

# Energy Security Fact Pack

Q4 2015



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SAFE's Energy Security Fact Pack provides a data-driven overview of the latest trends in U.S. energy security, including domestic and global oil production and consumption, oil market dynamics, energy prices, consumer spending on oil, fuel efficiency, and alternative fuel vehicles.

## Q4 2015: Low Oil Prices Affecting Industry and Output

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- Global oil prices continued to fall in Q4 2015, ending the year at \$38 per barrel (bbl) (Brent), down from \$48 in September. With prices now at levels not observed since 2004, the decline ranks as one of the most severe in history [Pages 4 & 21].
- Oil price volatility remains elevated, and is likely to endure for the foreseeable future due to growing uncertainty surrounding U.S. and global oil supplies, China's economic growth rate, ongoing conflict in the Middle East, among other factors [Page 24].
- Such unpredictable oil price fluctuations continue to inhibit oil companies' planning and activities. Notably, upstream capital expenditures for both oil majors and independents declined significantly, while year-over-year (y-o-y) U.S. employment in the oil and gas sector also continued to fall [Pages 5 & 6]. Q4 2015 witnessed a host of bankruptcies, mergers, and acquisitions in the industry.
- Despite the challenging low-price environment, high crude inventories, and falling revenues, the industry has maintained near record levels of oil production. Companies have achieved this by finding efficiencies and cutting costs [Page 7].
- Meanwhile, automakers sold a record 17.4 million light-duty vehicles in 2015. New light-duty truck sales reached 61% of total sales in December 2015, their highest share to date. [Page 23].

The Q4 2015 Fact Pack includes a 'Charts of the Quarter' section focused on trends in global oil prices, capital expenditures for selected oil companies, employment in the oil and gas sector, and U.S. oil production.

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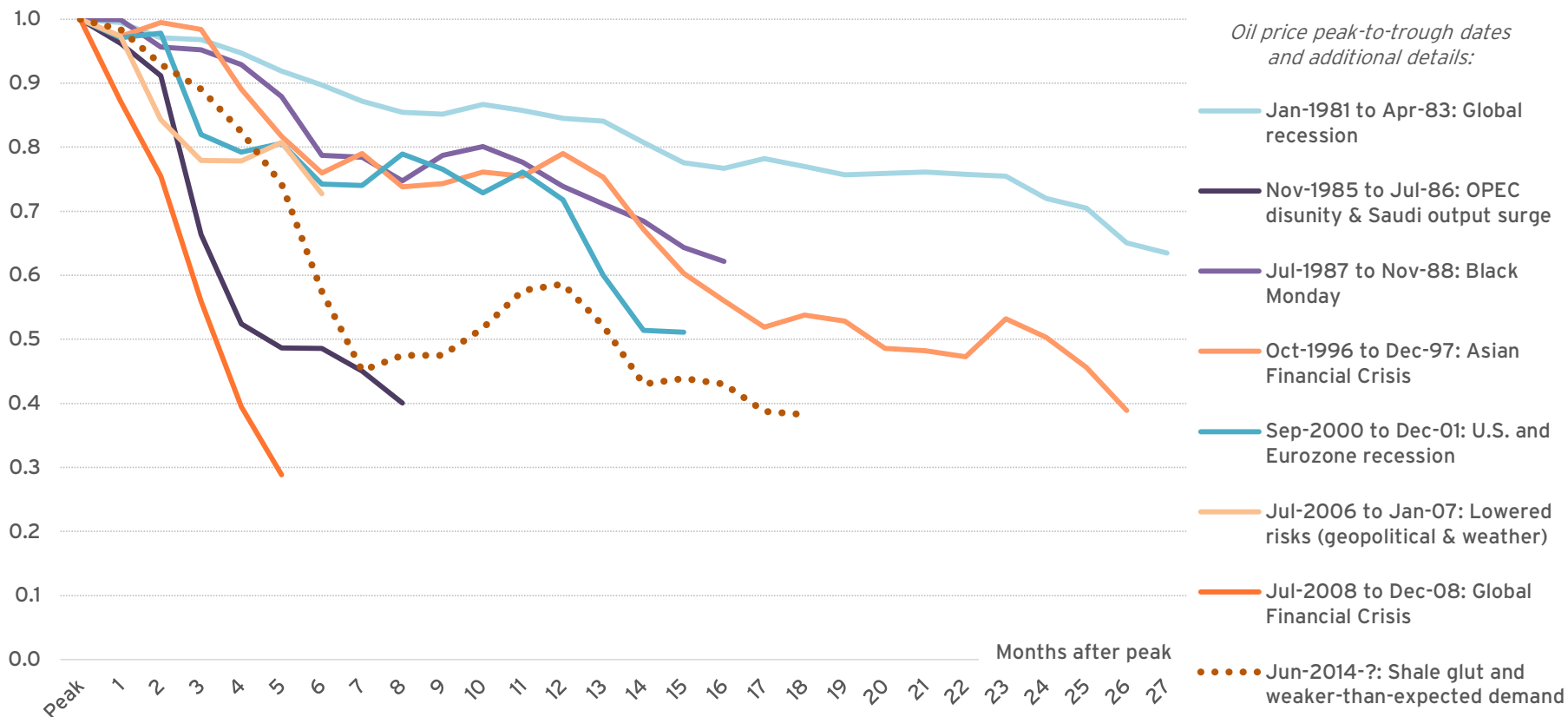
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# Current Oil Price Collapse Ranks as One of the Most Severe

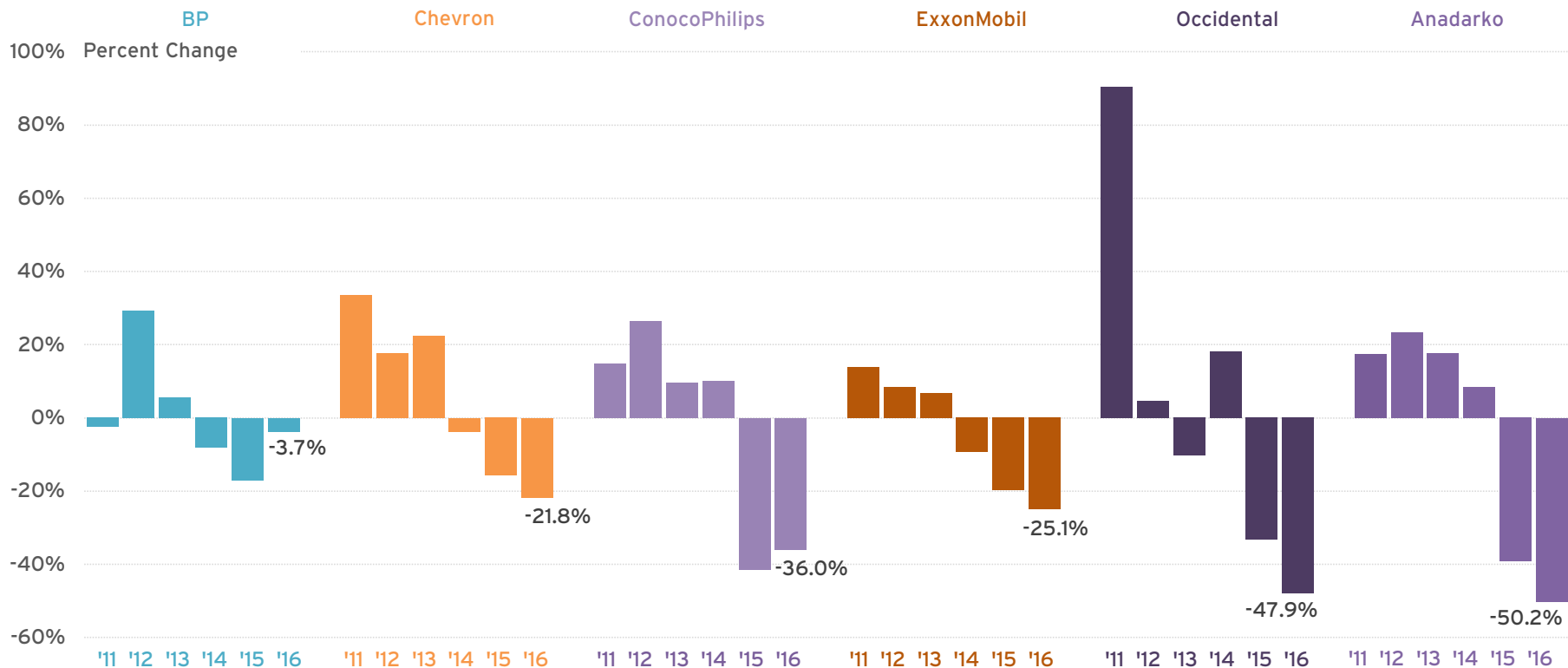
The current collapse in oil prices ranks as one of the swiftest and most severe in modern history, on par with declines observed in 1985/86 and 2008. Prices have fallen more than 66% versus their June 2014 peak.



Source: SAFE analysis based on data from EIA

# Oil Company Capital Expenditures Down

Lower oil prices forced companies to rapidly adjust their spending plans in 2015. For some, this represents a sizeable shift away from a period of increasing investment observed in recent years due in part to previously higher price levels.



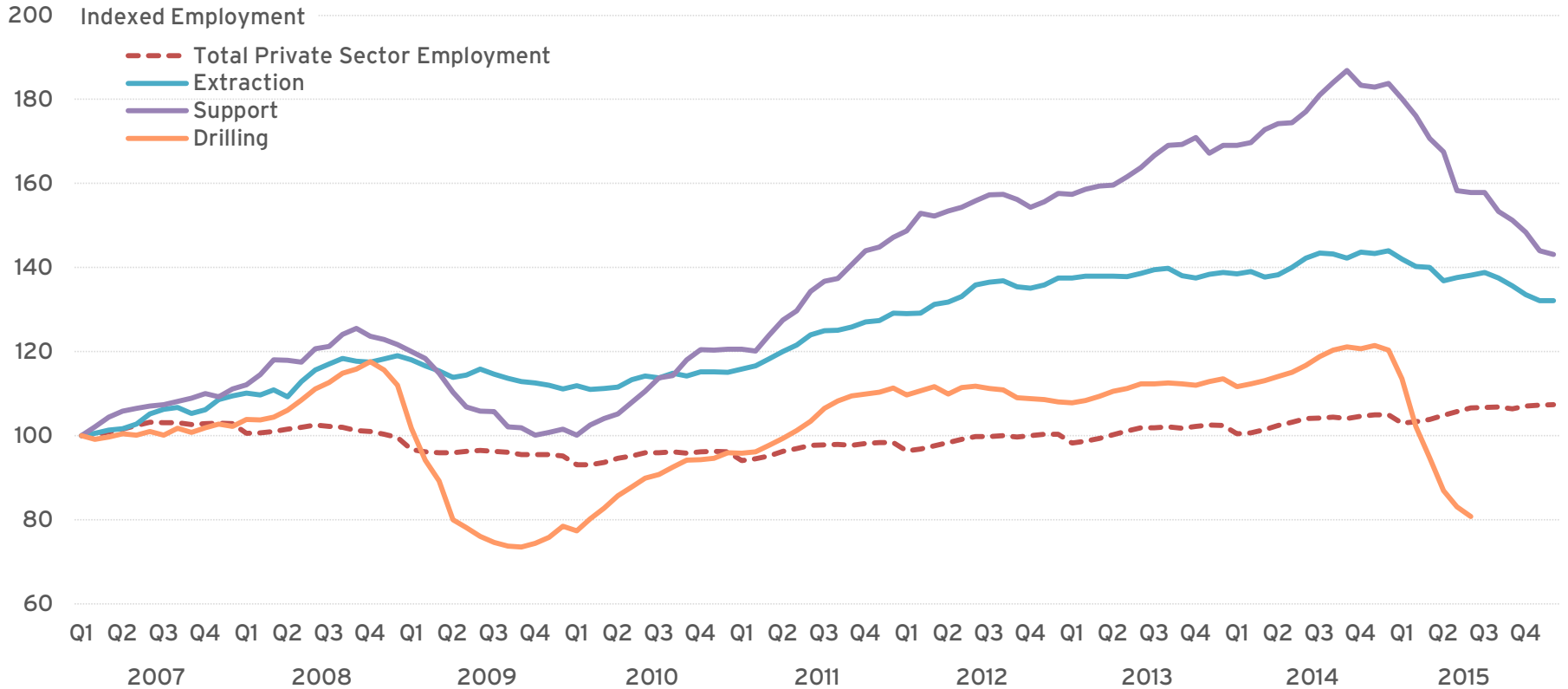
Note: Occidental Petroleum announced an estimated 2016 capital budget between \$2.8 and \$3.0 billion. ConocoPhillips revised its 2016 capital expenditures guidance downward from \$7.7 billion to \$6.4 billion on February 4, 2016.

Source: SAFE analysis based on data from corporate earnings statements and press releases



# Job Losses in Oil And Gas Sector Experience Swift Decline

U.S. oil and gas sector employment continued to fall in Q4, despite positive growth in the private sector as a whole. Employment in sector support services, for example, has declined 23% since September 2014.



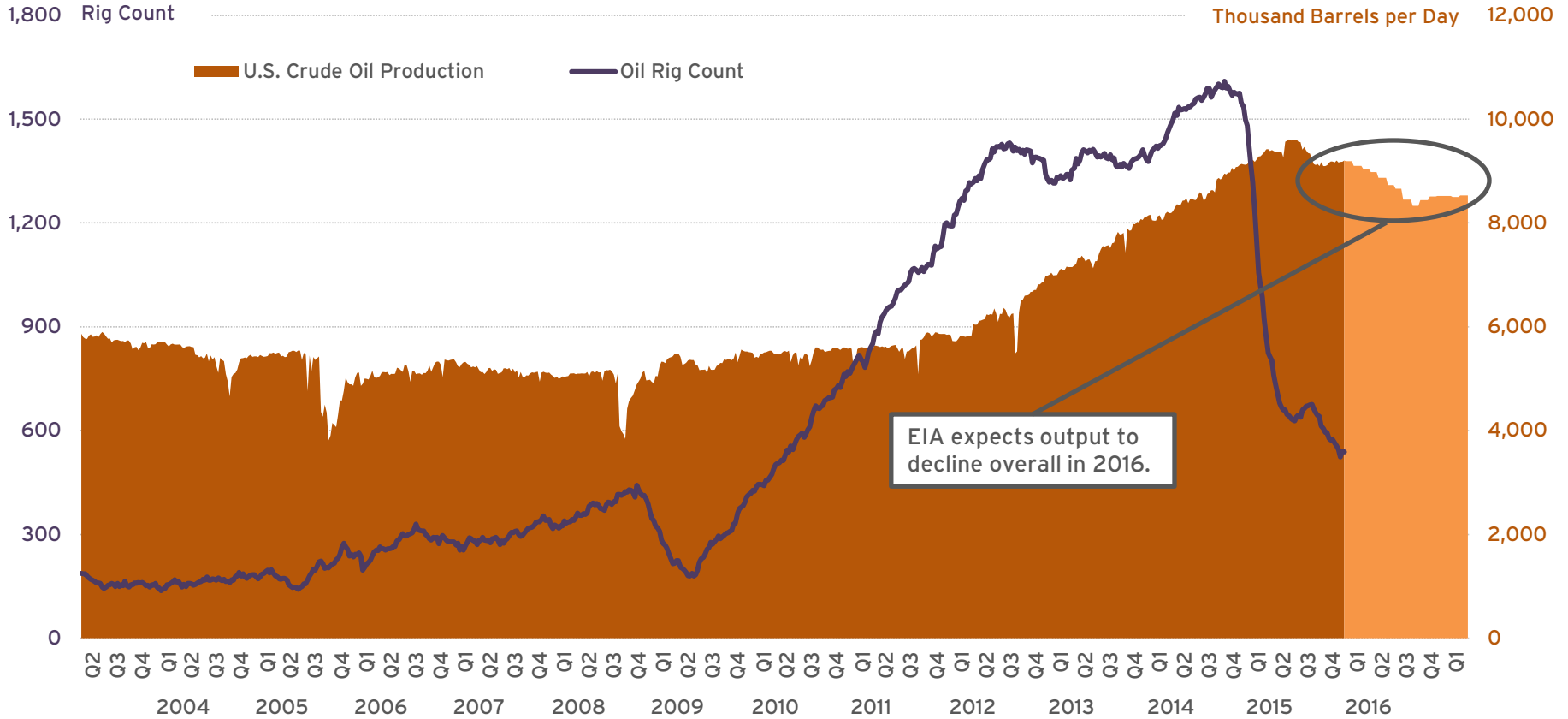
Note: Drilling data is not available for the last six months.

Source: SAFE analysis based on Bureau of Labor Statistics, Current Employment Statistics survey and Quarterly Census of Employment and Wages



# U.S. Oil Producers Resilient as 2016 Output Stabilizes

After reaching historic highs in Q4 2014, the oil rig count dropped sharply for several quarters. Q4 2015 witnessed a further decline of more than 16%, from 641 to 536. U.S. crude oil production rose marginally (nearly 0.1 mbd) quarter-over-quarter in Q4 2015.



Source: EIA and Baker Hughes





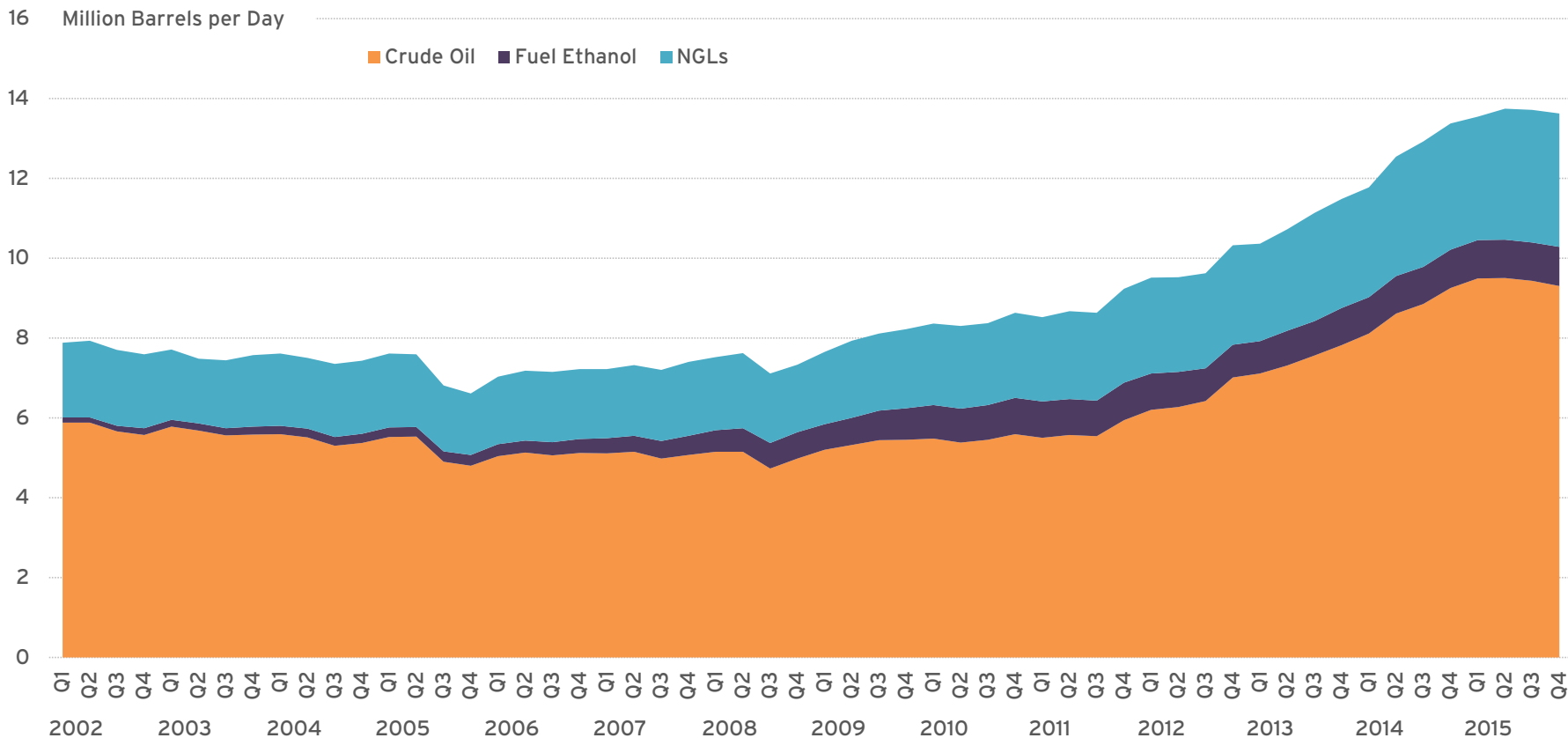
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# U.S. Oil Production Remains Steady

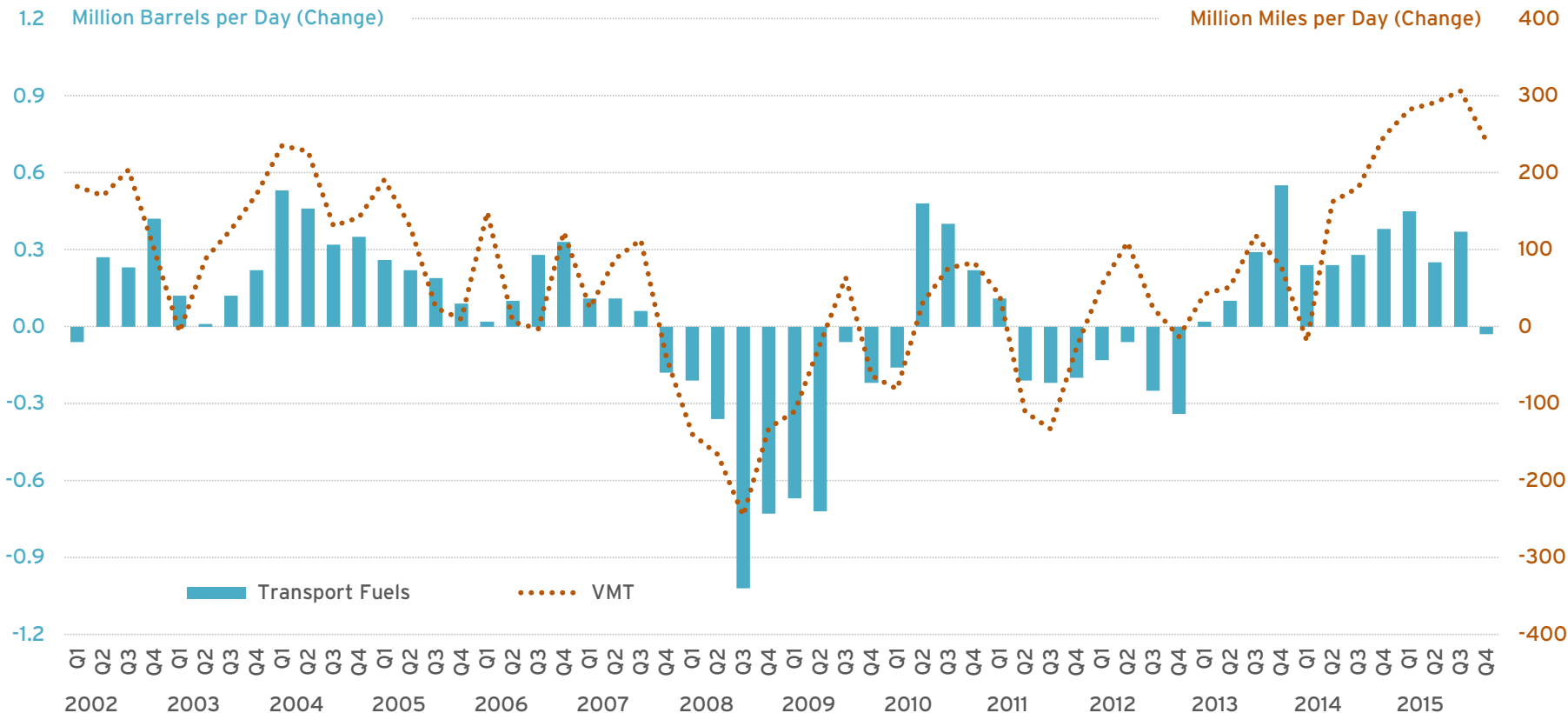
U.S. liquids production rose 0.25 mbd y-o-y in Q4. Nevertheless, inclusive of fuel ethanol and natural gas liquids (NGLs), total U.S. liquids production remains approximately 6.3 mbd higher than in 2008, making the U.S. the world's largest liquids producer.



Source: SAFE analysis based on data from EIA

# Y-o-Y Demand for Transport Fuel Declines

U.S. demand for gasoline, diesel, and jet fuel reached over 14.1 mbd in Q4, but y-o-y growth declined for the first time since Q4 2012. Total vehicle miles traveled (VMT) increased by approximately 241 million miles in Q4 y-o-y.

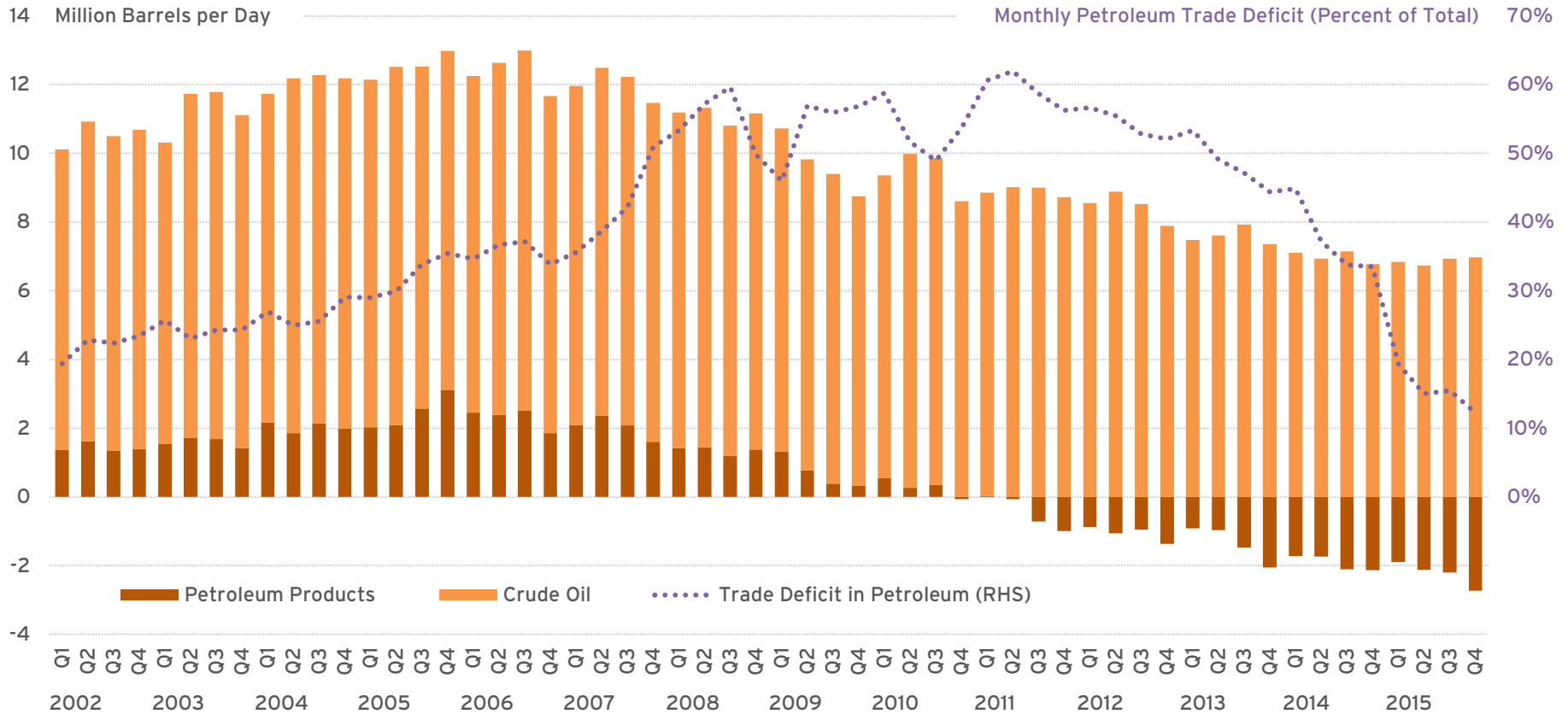


Source: SAFE analysis based on data from EIA



# U.S. Petroleum Trade Deficit Continues Slide

Total U.S. net oil imports have fallen 67% since 2005 and in Q4 fell to 4.0 mbd (-0.4 mbd y-o-y). The United States became a net exporter of petroleum products in 2011. In Q4, net petroleum product exports reached 2.7 mbd.



Source: SAFE analysis based on data from EIA



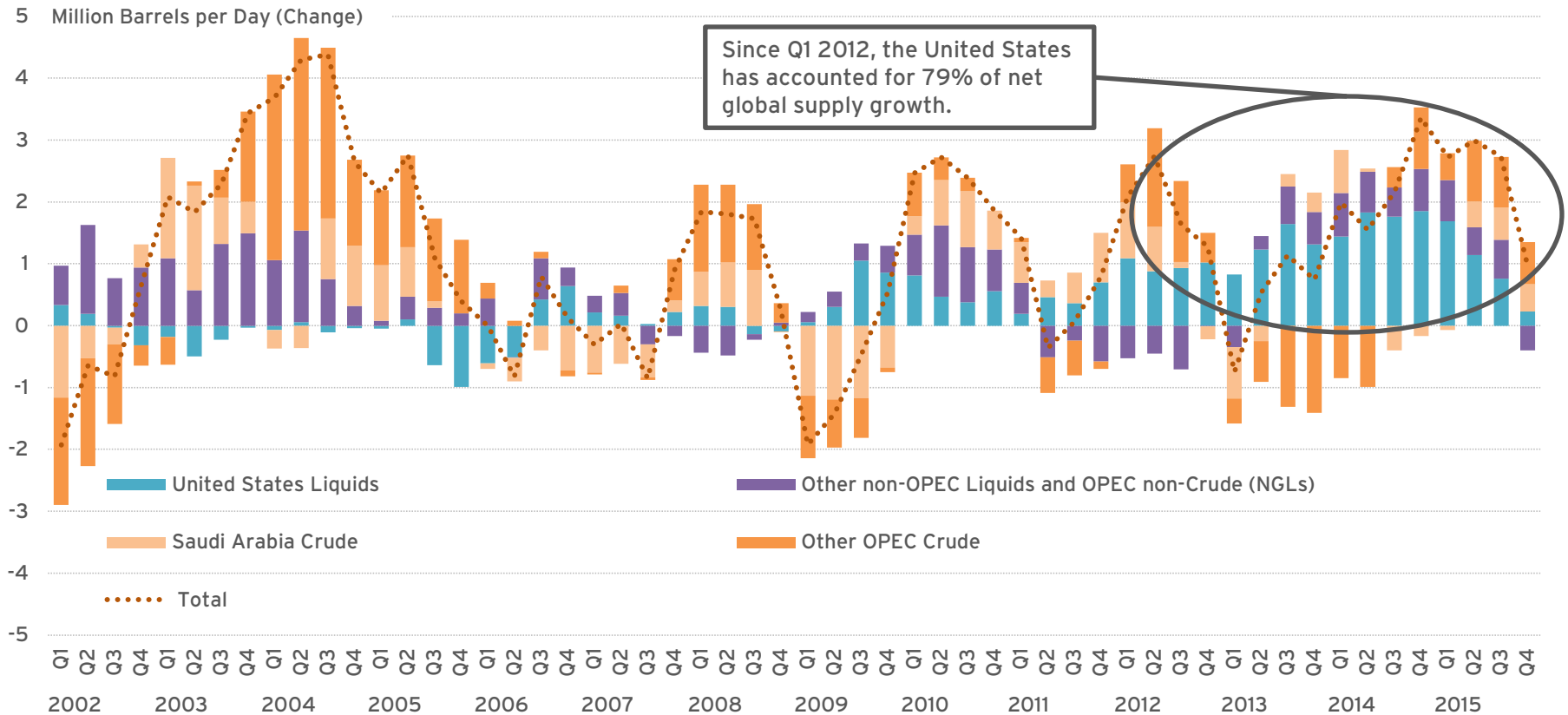
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# Global Oil Supply Growth Slows

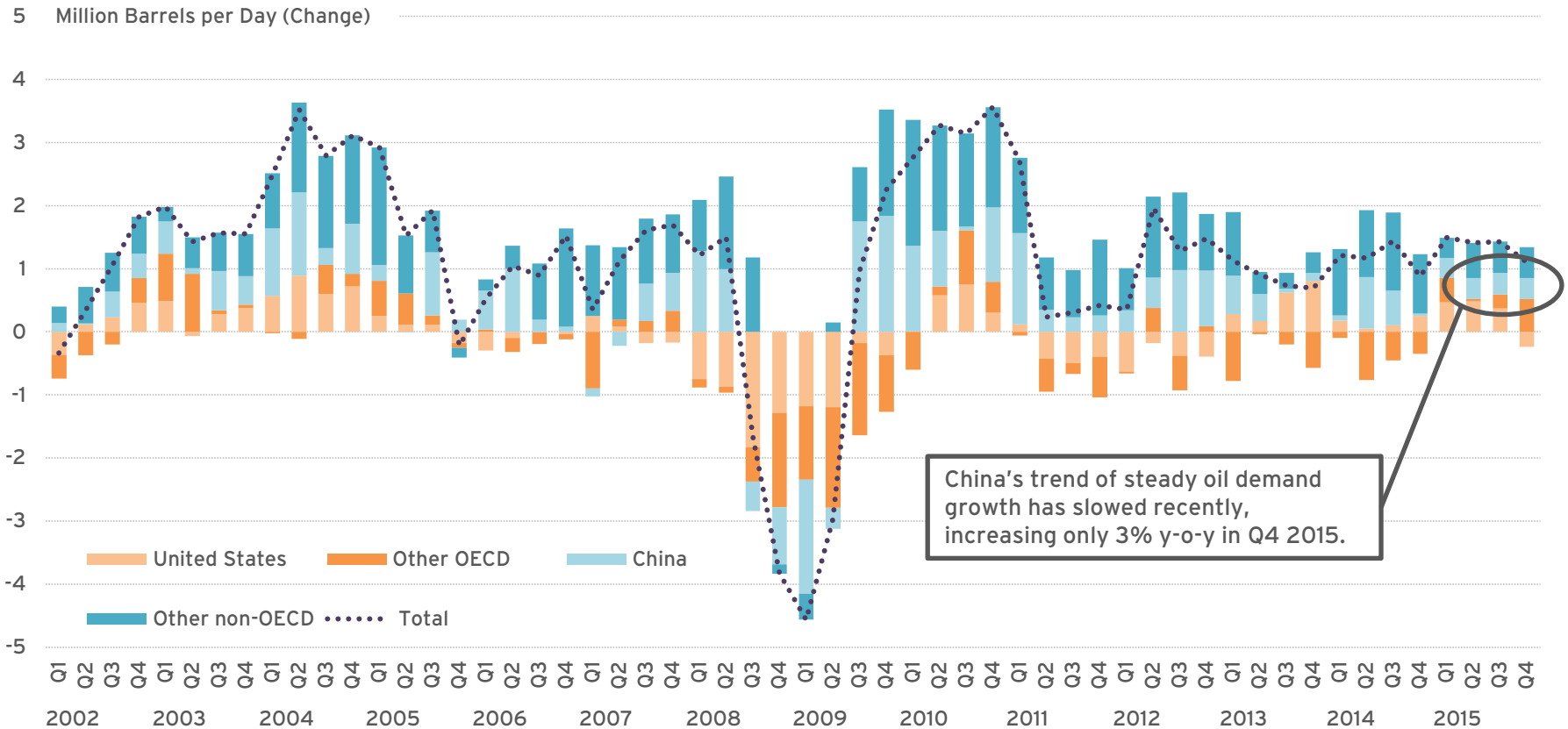
Global production grew nearly 1.0 mbd y-o-y on the back of higher U.S. and Saudi Arabia supply (+0.2 and +0.4 mbd y-o-y, respectively) in Q4. Non-Saudi OPEC supply continued its recent positive trend (0.7 mbd y-o-y) for the sixth consecutive quarter.



Source: SAFE analysis based on data from EIA

# Global Oil Demand Continues to Rise

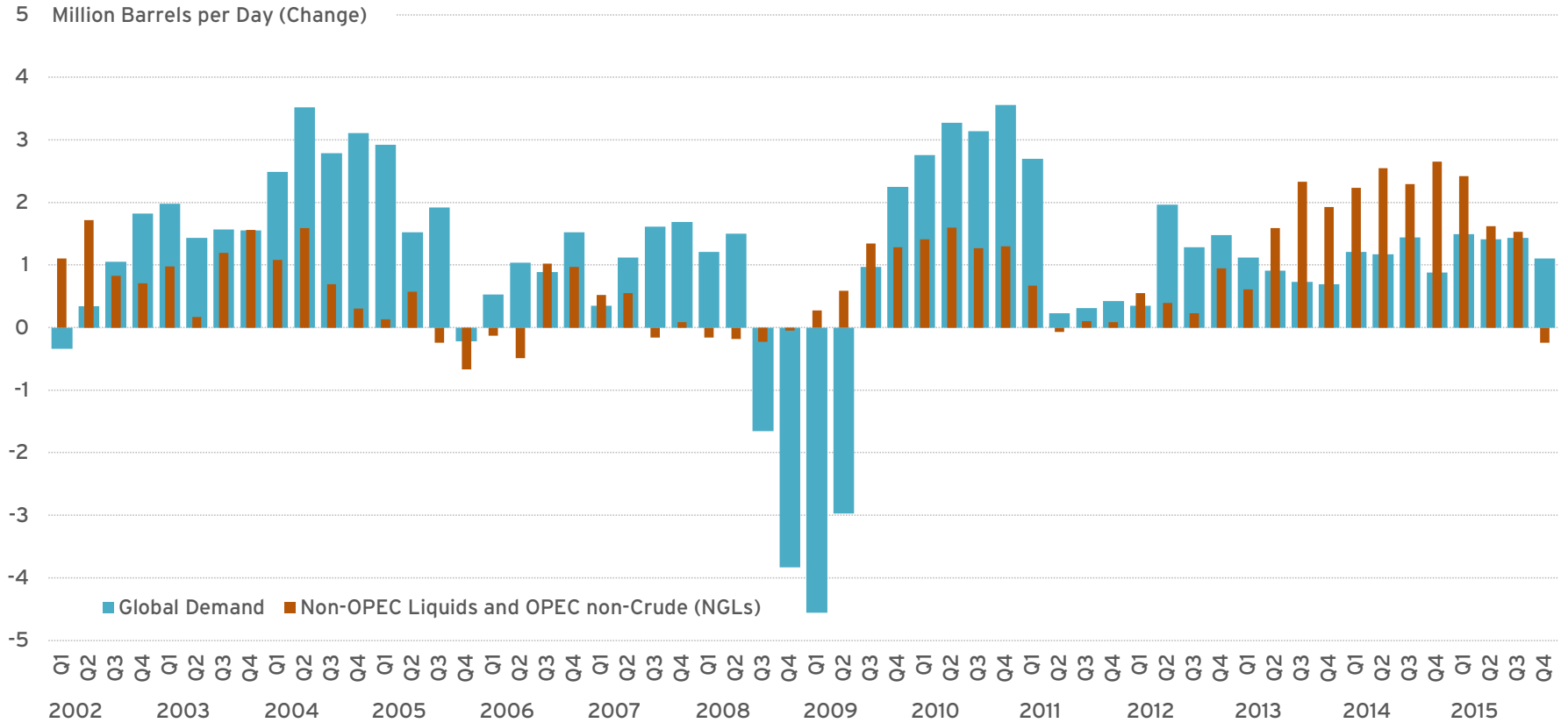
Global oil demand grew by approximately 1.1 mbd y-o-y in Q4. Non-OECD countries accounted for the majority of the increase, while the United States witnessed its first y-o-y decline since 2012. Global oil demand has increased since 2009, reaching 94 mbd in Q4 2015.



Source: SAFE analysis based on data from EIA

# Non-OPEC Supply Growth Finally Outstripped by Demand

Growth in global oil demand has exceeded non-OPEC liquids supply growth for the first time since Q1 2013. Non-OPEC supply growth declined nearly 0.2 mbd y-o-y, following seventeen straight quarters of increases.



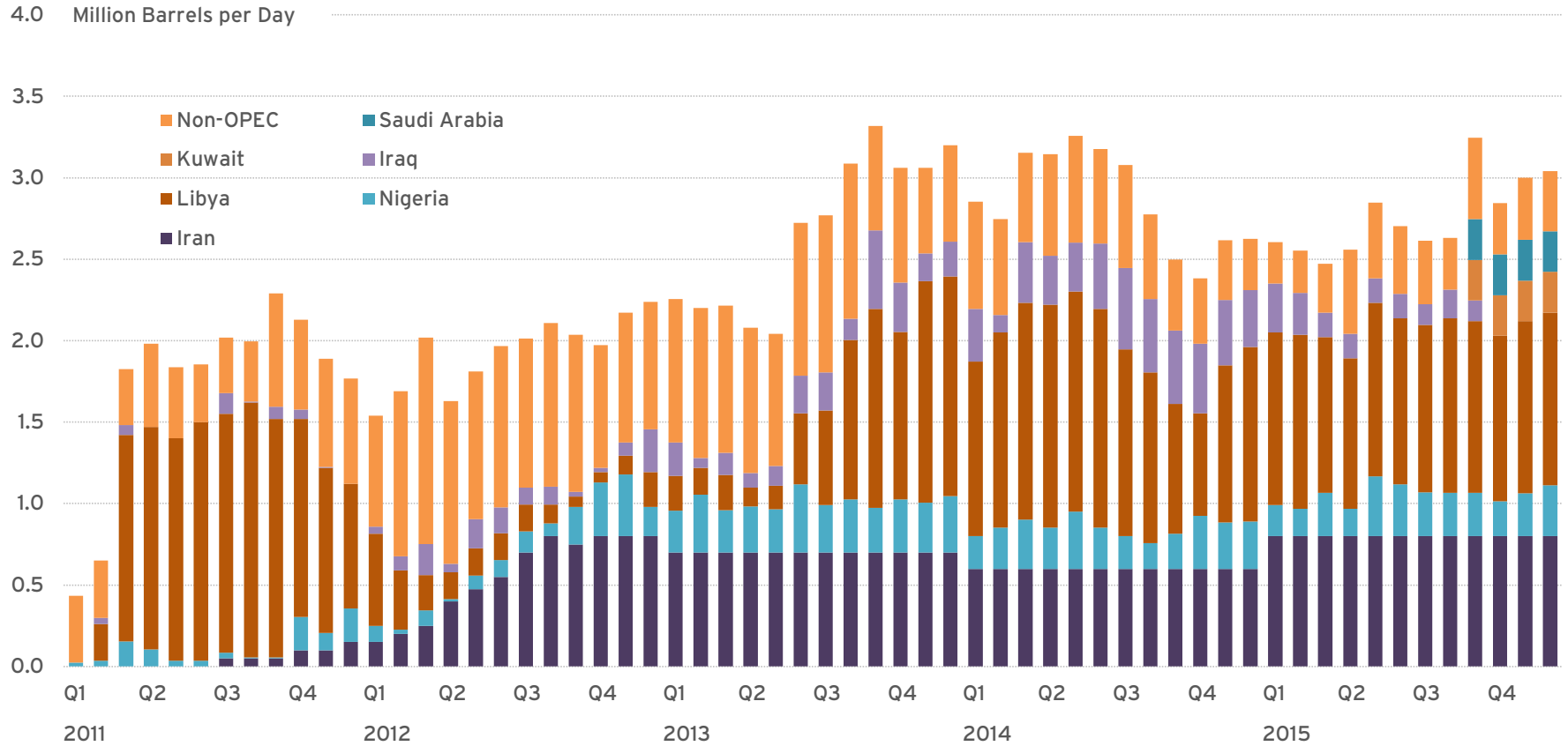
Source: SAFE analysis based on data from EIA





# Unplanned Crude Oil Outages Increase

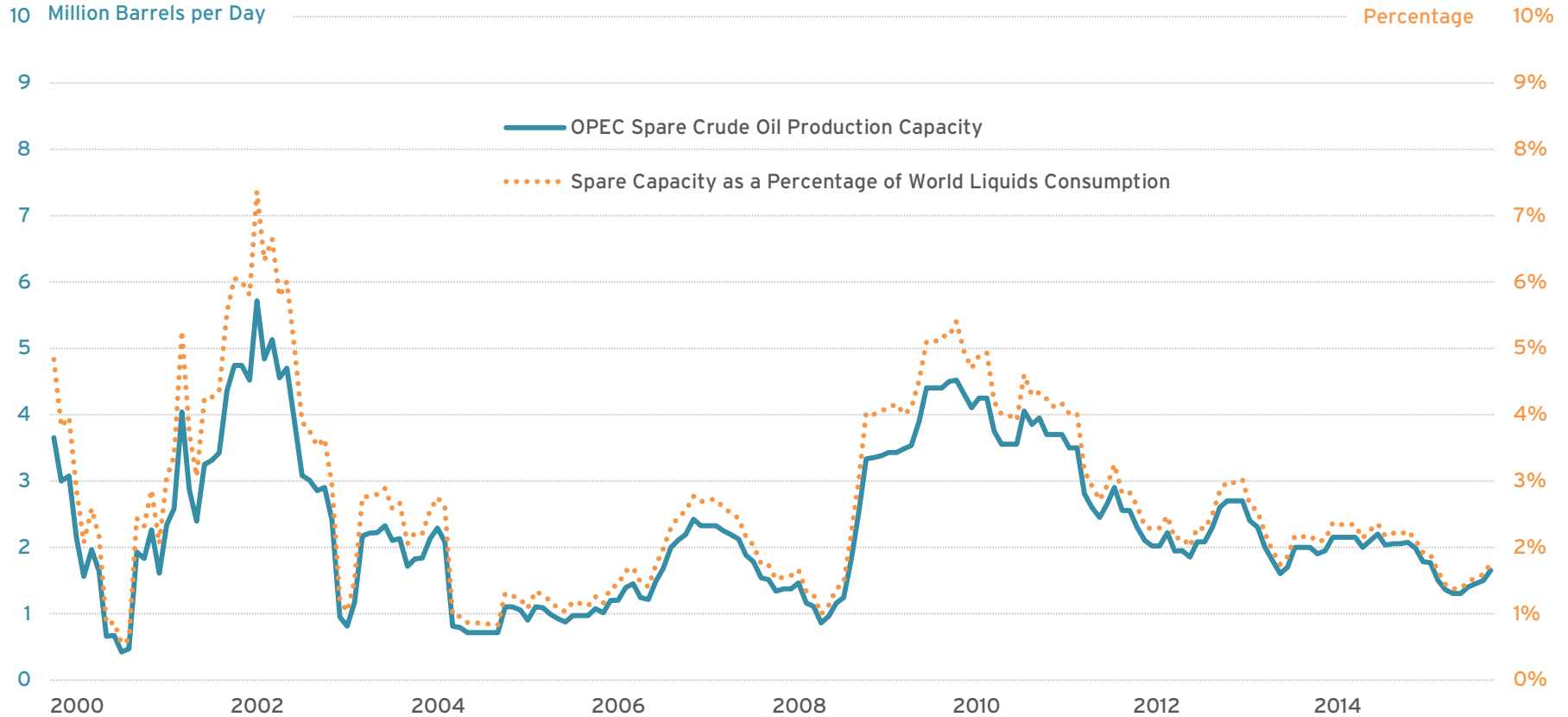
Global unplanned oil outages increased to 3.1 mbd in Q4 (+0.6 mbd y-o-y). Although unrest and instability remain rife in many countries, Iranian outages are expected to decrease in the coming months as oil and financial sanctions were lifted in January 2016.



Source: SAFE analysis based on data from EIA

# OPEC Spare Crude Oil Production Capacity Increases

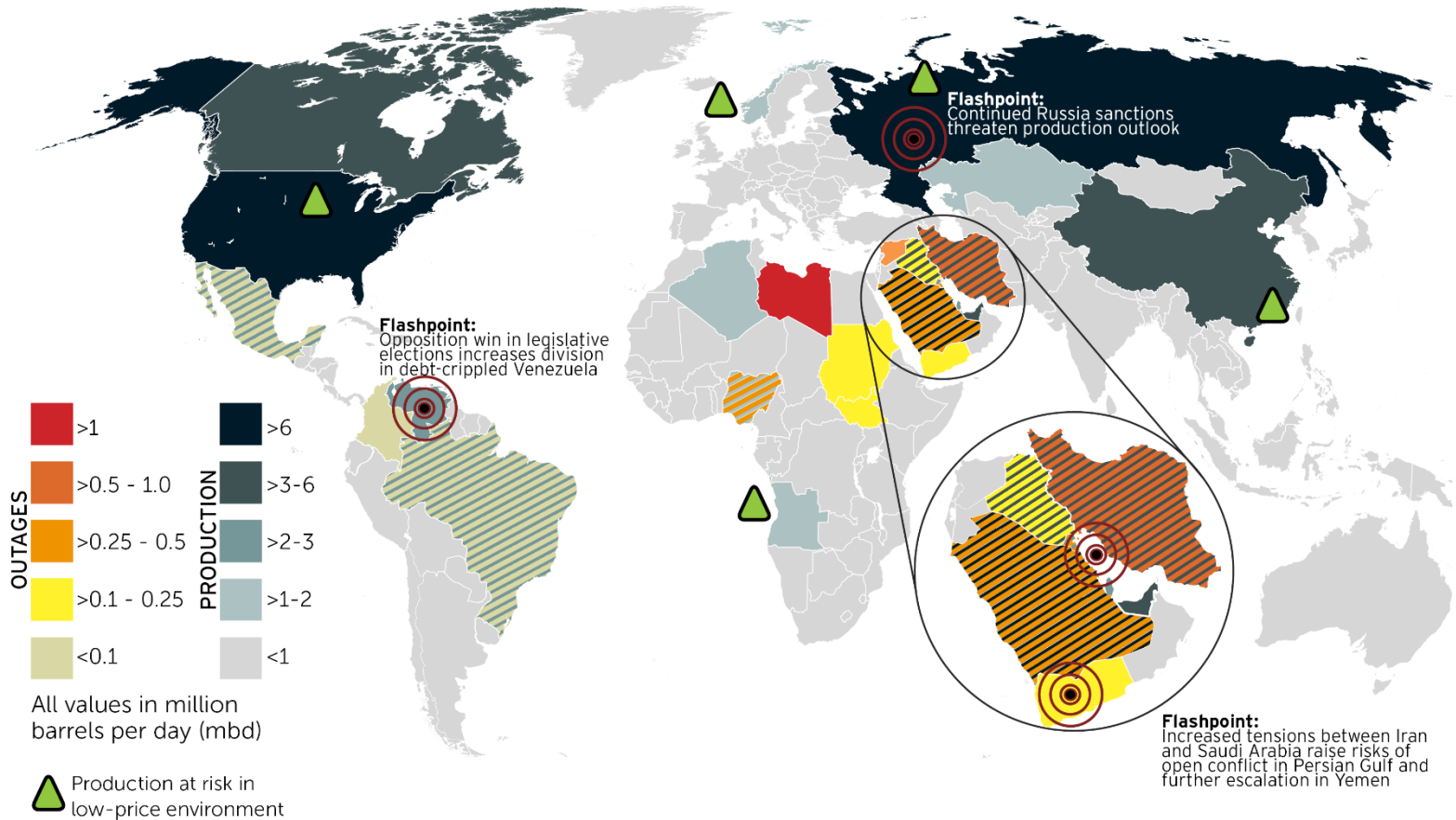
OPEC spare crude oil production capacity is estimated at 1.5 mbd in Q4 (+0.2 mbd q-o-q). This is equivalent to approximately 1.6% of global consumption. The majority of OPEC's spare production capacity is held by Saudi Arabia.



Source: SAFE analysis based on data from EIA

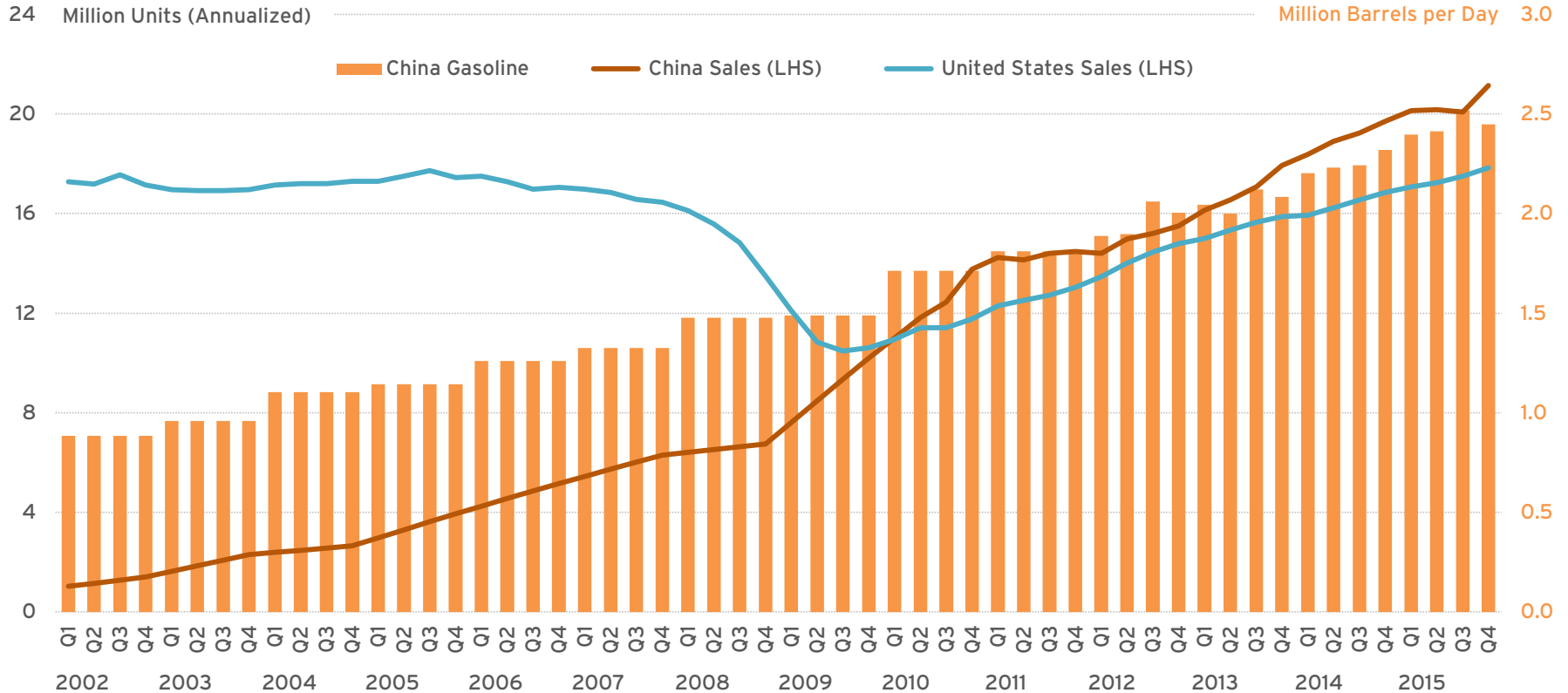
# Barrels at Risk Map

Total oil supply outages averaged 3.1 mbd in Q4. Ongoing disputes led to continued outages in the Saudi-Kuwaiti shared zone, and tensions elsewhere continue to risk increasing disruptions.



# China Vehicle Sales Rise While Gasoline Demand Falls

Although there are only approximately 100 passenger vehicles per 1,000 people in China (versus 800 in the United States), sales have exceeded those in the U.S. since 2010. Gasoline demand in China fell for the first time since Q4 2013 (nearly 0.2 mbd q-o-q).



Note: Four-quarter rolling averages presented for China's vehicle sales before 2010 and annual averages presented for China's gasoline demand before 2012.  
 Source: SAFE analysis based on data from BEA, IEA, and China Association of Automobile Manufacturers



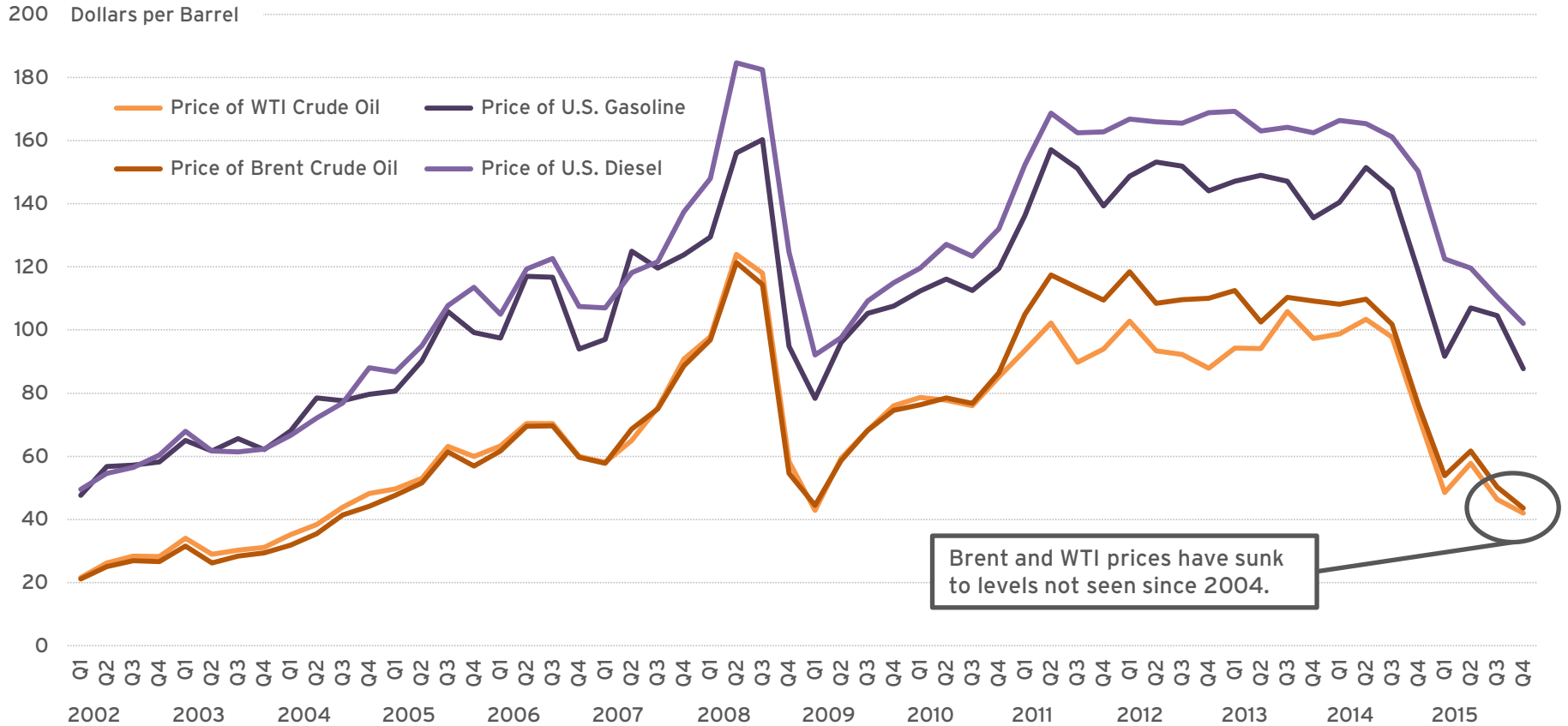
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# Brent and WTI Prices Plunge Lower

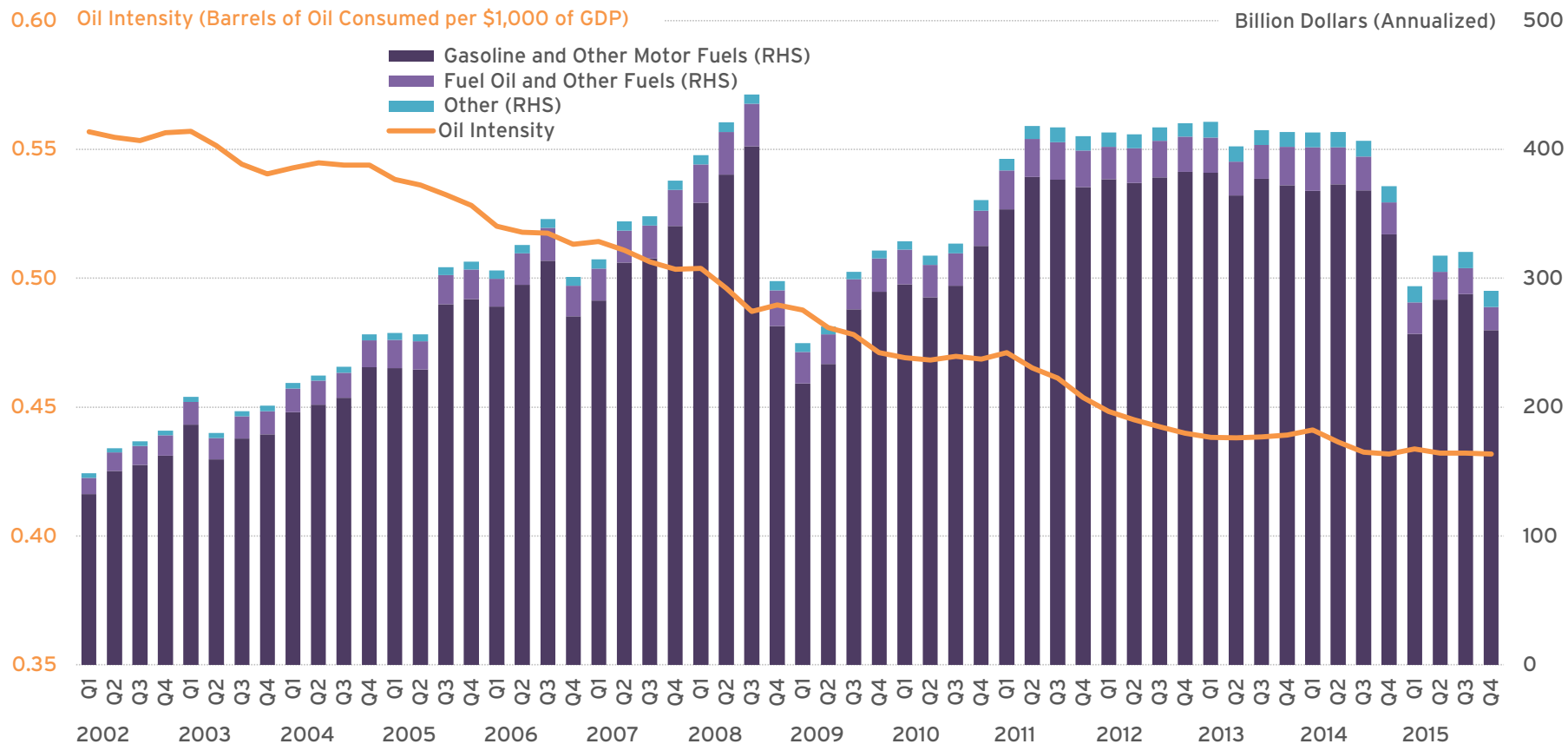
Domestic petroleum product prices like gasoline and diesel correlate closely with prevailing global crude oil benchmarks. Oil and gasoline prices declined slightly from Q3 to Q4. December average Brent = \$43.56/bbl, WTI = \$41.96/bbl, U.S. gasoline = \$2.09/gal.



Source: SAFE analysis based on data from EIA

# Oil Intensity Flat While Household Expenditures Down

U.S. oil intensity remained unchanged in Q4 at 0.43 barrels per \$1,000 of GDP. However, household spending on petroleum fuels is approximately 22% lower y-o-y, at an annualized level of \$290 billion, due to depressed oil and petroleum product prices.

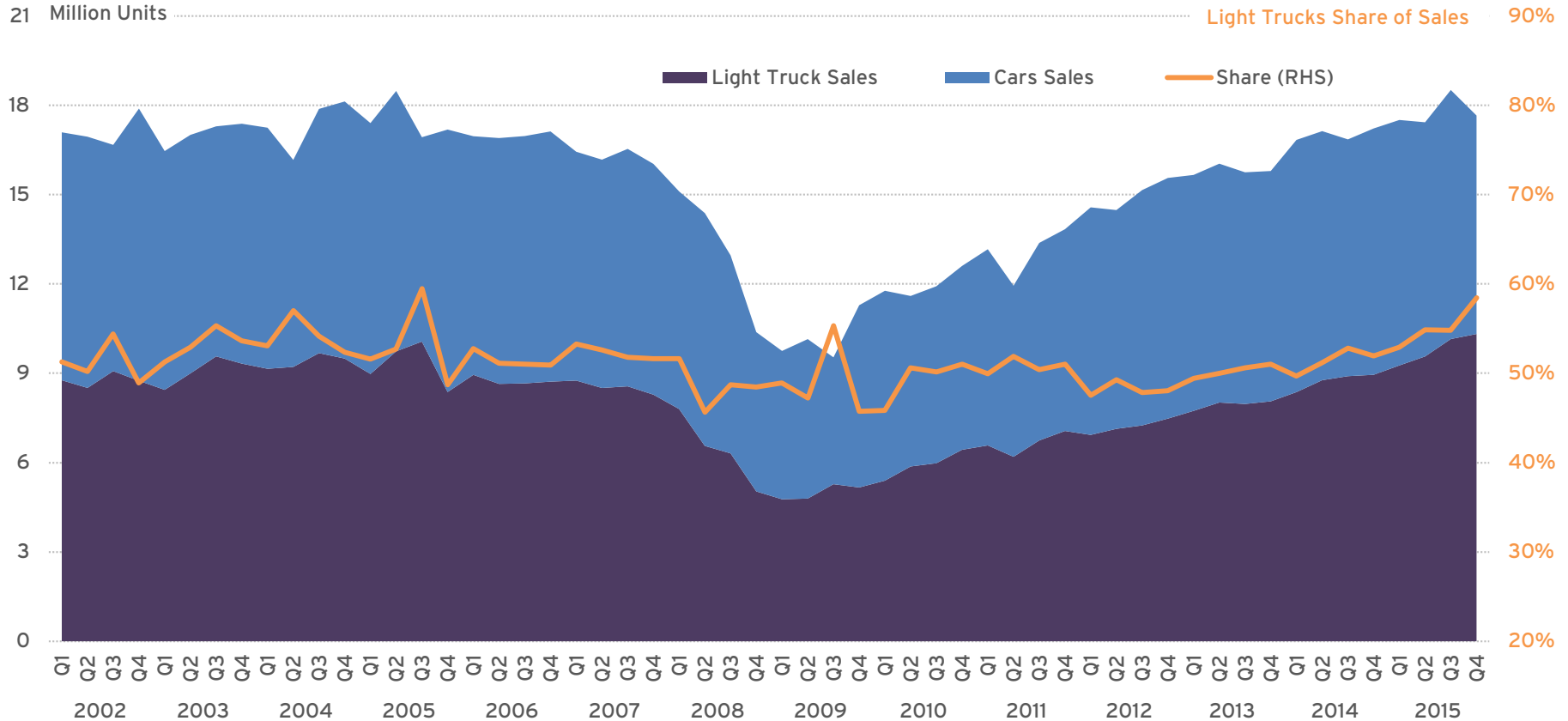


Source: SAFE analysis based on data from EIA and BEA



# Light-Truck Sales Grow to Historic Highs

New light-truck sales climbed to roughly 10.3 million units in Q4 2015, accounting for approximately 58% percent of new light-duty vehicle sales. Total seasonally adjusted sales in Q4 grew by roughly 75% over 2009 levels to 17.8 million units.

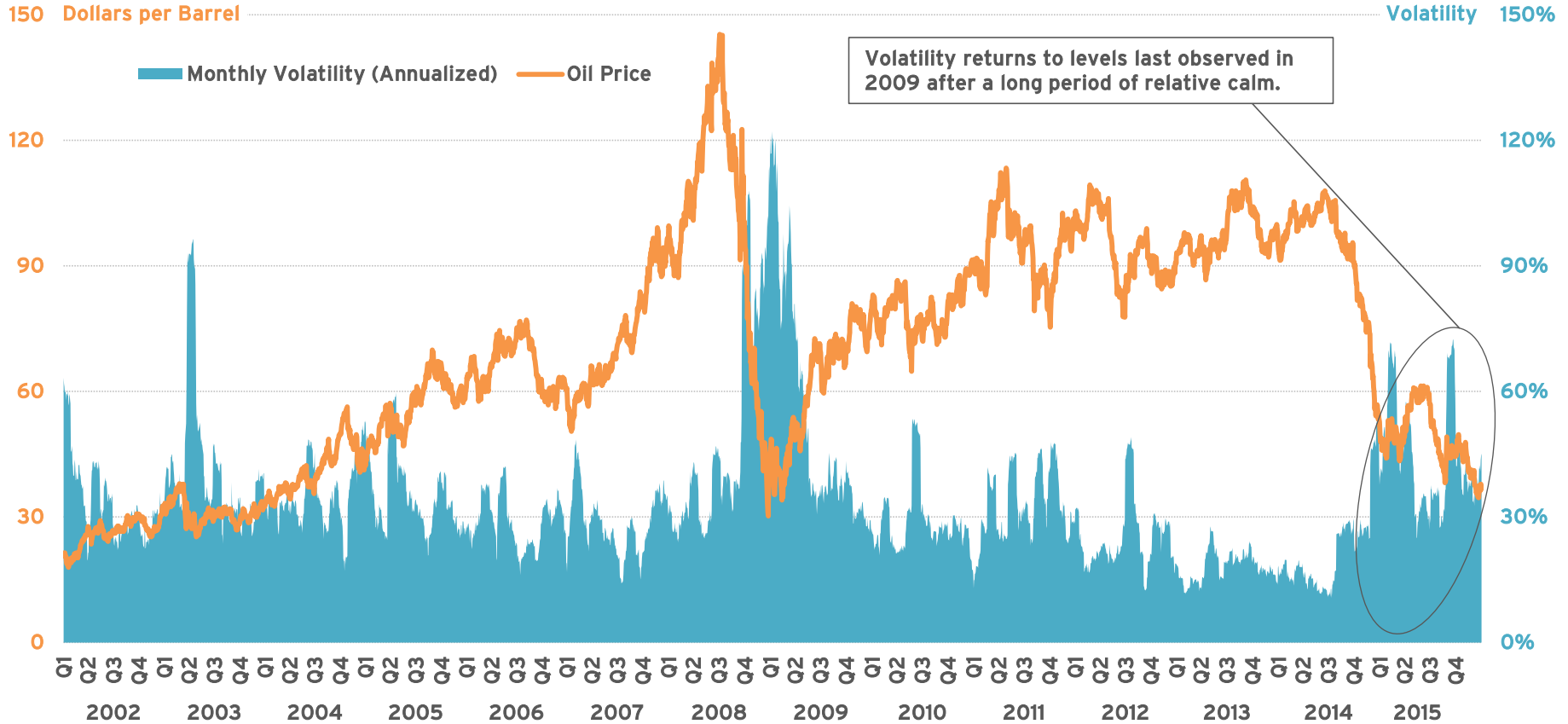


Source: SAFE analysis based on data from BEA



# Oil Price Volatility Increases, Remains Elevated

The decline in oil prices over the past year has resulted in the return of oil price volatility, which averaged 42% in H2 2015. By comparison, 30-day volatility averaged 33% in Q2 2015, and only 16% in H1 2014.



Source: SAFE analysis based on data from EIA

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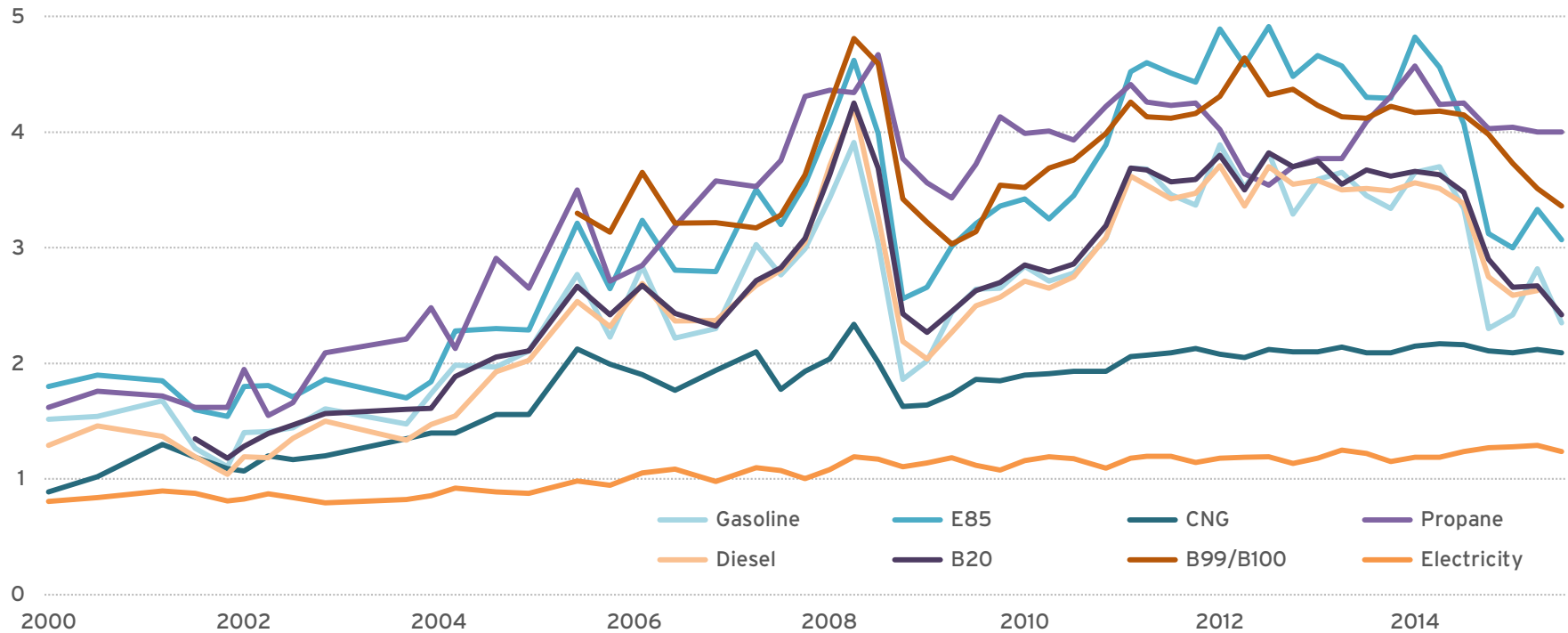
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# Liquid Retail Fuel Prices Fall Lower

Despite recent decreases, liquid fuel prices have risen overall since 2000 while experiencing substantial volatility. Meanwhile, the prices of compressed natural gas (CNG) and electricity have remained relatively stable and have increased far less over the same time period.

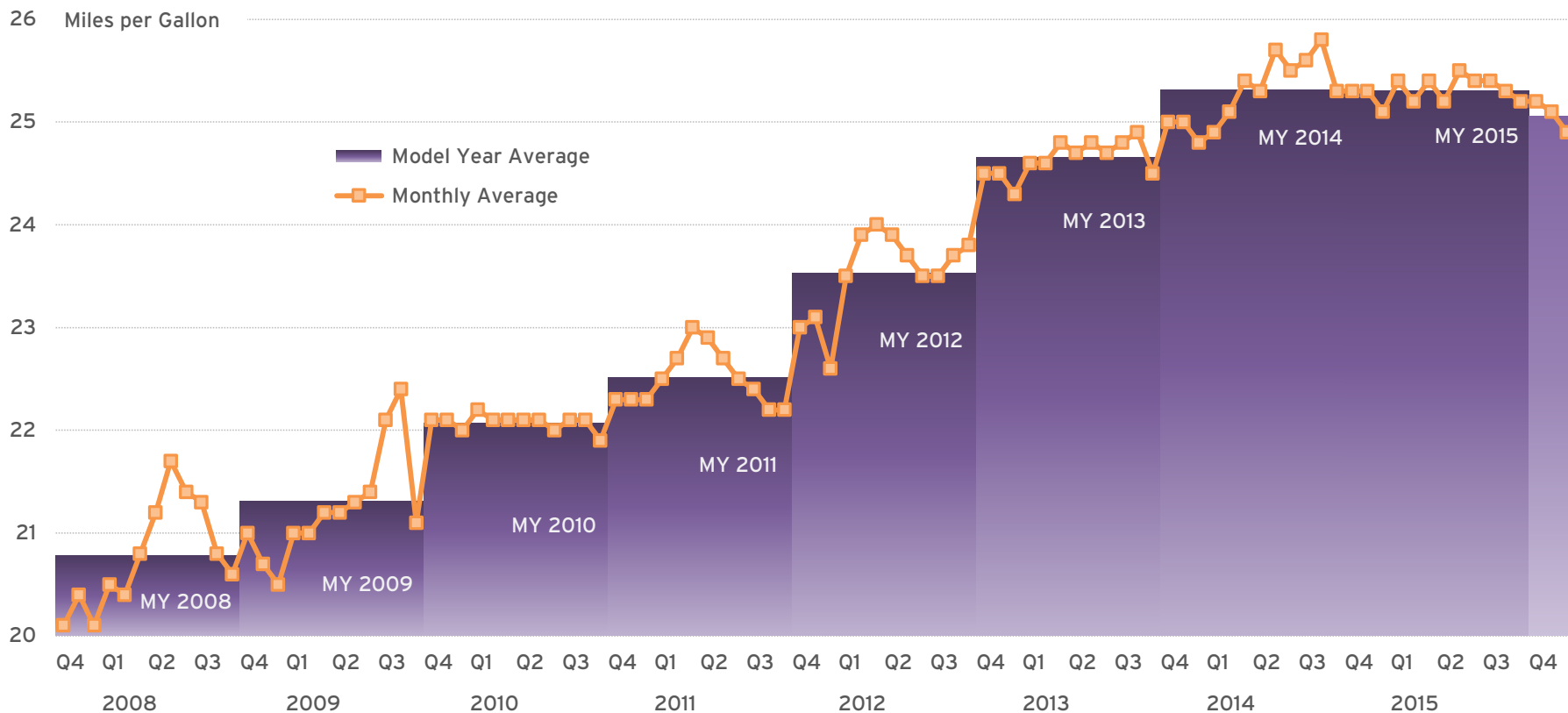
6 Dollars per Gasoline Gallon Equivalent (GGE)



Source: SAFE analysis based on data from Clean Cities Alternative Fuel Price Reports

# New Light-Duty Vehicle Fuel Economy Ratings Decrease

The average fuel economy rating of new light-duty vehicle sales fell y-o-y in Q4, a marked change versus the MY 2008 to 2015 period, when it consistently increased. MY 2016 fuel economy currently stands at 25.1 mpg, approximately 18% higher than 2009 levels.



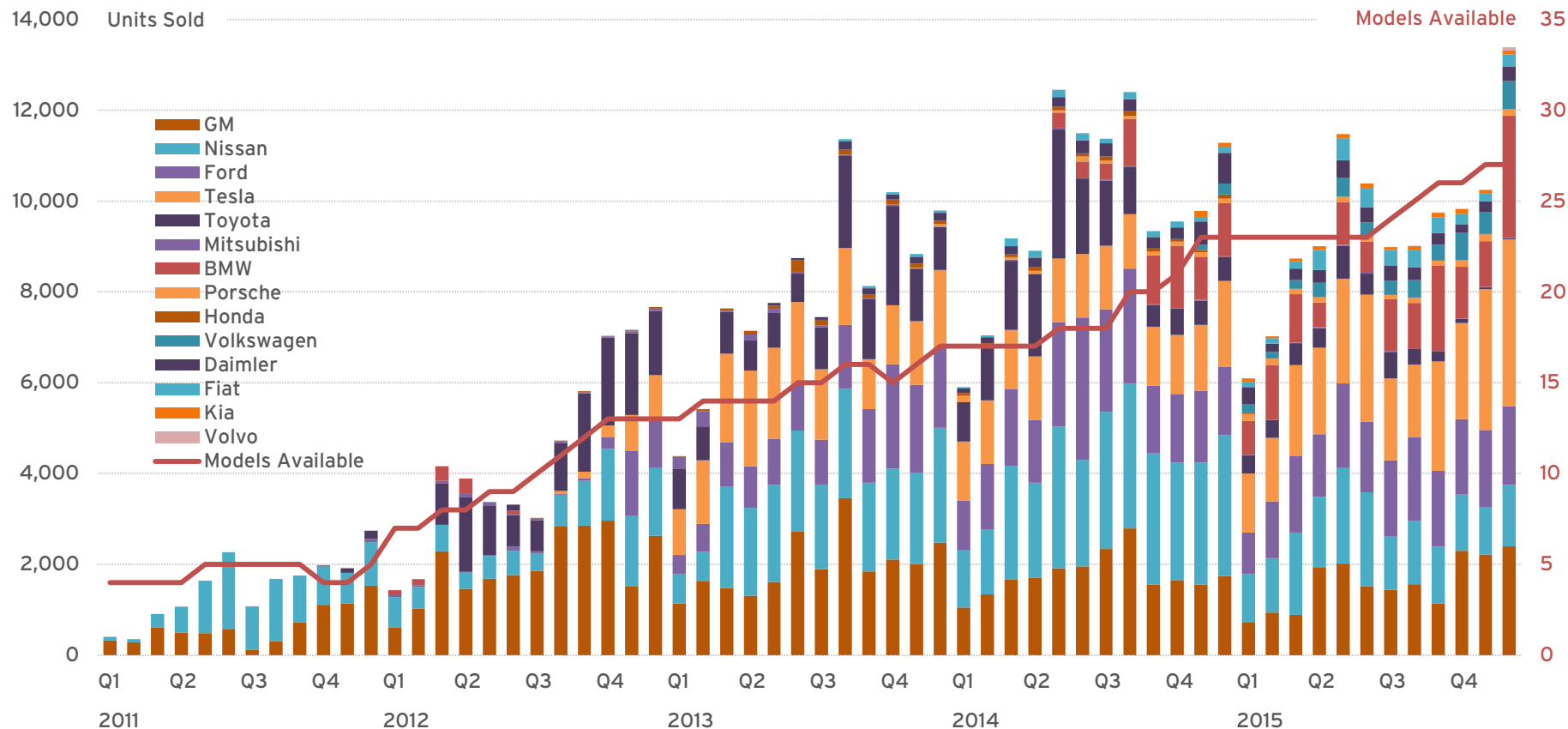
Note: Average sales-weighted fuel-economy rating of purchased new light-duty vehicles.

Source: SAFE analysis based on data from Michael Sivak and Brandon Schoettle, University of Michigan Transportation Research Institute



# Plug-in Electric Vehicle Sales Growth Flat in 2015

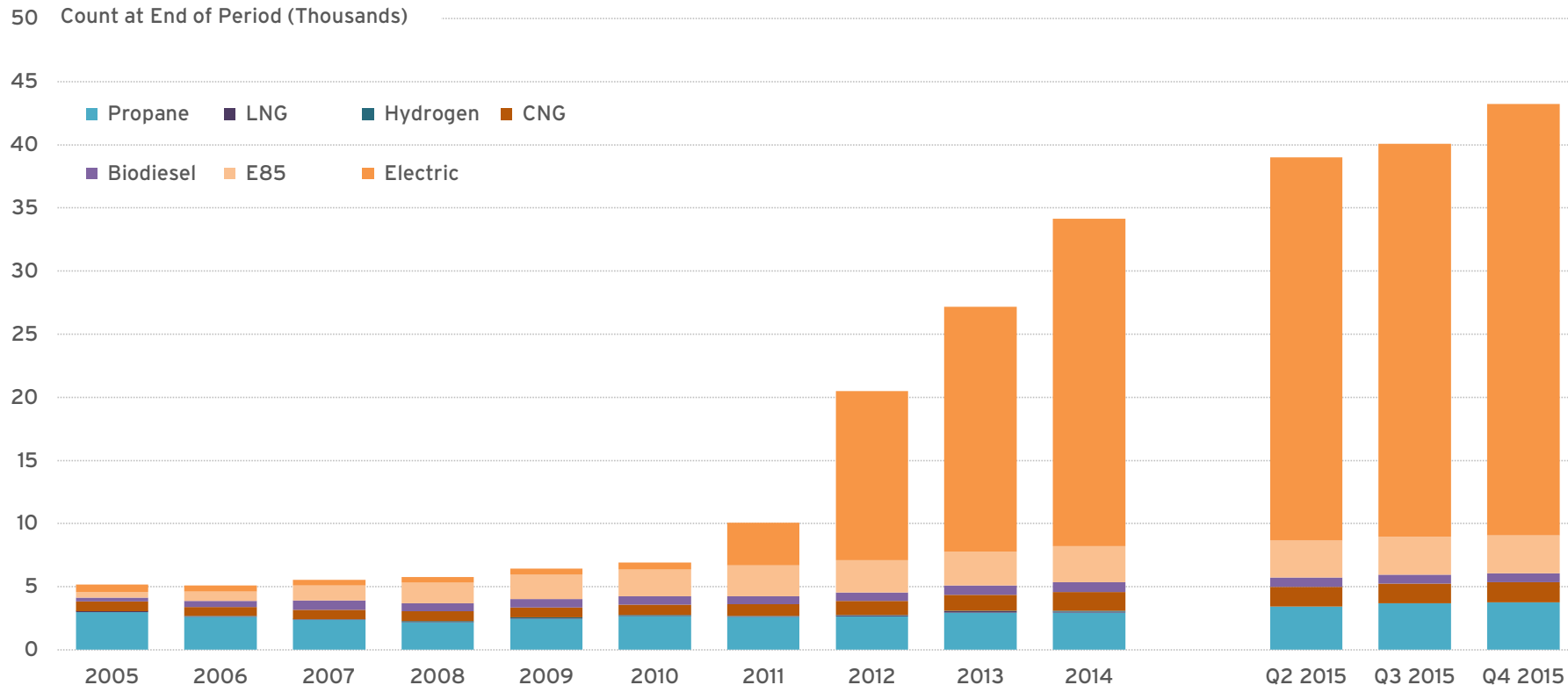
Approximately 33,500 plug-in electric vehicles (PEVs) were sold in Q4, up 8.9% y-o-y. Tesla's Model S continued to lead the PEV market, outselling its nearest competitor (Chevrolet Volt) by 42%. The six best-selling vehicles accounted for approximately 70% of total sales.



Source: SAFE analysis based on data from HybridCars.com

# Alternative Fueling Stations Continue Climb

The number of alternative fueling stations nationwide increased more nearly 65% through the end of Q4 2015 versus 2013, a net addition of approximately 17,500 stations. The vast majority of these new additions (91%) were for electric charging.



Note: Starting in 2011, electric charge equipment was counted by the plug rather than by the geographic location. This is different than other fuels, which only count the geographic location regardless of how many dispensers or nozzles are on site.

Source: DOE, EERE, Alternative Fuels Data Center

# About, Links, and Contact

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## ABOUT

Securing America's Future Energy (SAFE) is a nonpartisan, not-for-profit organization committed to reducing America's dependence on oil and improving U.S. energy security in order to bolster national security and strengthen the economy. SAFE has an action-oriented strategy addressing politics and advocacy, business and technology, and media and public education.

SAFE's Energy Security Fact Pack, launched in 2014, provides a data-driven overview of the latest trends in U.S. energy security, including domestic and global oil production and consumption, oil market dynamics, energy prices, consumer spending on oil, fuel efficiency, and alternative fuel vehicles.

## WEB LINKS

SAFE: [www.secureenergy.org](http://www.secureenergy.org)

Electrification Coalition: [www.electrificationcoalition.org](http://www.electrificationcoalition.org)

The Fuse: [www.energyfuse.org](http://www.energyfuse.org)

Oil Security Index: [www.oilsecurityindex.org](http://www.oilsecurityindex.org)



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