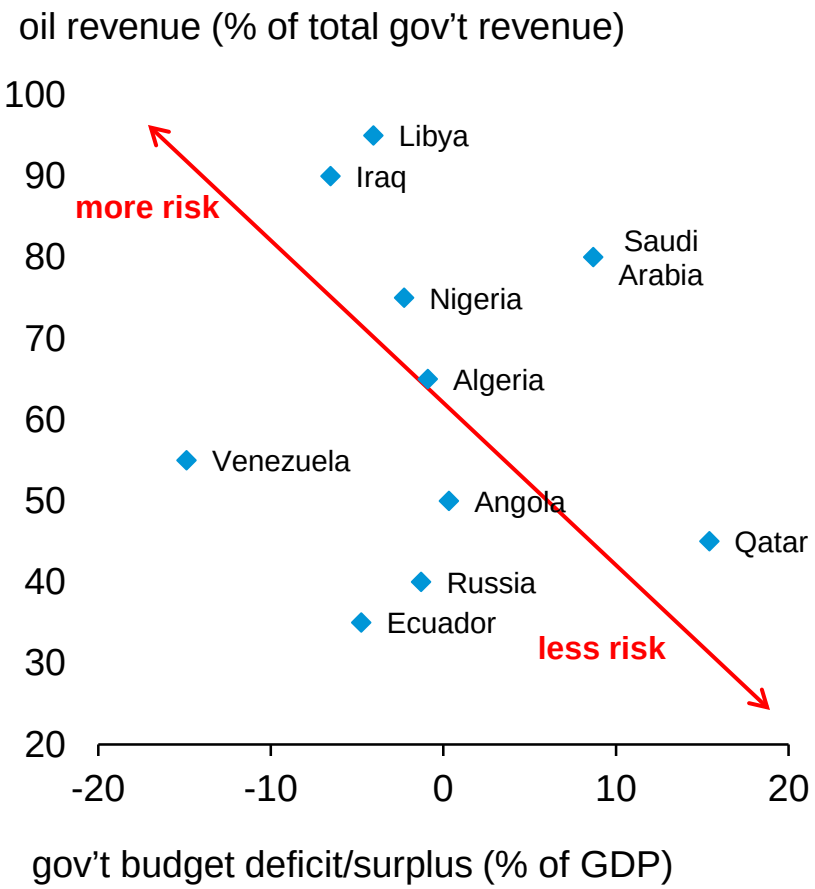
Source: EIA, Short-Term Energy Outlook, February 2015

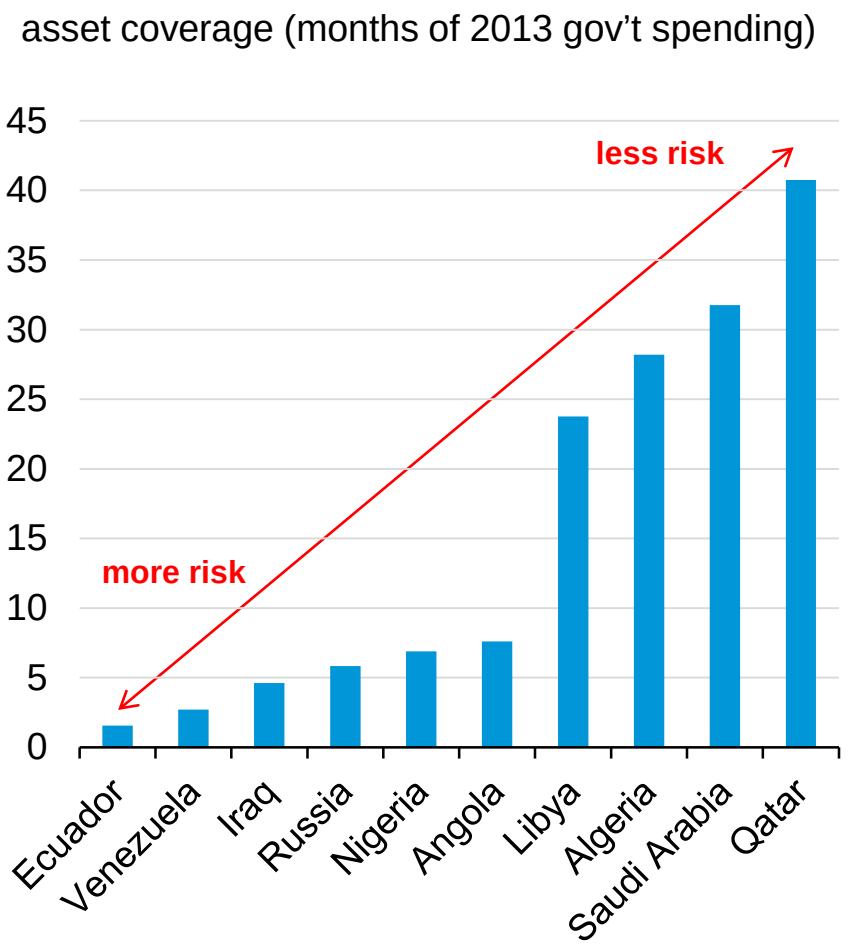
Global oil demand



Source: U.S. Energy Information Administration, International Energy Outlook 2014

Gov't deficits, high reliance on oil revenue, and asset coverage of gov't spending are indicators of geopolitical stress exposure





Source: EIA, International Monetary Fund (IMF), individual country investment authorities

Various events could lead to changes in global supply or demand that could push future crude oil prices higher or lower than the STEO forecast

	Event
Increase Prices	Social unrest in Venezuela leads to supply disruptions
	ISIL disrupts Iraqi exports
	Iranian sanctions are tightened
	Social unrest in oil-dependent countries leads to supply disruptions
	OPEC cuts output more than projected
Decrease Prices	World economic growth is lower than projected (e.g., China)
	Saudi Arabia keeps production at 9.6-9.7 million bbl/d in 2016
	Reduction in unplanned production outages
	Iranian sanctions are lifted

Lower oil prices are expected to provide an immediate boost to the economy

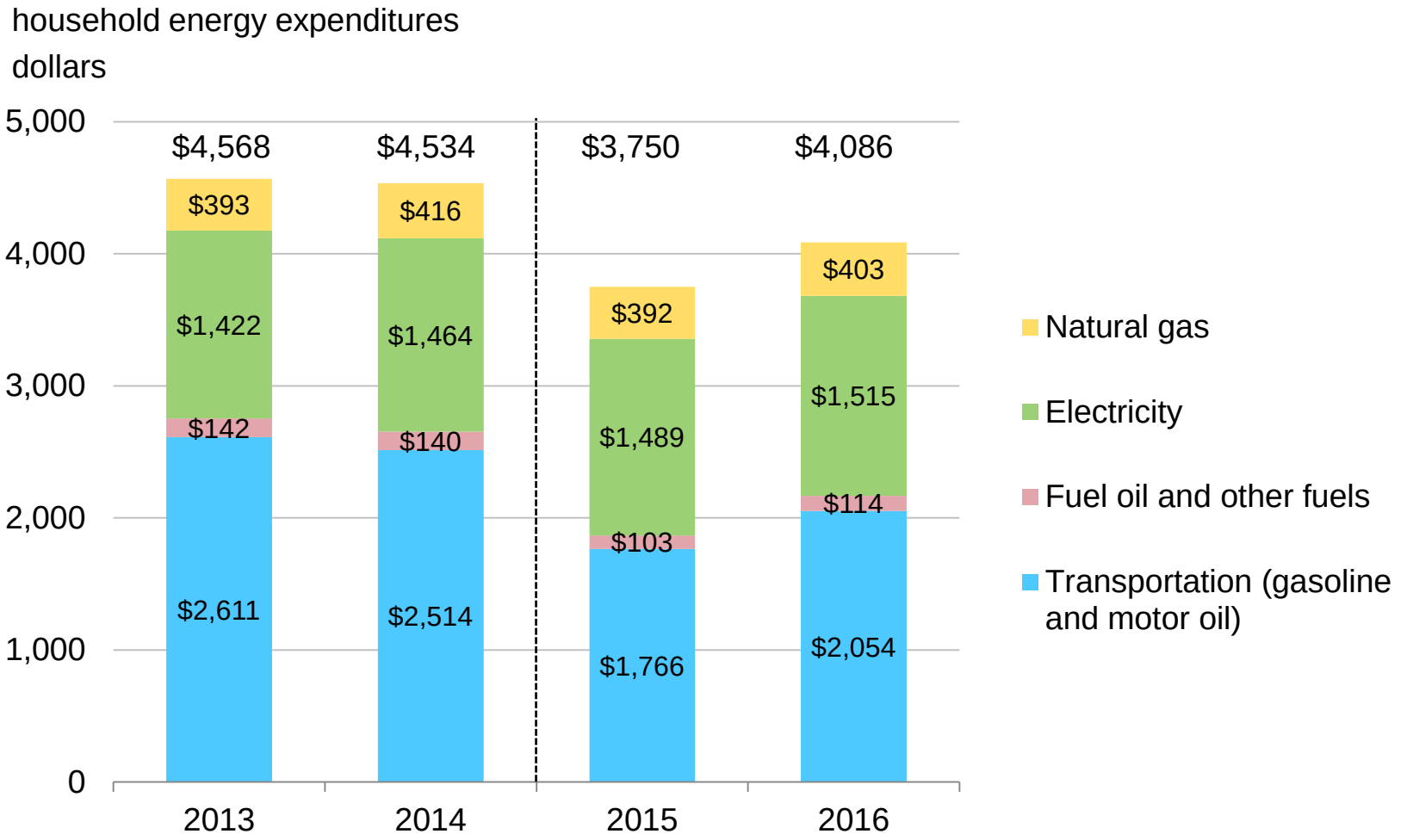
- Starting from a base price of roughly $100 per barrel, a $10 drop in oil prices sustained for four quarters is estimated to raise real GDP by about 0.22% above baseline; if the drop in oil prices is sustained for a second year, the level of real GDP in that year averages 0.34% above baseline

- Estimated GDP impacts presented above are roughly scalable for drops of $20 or $30 per barrel; in the latter case the average level of GDP in the second year would be roughly 1% above baseline.

- If oil prices drop and then return to previous levels, GDP begins to return as well; the speed in which GDP adjusts depends on the oil price trajectory

- Estimated percentage impacts of an oil price drop on consumer prices and unemployment are generally smaller than impacts on GDP, and also tend to decrease in the second year as increased demand puts pressure on prices of other goods

Average household energy expenditures fall by 17% in 2015, then rebound somewhat in 2016 (based on EIA price forecast)



Sources: 2013 expenditures and income from BLS Consumer Expenditure Survey. The average household in the BLS survey (called a consuming unit) averages 2.5 people and 1.3 income earners. Expenditures for 2014-16 based on average prices from EIA Short-Term Energy Outlook, February 2015

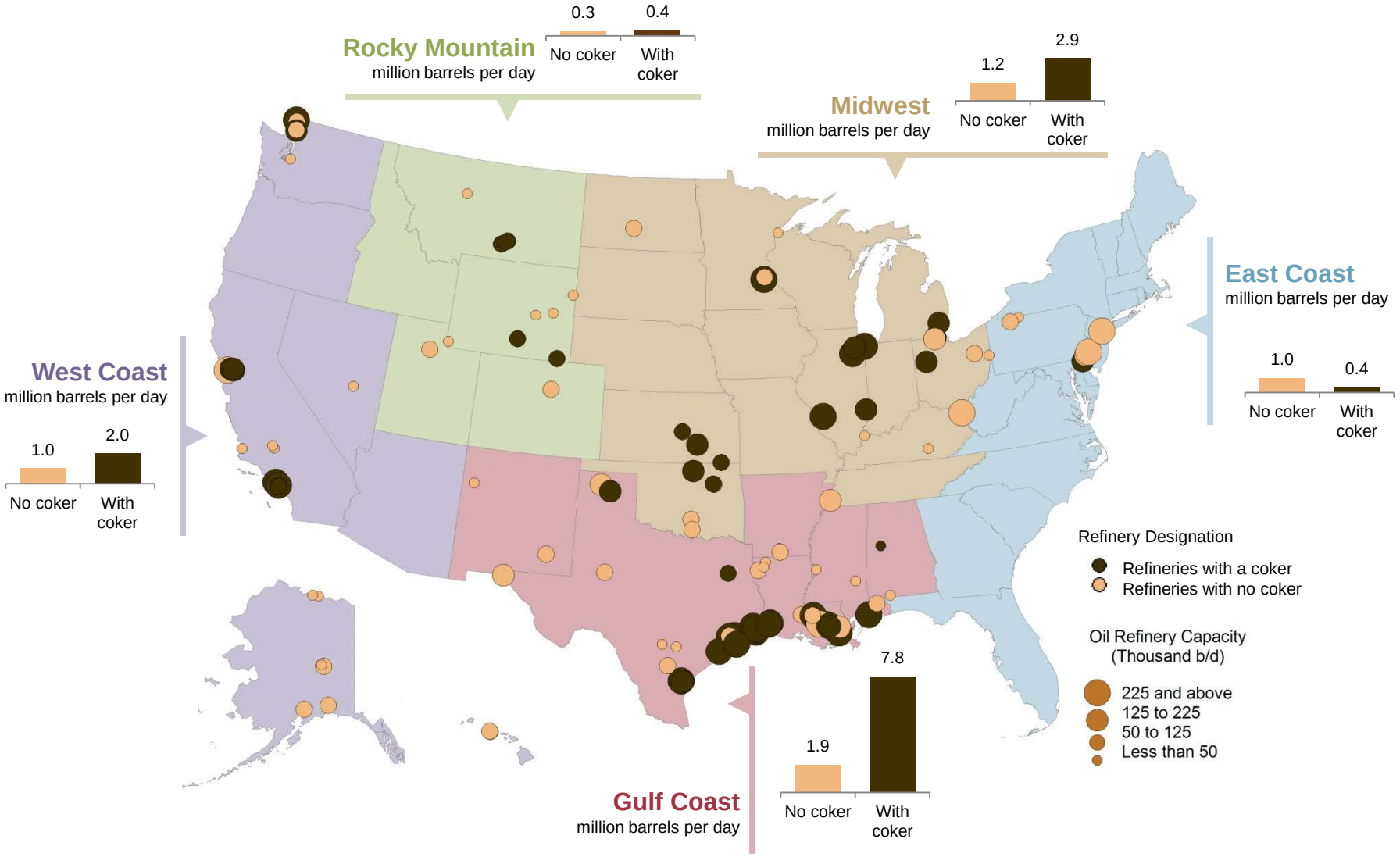
Long-term scenarios

Our preliminary analysis contrasts a sustained lower price case (LPC), real prices in the neighborhood of $70 per barrel through 2040, with a higher price case (HPC) where real prices rise steadily towards $150 per barrel in 2040.

- While temporarily lower oil prices are expected to have only a small impact on the level of domestic oil production through 2020, projected long-term U.S. crude oil production in the LPC is well below the HPC outlook
- Projected U.S. net dependence on imported oil in 2040 widens from about 15% in the HPC to 35-40% in the LPC
- Projected natural gas supply growth is much lower in the LPC than in the HPC, reflecting both lower coproduction supply and lower demand for LNG exports
- Sustained lower world oil prices significantly affects the economics of U.S. LNG exports; in the LPC there are no new liquefaction plant starts beyond those already under construction
- Energy-related carbon dioxide emissions in 2040 are roughly 200 MMT above their projected HPC level in the LPC

Supplemental Slides

U.S. regional refinery capacity and complexity



Note: As of January 1, 2014, there were 133 operating refineries with atmospheric crude oil distillation units (ACDU) totaling capacity of 18.9 million barrels per stream day. Heavy capacity denotes refineries with coking capacity; light capacity denotes refineries without coking capacity.
Source: U.S. Energy Information Administration

Projected U.S. Refinery Projects Through 2019

Crude Capacity Changes
Unit Capacities in Thousands of Barrels per Day

PADD 2

State	Company	Location	Expected Completion	Heavy	Medium	Light Sour	Light Sweet	Total
OH	Marathon	Canton	2014				25	25
ND	Calumet / MDU Resources	Dickinson	2014				20	20
KY	Marathon	Catlettsburg	2015				35	35
IL	Marathon	Robinson	2016				30	30
OH	Husky	Lima	2017	40			(40)	0
KS	NCRA	McPherson	2018	30			(15)	15
				70	**0**	**0**	**55**	**125**

PADD 3

State	Company	Location	Expected Completion	Heavy	Medium	Light Sour	Light Sweet	Total
TX	Calumet	San Antonio	2014				3	3
TX	Flint Hills	Corpus Christi	2014			(30)	30	0
LA	Marathon	Garyville	2014	10	5	5		20
TX	Delek	Tyler	2015				12	12
TX	Valero Energy	Corpus Christi	2015				70	70
TX	Valero Energy	Houston	2015				90	90
TX	Valero Energy	McKee	2015				25	25
TX	Marathon	Galveston Bay	2015		(25)		25	0
				10	**(20)**	**(25)**	**255**	**220**

Source: Turner, Mason & Company

Projected U.S. Refinery Projects Through 2019

Crude Capacity Changes
Unit Capacities in Thousands of Barrels per Day

PADD 1

State	Company	Location	Expected Completion	Heavy	Medium	Light Sour	Light Sweet	Total
NJ	Axeon Specialty	Paulsboro	2014	(35)			35	0
				(35)	**0**	**0**	**35**	**0**

PADD 4

State	Company	Location	Expected Completion	Heavy	Medium	Light Sour	Light Sweet	Total
UT	Tesoro	Salt Lake City	2015				4	4
UT	HollyFrontier	Woods Cross	2015				14	14
MT	Calumet	Great Falls	2015	10				10
UT	HollyFrontier	Woods Cross	2017				15	15
MT	CHS	Laurel	2019				25	25
				10	**0**	**0**	**58**	**68**

PADD 5

State	Company	Location	Expected Completion	Heavy	Medium	Light Sour	Light Sweet	Total
CA	Chevron	Richmond	2017	20	(20)			0
AK	AIDEA	Mustang	2018		3			3
				20	**(17)**	**0**	**0**	**3**

Source: Turner, Mason & Company

New condensate splitter projects in the United States

Project	Capacity (Mbbl/sd)	State	Est. Cost[2] ($MM)	Completion	Status
Kinder Morgan - Galena Park	50	Texas	180	2015	under construction
Kinder Morgan - Galena Park	50	Texas	180	2016	under construction
Marathon - Canton	25	Ohio	180	2015	under construction
Kinder Morgan - Galena Park	50	Texas	200e	2017	proposed
Buckeye/Trafigura – Corpus Christi	50	Texas	200	2016	proposed
Magellan – Corpus Christi	50	Texas	250e	2017	proposed
Magellan – Corpus Christi	50	Texas	200e	2018	proposed
Phillips 66 – Sweeny	75	Texas	242	2018	proposed
Targa - Houston Ship Channel	35	Texas	115	2018	proposed
Marathon - Catlettsburg	35	Kentucky	150	2016	front-end engineering design
CCI – Corpus Christi	100	Texas	500	2016	front-end engineering design

Note: Mbbl/sd = thousand barrels per stream day; MM = millions; e = Estimated costs, when stated costs not available from news reports or company filings.

Source: U.S. Energy Information Administration, compiled from industry sources as of January 2015.

Tri-lateral cooperation: Canada, Mexico, & United States memorandum of understanding signed 12/15/2014

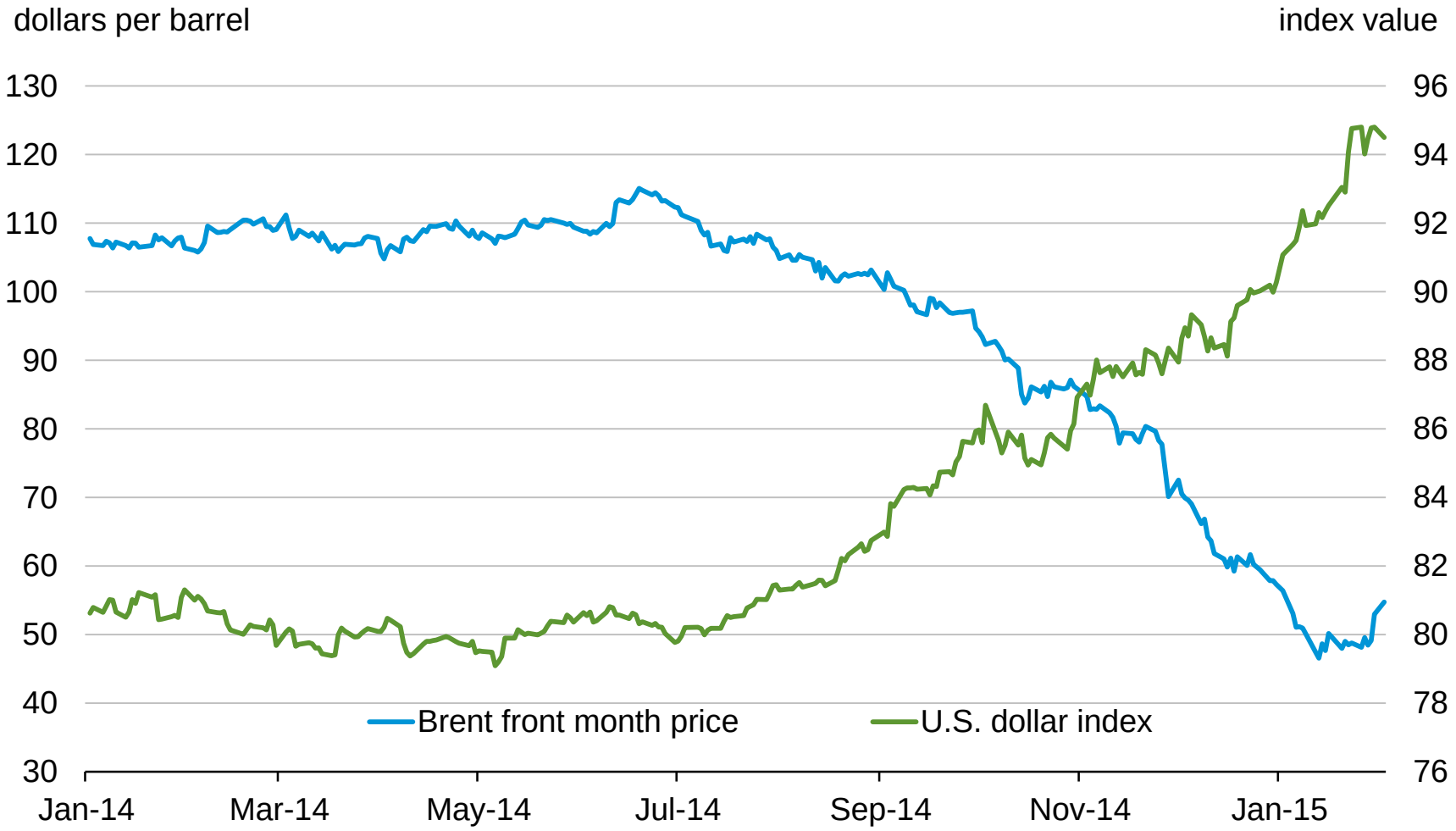
1) Reconciliation of import and export information on energy flows. The working group would develop a cross reference for terminology and a table of conversion factors across the three countries. EIA would propose subcategories of+ crude oil, refined products, natural gas and electricity.

2) GIS mapping. The working group would establish a standard format, sourcing protocols and a mechanism for file/data sharing. Each party would provide its public map layers to each partner, while asking them to provide theirs. It would then be up to each party to decide if and how they want to display the information they receive from the other parties.

3) Outlooks for crossborder flows of fuels. EIA would propose that we begin by sharing information among the three partners regarding recent historical data and outlooks for cross border flows of oil, natural gas, and electricity. The information exchange would also provide some brief information on broader energy measures -- production and consumption of the energy commodities – as well as information on some of the key outlook drivers – economic and population growth.

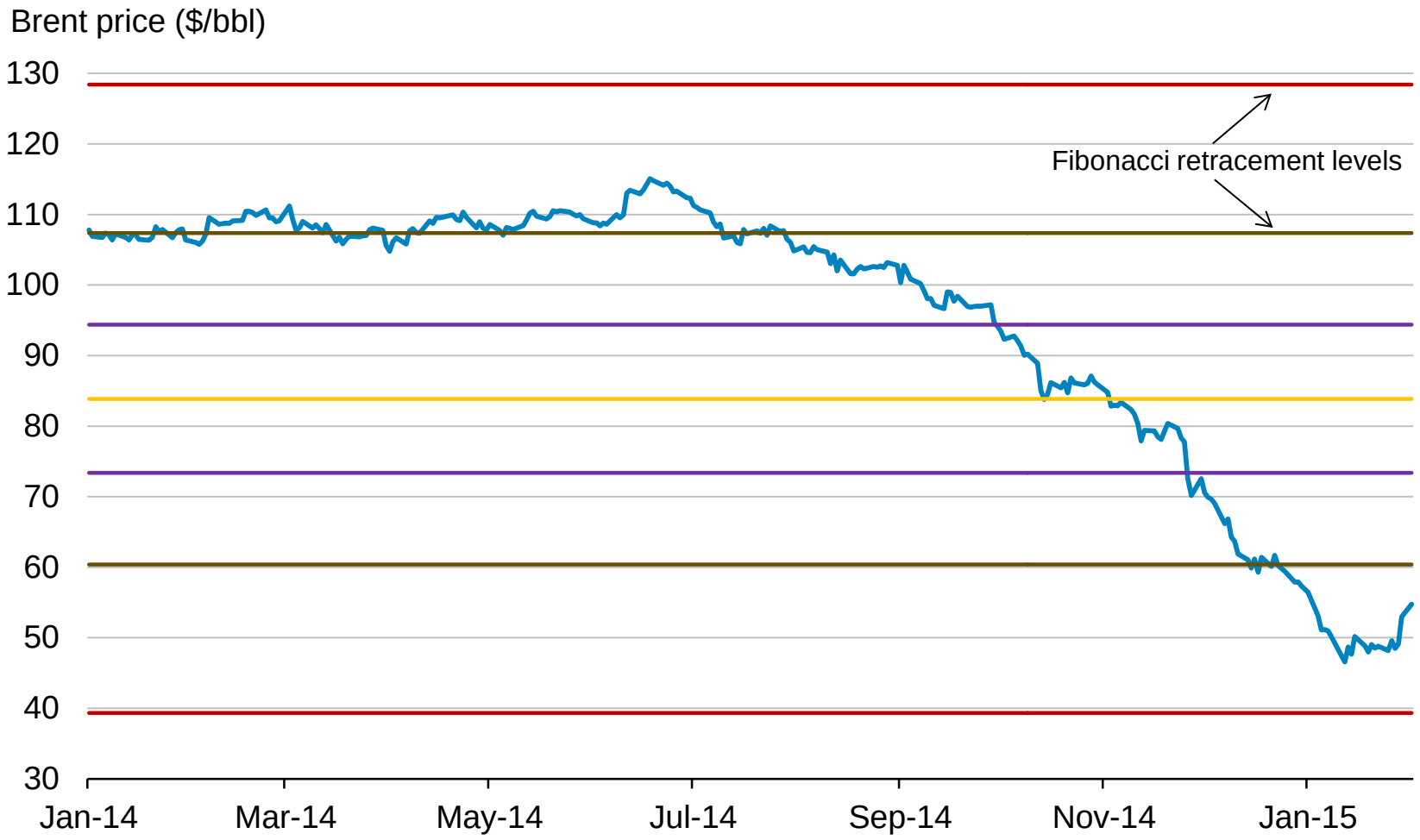
North American border crossing points for electricity and oil and natural gas pipelines

Oil and currency markets reflect expectations for lower global economic growth



Source: EIA, Bloomberg

The recent drop in Brent prices broke through technical support levels

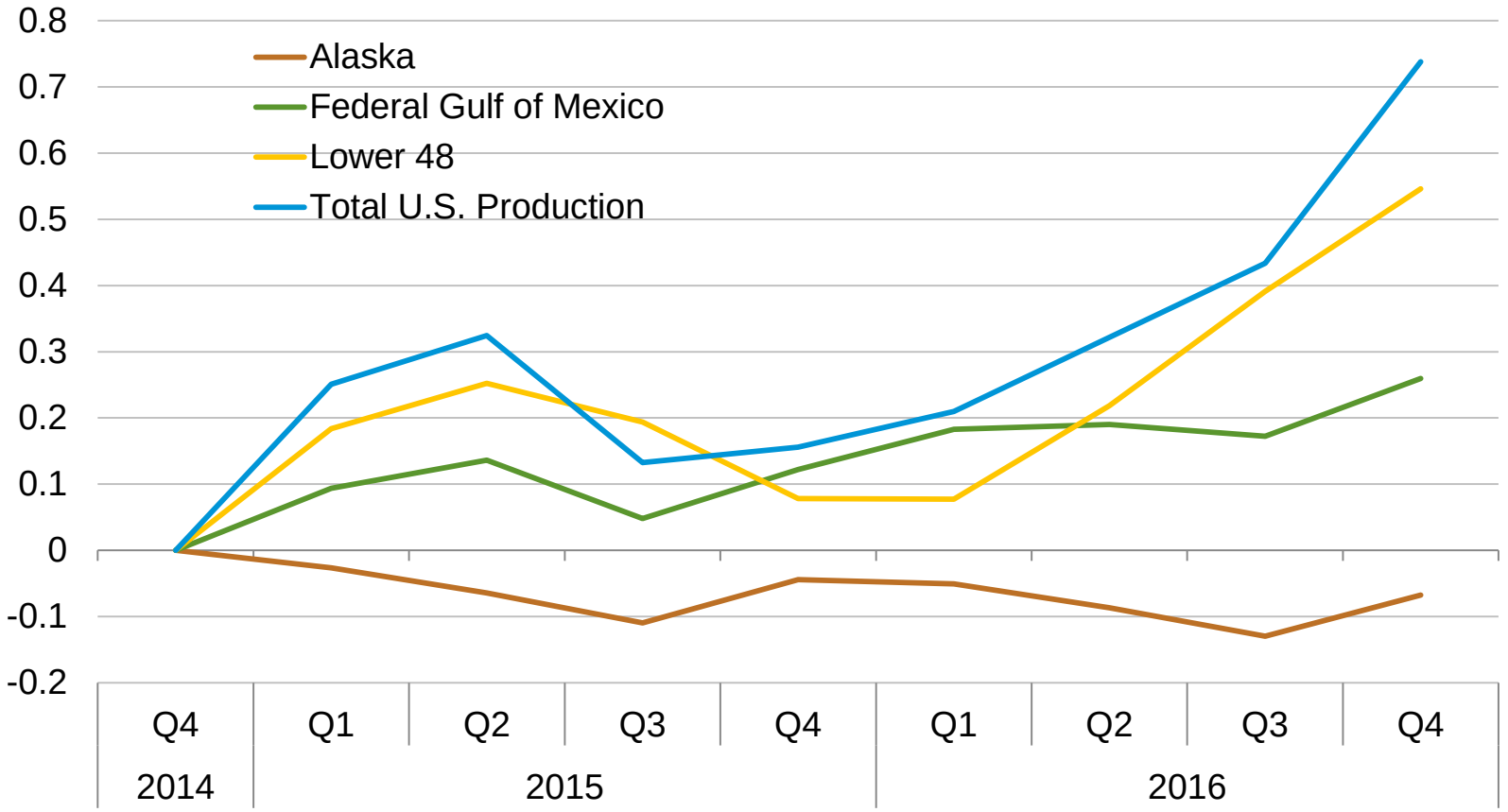


Source: EIA, Bloomberg (updated 2/3/15)

Note: Fibonacci levels are based on the period January 2009 - present

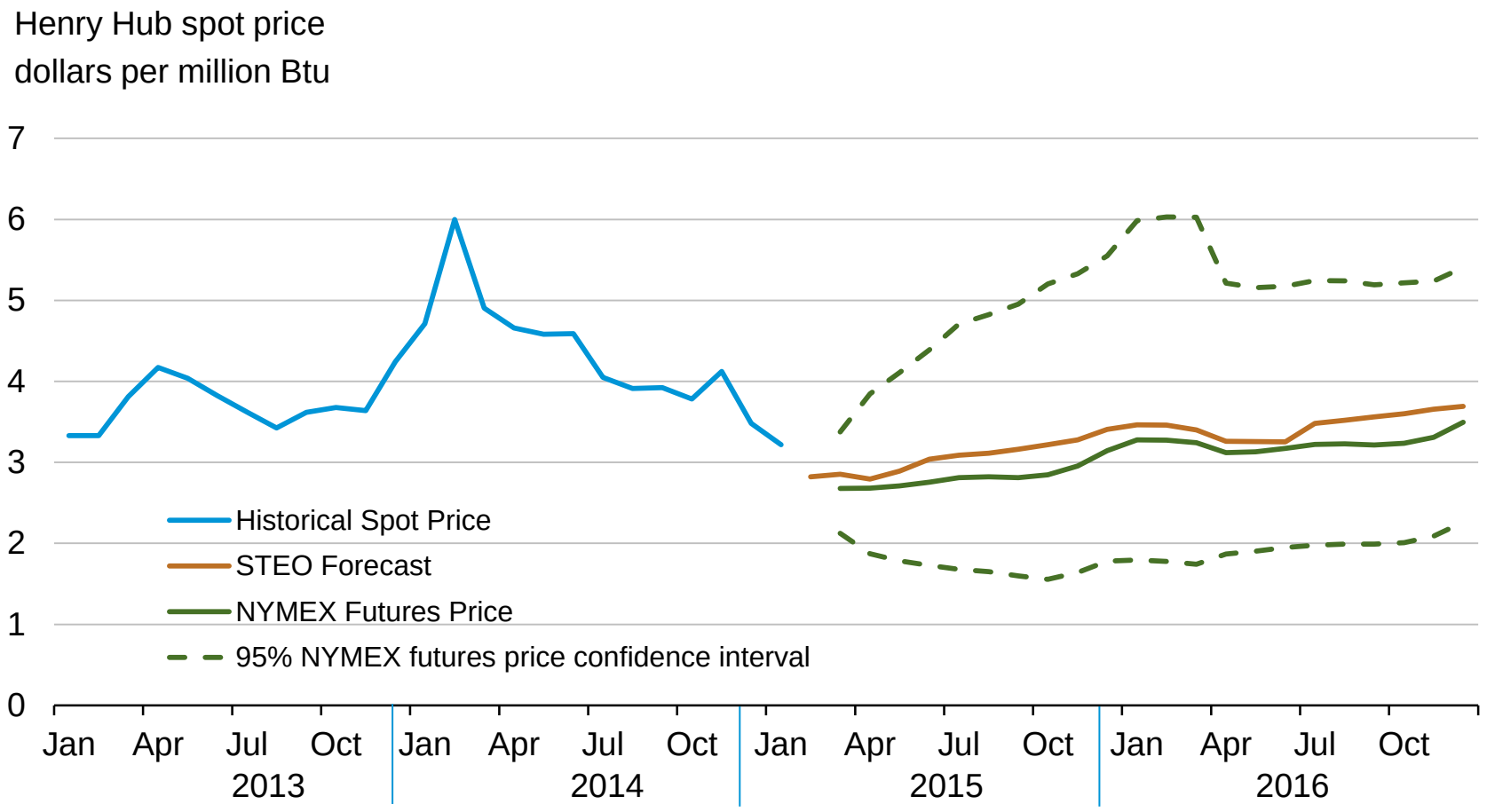
Total U.S. crude production is projected to be 740,000 higher in 4Q16 than in 4Q14, growth is driven by Lower 48 and Federal GOM production and offset by declines in Alaska

U.S. crude oil production growth by area
cumulative growth compared with 4Q14



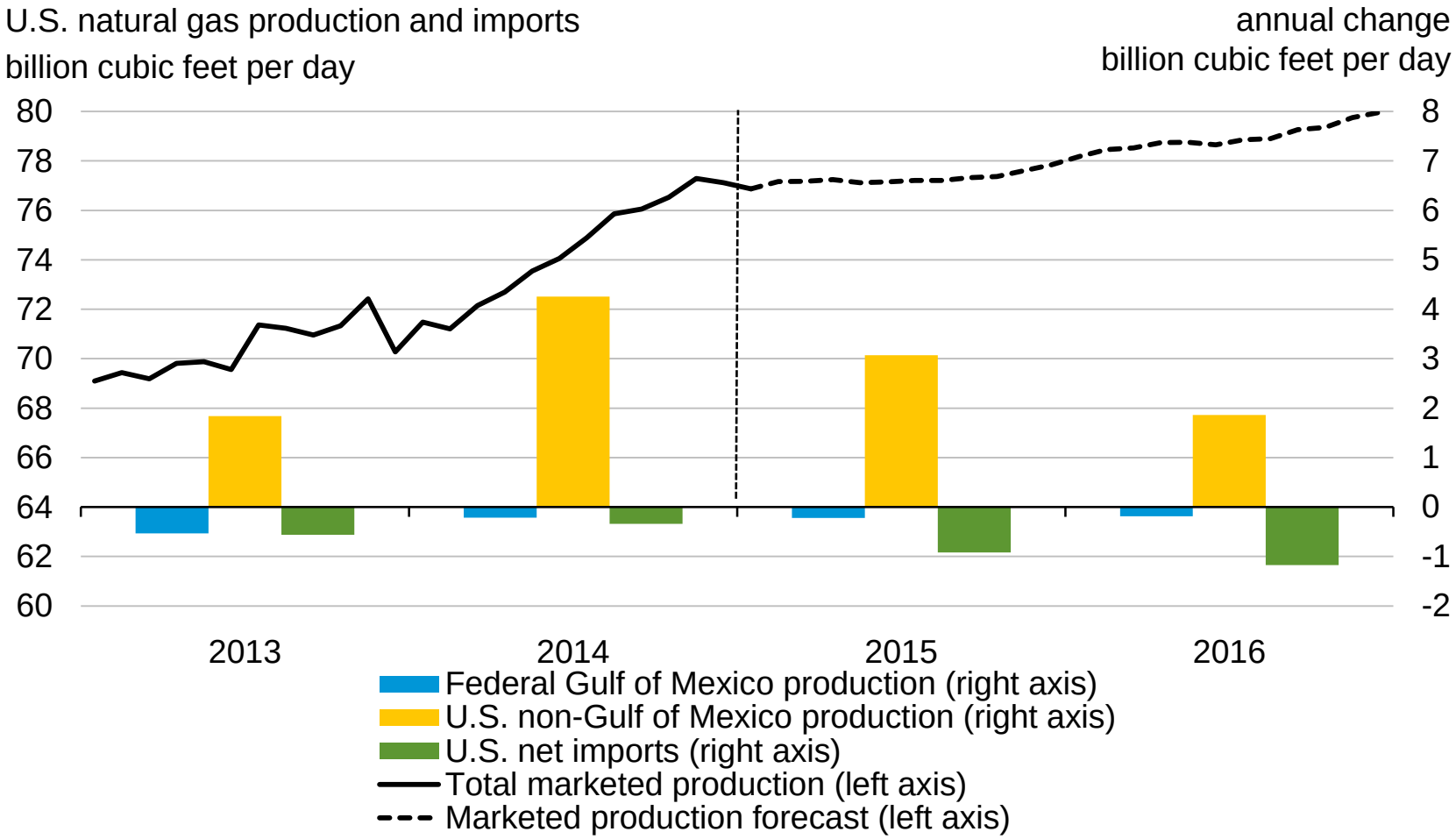
Source: EIA, Short-Term Energy Outlook, January 2015

Henry Hub spot prices are expected to average $3.05/million Btu in 2015 and $3.47/million Btu in 2016



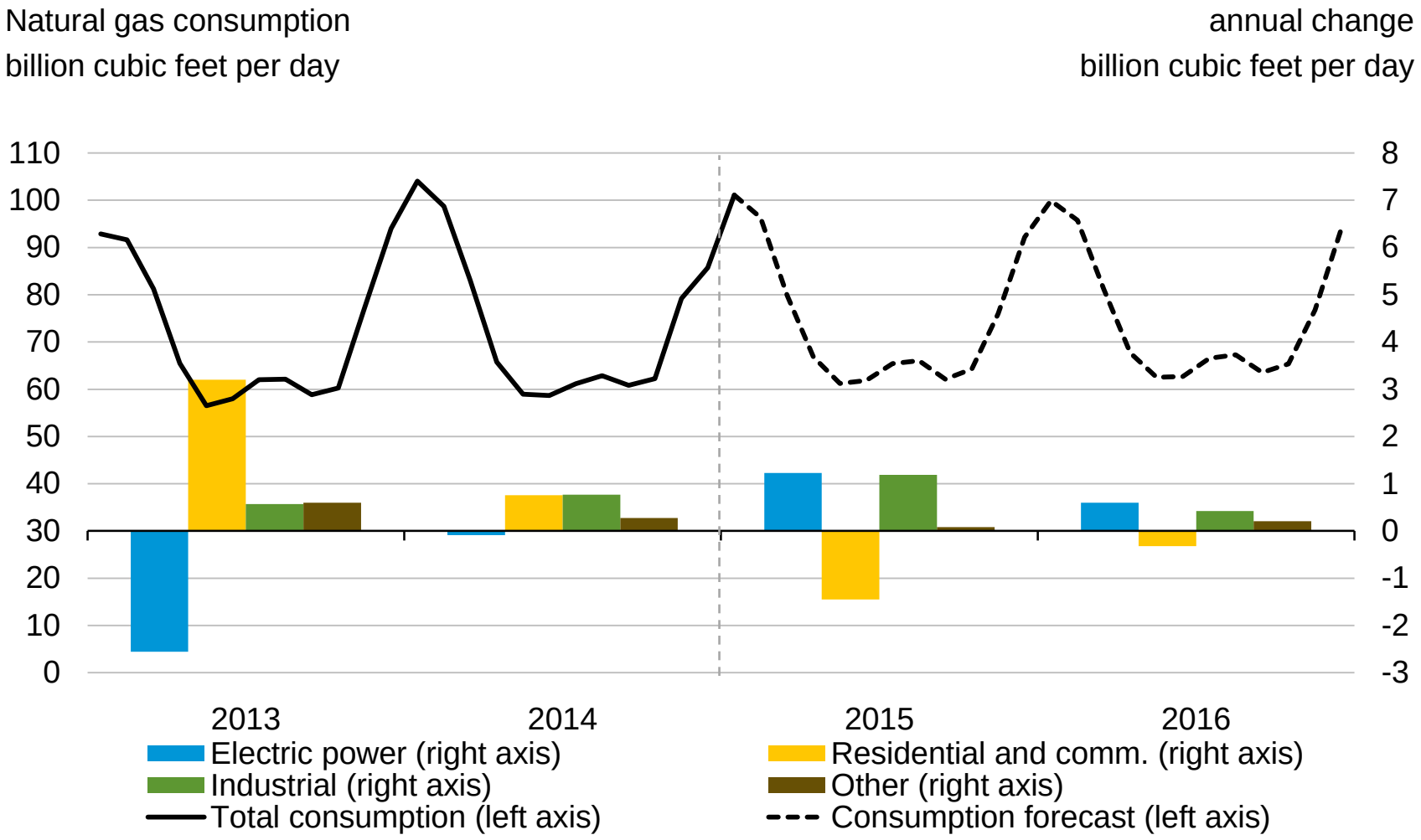
Source: EIA, Short-Term Energy Outlook, February 2015

Natural gas production is expected to increase by 2.4 bcf/day in 2015 and by 1.8 bcf/day in 2016



Source: EIA, Short-Term Energy Outlook, February 2015

Industrial and power sectors drive natural gas consumption growth in the forecast



Source: EIA, Short-Term Energy Outlook, February 2015

For more information

U.S. Energy Information Administration home page | www.eia.gov

Annual Energy Outlook | www.eia.gov/aeo

Short-Term Energy Outlook | www.eia.gov/steo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

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Drilling Productivity Report | http://www.eia.gov/petroleum/drilling/