Energy Security Fact Pack

Q1 2017

Securing America's Future Energy

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Contents

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.

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Q1 2017: Infrastructure in America

- Global crude oil prices increased quarter-over-quarter (q-o-q) in Q1 2017 on the implementation of OPEC's coordinated cuts and expectations that the producer bloc would continue to draw down supplies in the second half of 2017. Brent prices averaged roughly $52 per barrel in March. U.S. gasoline prices increased 25% year-over-year (y-o-y) but remain moderate in the minds of consumers at $2.25 per gallon [Page 23].
- The U.S. oil industry continued to recover as shale supply increased and rigs came back online [Pages 9 & 10]. Resurgent U.S. production and high OECD inventories kept Q1 2017 oil prices relatively stable y-o-y. Although volatility has been decreasing, low levels of long-term upstream capital investment mean medium- and longer-term volatility will return.
- 'Charts of the Quarter' highlight U.S. roadway infrastructure, including current and future travel trends, the state of U.S. roads, and other topics:
  - U.S. roadways are under growing strain. Recently, low gasoline prices have propelled a record number of Americans to buy less fuel-efficient vehicles and vehicle miles travelled has reached a record high [Pages 4 & 22]. Over the next three decades, U.S. roadways will manage significant projected increases in truck-carrying freight, which is expected to grow 35% to 14.2 billion tons in 2045 [Page 5].
  - However, one-fifth of roads are in poor condition [Page 6]. Rather than implement a patchwork of state legislation, an intelligently connected transportation system will require comprehensive and national infrastructure standards to support future demand and prepare for transformative autonomous vehicle technologies [Pages 7 & 27].

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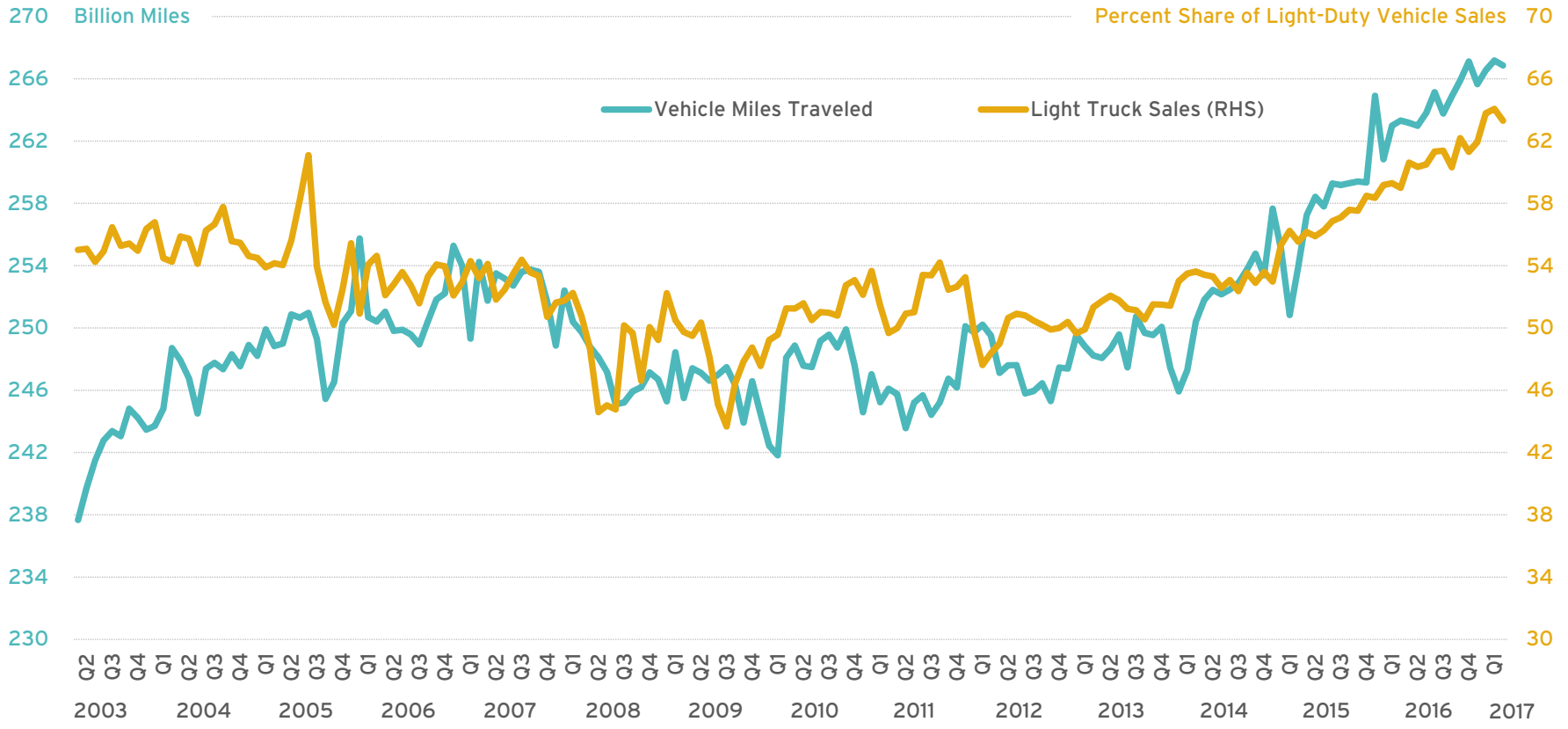
Pedal to the Metal

Americans drove a record 267 billion miles in Q1 2017, a 7% increase over Q1 2012. A growing proportion of those miles are now being driven by light trucks, which accounted for 65 percent of new light-duty vehicle (LDV) purchases in Q1 (+10 percentage points over Q1 2012).



Note: Latest data for VMT is February 2017. VMT for March 2017 is an average of January 2017 and February 2017 data.

Source: EIA, USDOT Federal Highway Administration

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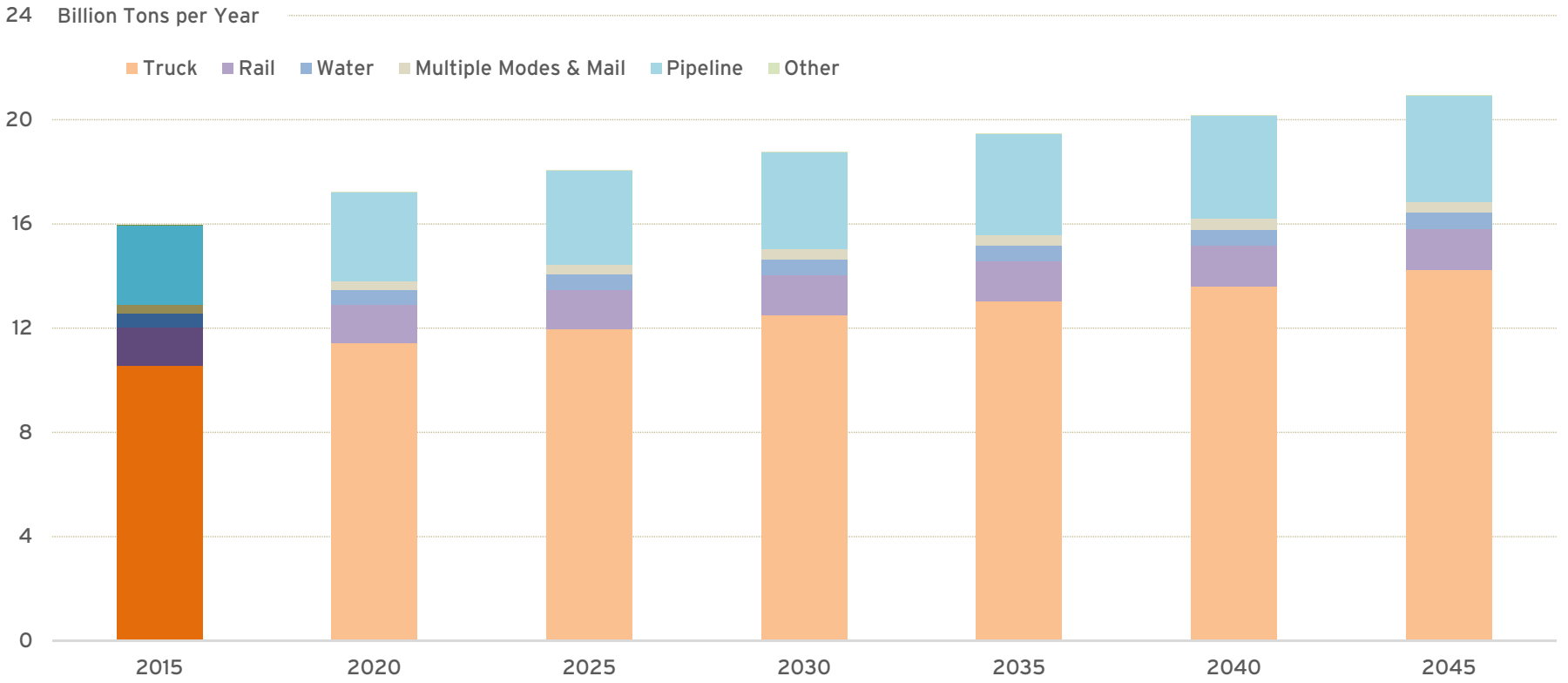
Oversize Load Ahead

Freight by truck will account for 74% of the five billion ton increase in freight movement expected between 2015 and 2045, bringing the total annual tonnage transported throughout the United States to roughly 21 billion tons. Pipelines account for 20% of the projected increase.

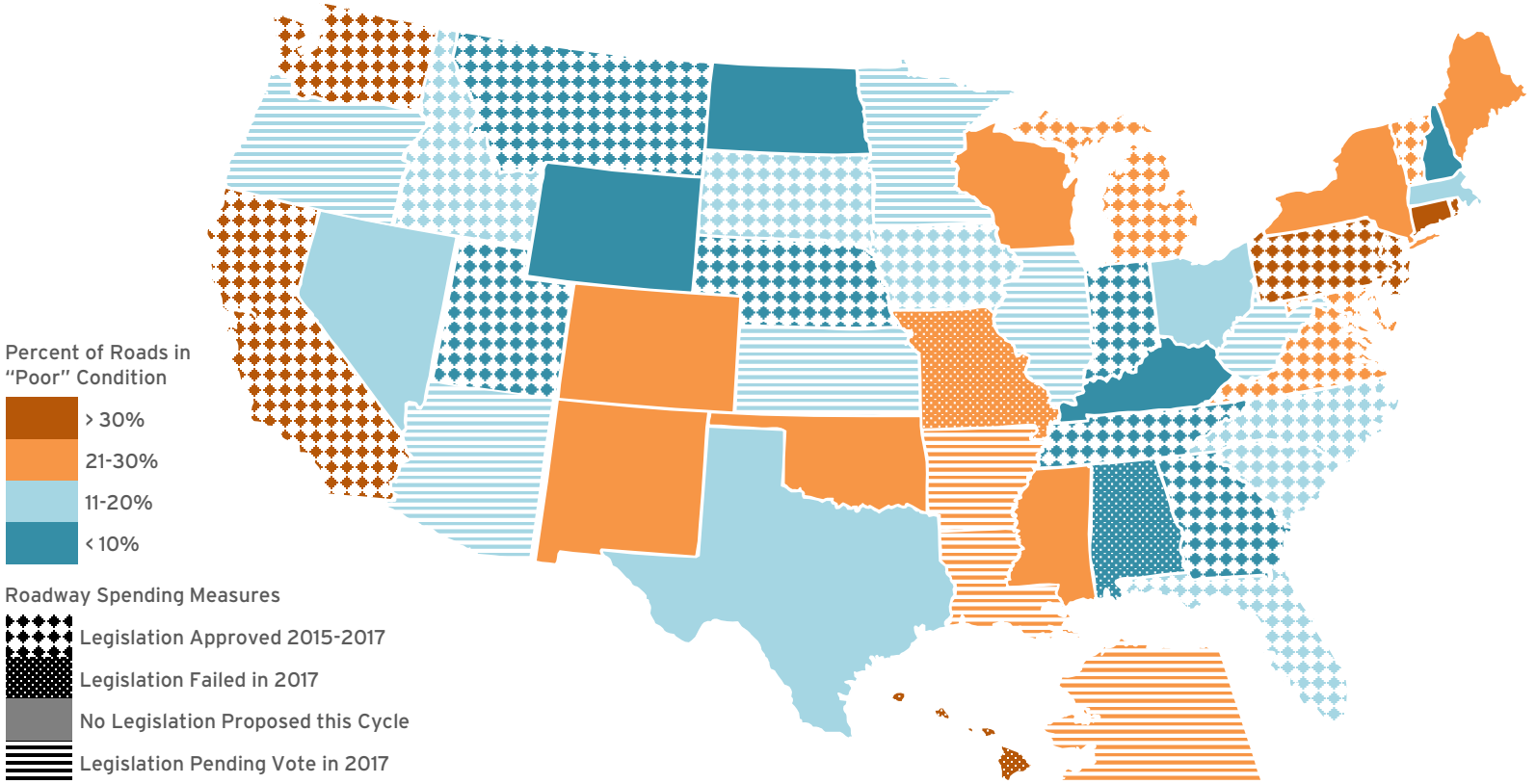


Note: Chart excludes 'Air' data series for registering negligible values relative to scale.

Source: FHA

States Act on Crumbling Infrastructure

Between 2015 and 2017, 20 states passed comprehensive transportation infrastructure packages to boost funding for deteriorating public roadways. Legislators in 13 states have introduced similar measures this cycle, three of which have already failed.



Note: "Poor" condition is defined by American Society of Civil Engineers (ASCE).

Source: SAFE analysis based on data from National Conference of State Legislatures, Transportation Investment Advocacy Center (TIAC), and ASCE.

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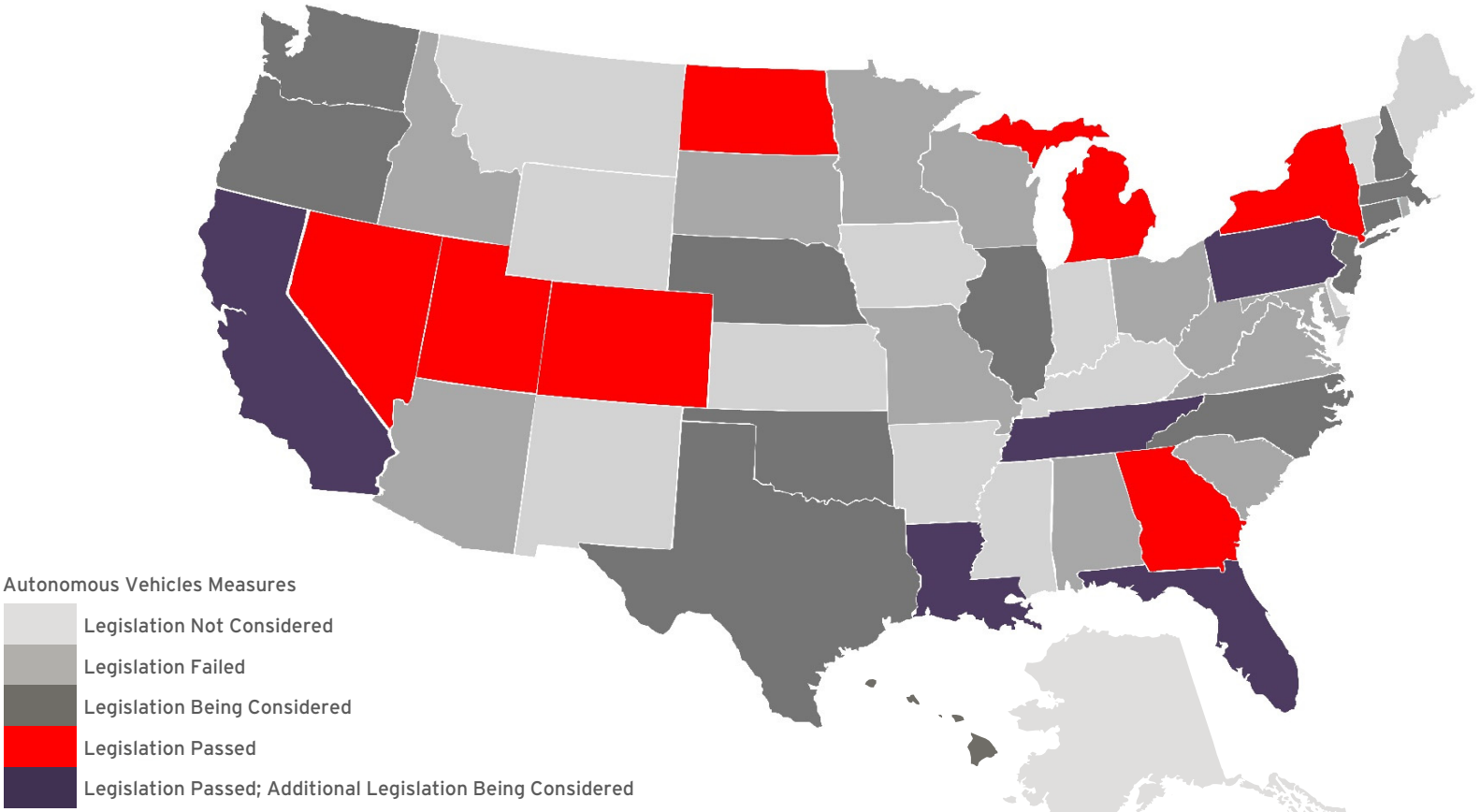
Patchwork of Autonomous Vehicle Legislation

Thirty-seven states have considered legislation regulating autonomous vehicle (AV) technologies, of which eight states have passed such measures. In the absence of a uniform federal framework, a jumble of state legislation impedes AV testing and deployment.



Source: SAFE analysis based on data from The Center for Internet and Society at Stanford Law School.

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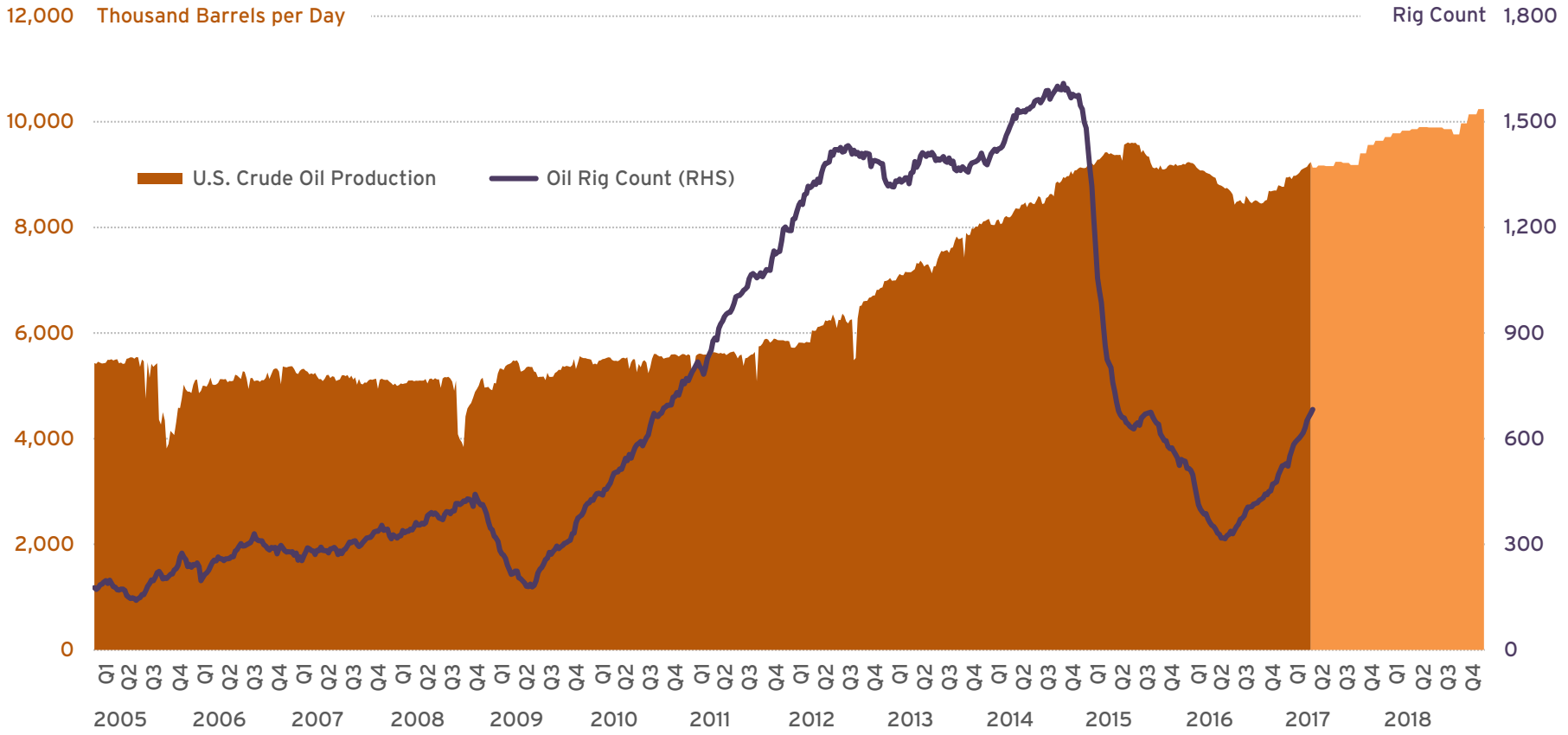
U.S. Rig Count Builds on Robust Recovery

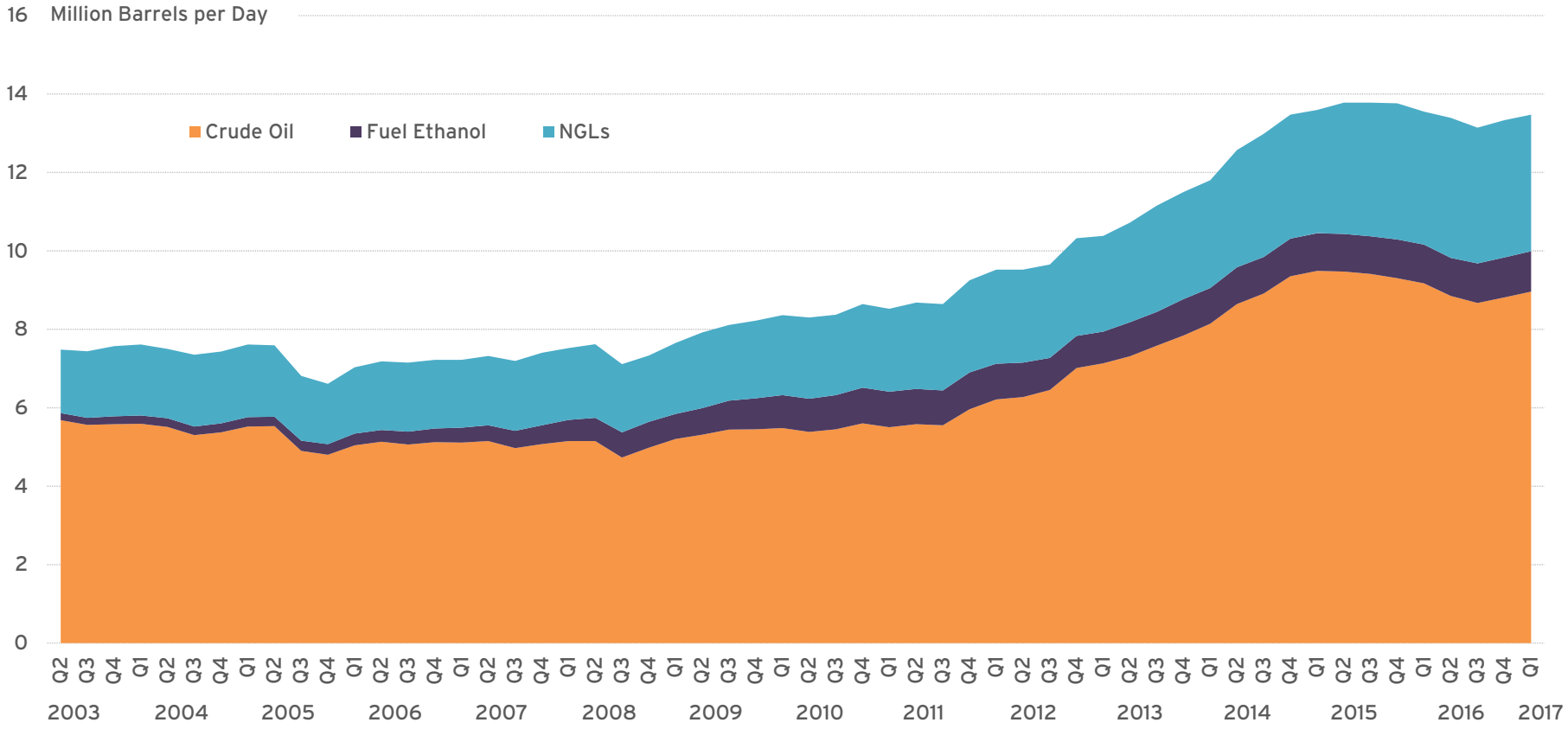
The U.S. oil rig count increased from 525 to 662 in Q1, a 21 percent increase q-o-q after falling to its lowest point since 2009 in Q2 2016. U.S. crude oil production continued to grow, reaching 9.0 mbd (+0.2 mbd q-o-q). 2018 forecast production shows U.S. crude oil reaching 10.0 mbd.



Source: EIA and Baker Hughes

U.S. Oil Production Grows

U.S. liquids production grew 0.1 mbd q-o-q in Q1 2017. Inclusive of fuel ethanol and natural gas liquids (NGLs), total U.S. liquids production remains roughly 6.0 mbd higher than in 2008. After Saudi Arabia, the United States is among the world's largest liquid fuels producers.



Source: SAFE analysis based on data from EIA

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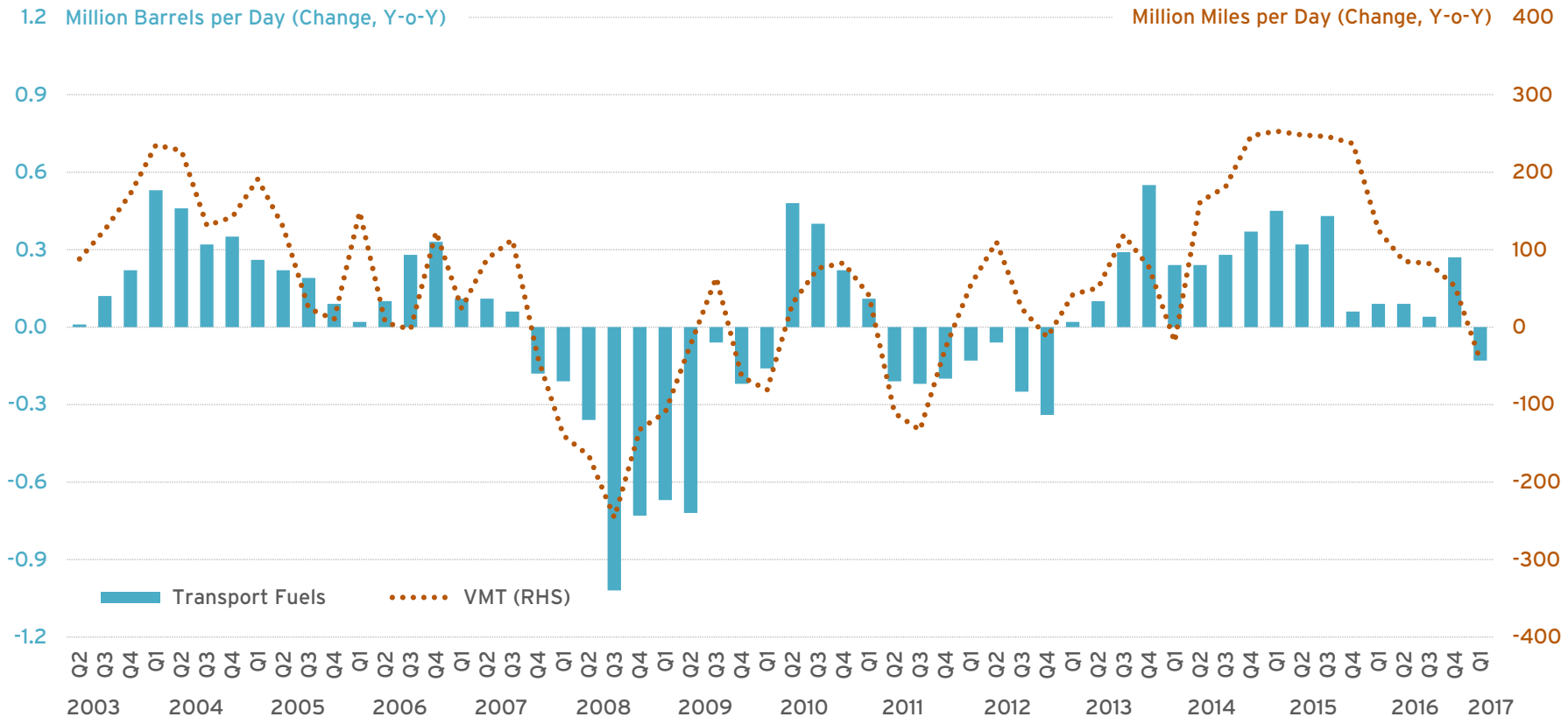
Transportation Fuel Demand Growth Flat

U.S. demand for gasoline, diesel, and jet fuel averaged 13.8 mbd in Q1 2017, -0.1 mbd y-o-y. Total vehicle miles traveled (VMT) fell 43 million miles y-o-y (-1.4%), the first decline in 12 consecutive quarters.



Source: SAFE analysis based on data from EIA

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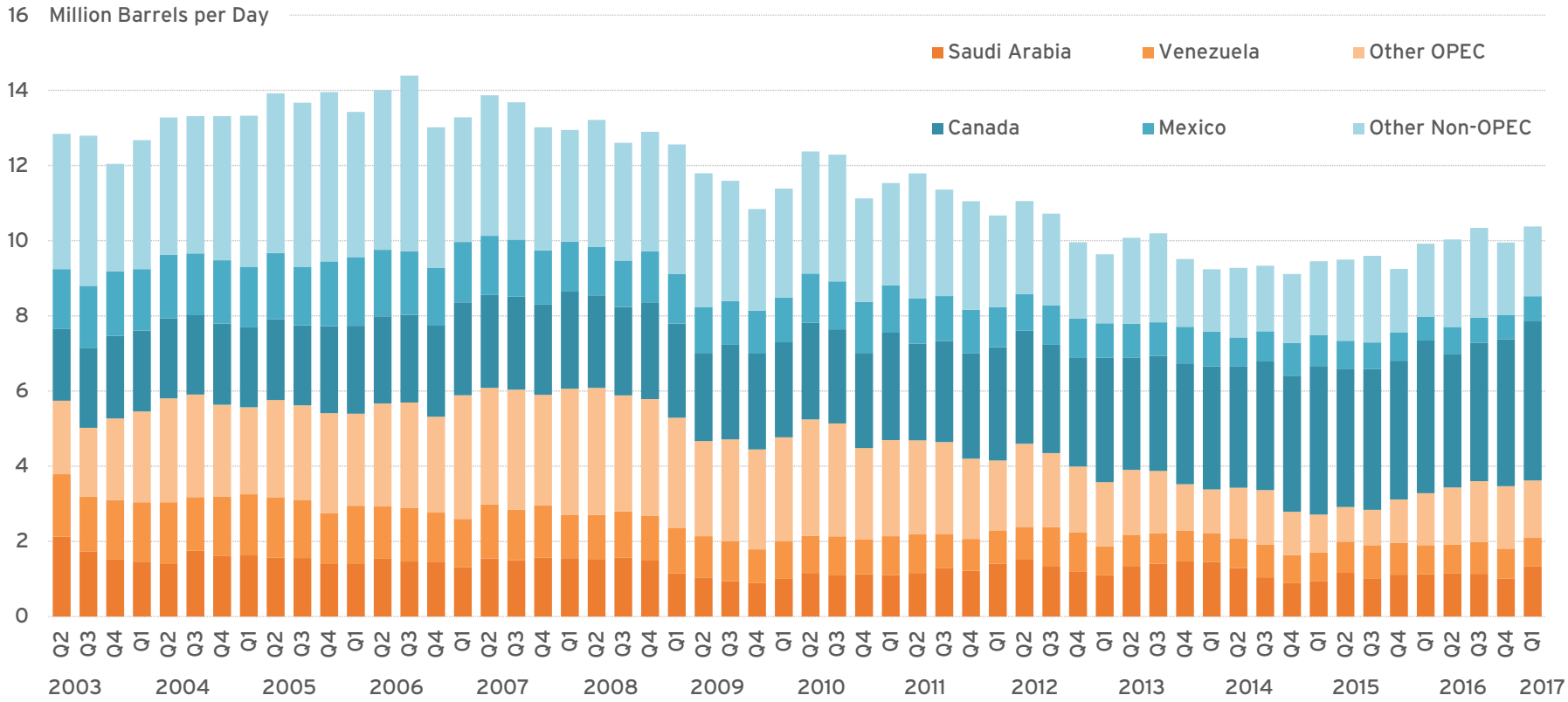
Imports From OPEC Hold Steady

U.S. crude oil and petroleum product imports grew to 10.4 mbd in Q1 2017 (+0.5 mbd y-o-y) after having fallen in Q4 2016. U.S. imports from OPEC remained steady at 35% (approximately 3.6 mbd) for the third straight quarter with Saudi Arabia as the leading source (1.3 mbd).



Note: Q1 2017 average calculated using January 2017 and February 2017 data.

Source: SAFE analysis based on data from EIA

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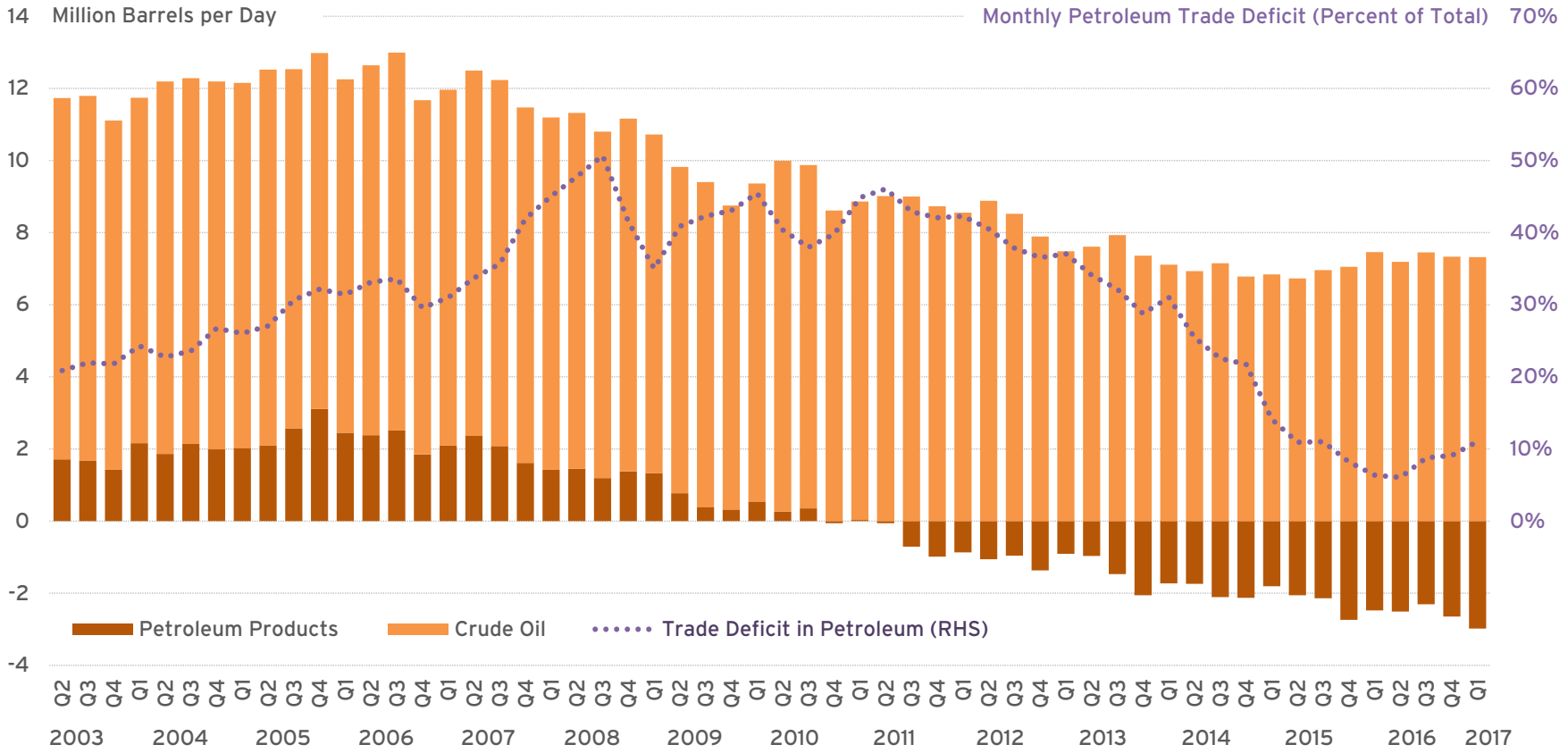
U.S. Petroleum Trade Deficit Flat

Although U.S. net oil imports have fallen by more than two thirds since Q4 2005, the country remains reliant on imported oil. In Q1, net imports stood at 4.3 mbd, a decrease of 0.6 mbd y-o-y. The United States became a net exporter of petroleum products in 2011.



Source: SAFE analysis based on data from EIA

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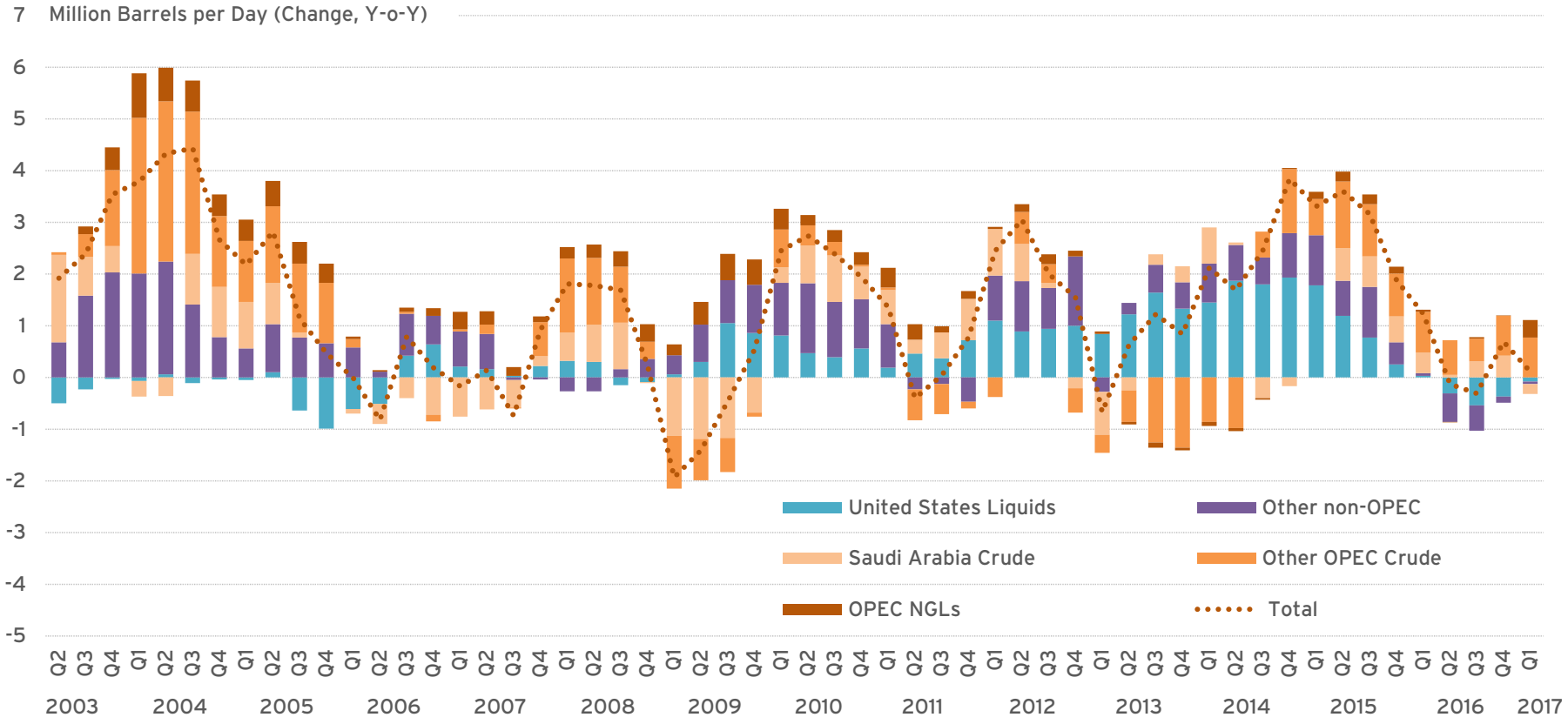
Global Oil Supply Steadies

Global oil production remained roughly flat in Q1 2017 y-o-y at 96.9 mbd as sharp cuts in Saudi output met resurgent U.S. production. The United States contributed 66% of net global supply growth between 2012 and 2017.



Source: SAFE analysis based on data from EIA

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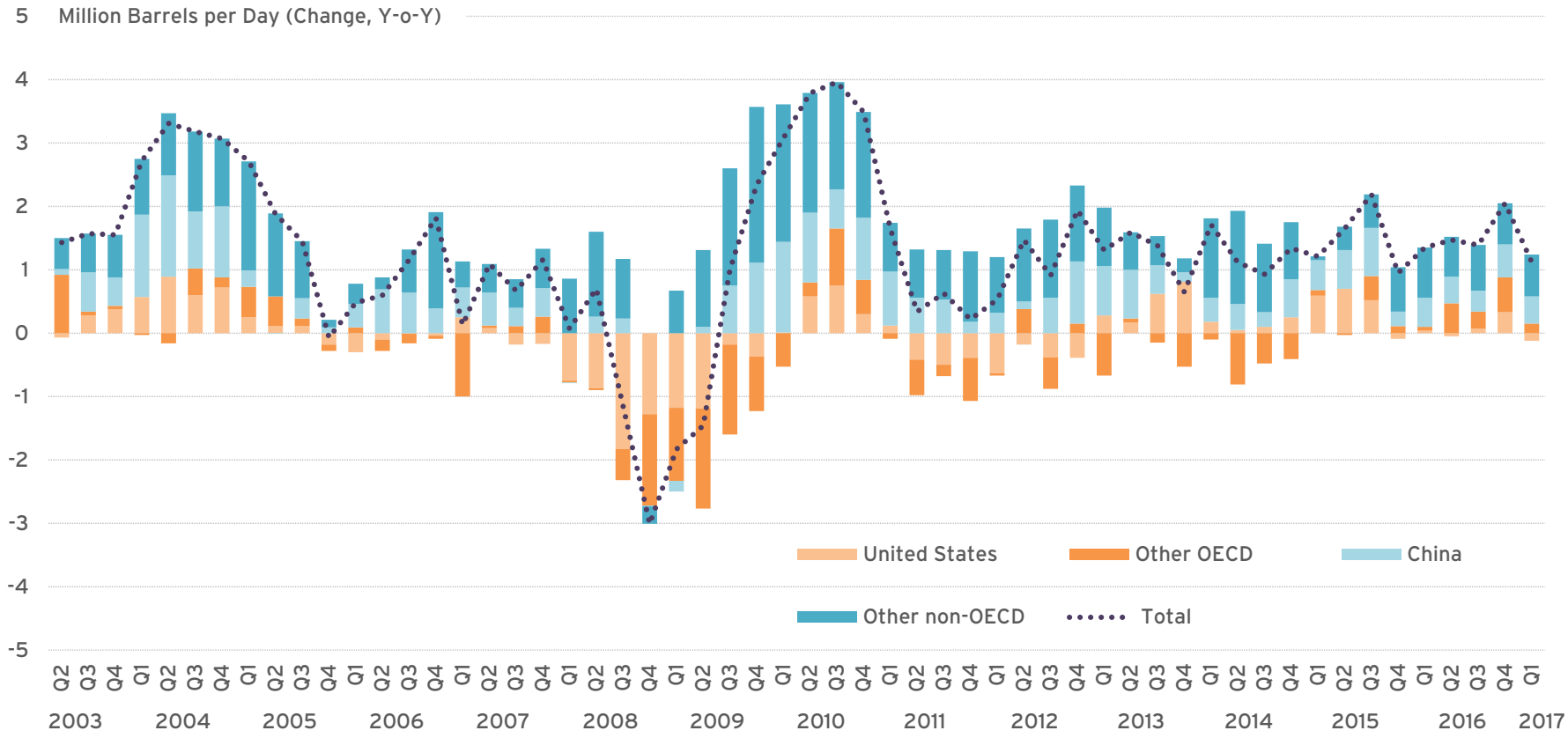
Global Oil Demand Growth Slows

Global oil demand grew 1.1 mbd y-o-y in Q1 2017 driven by growth in non-OECD countries (+1.0 mbd y-o-y). Demand in OECD countries was effectively flat y-o-y in Q1 2017 at 46.7 mbd. Global oil demand has been increasing since 2009, reaching approximately 96.6 mbd in Q1.



Source: SAFE analysis based on data from EIA

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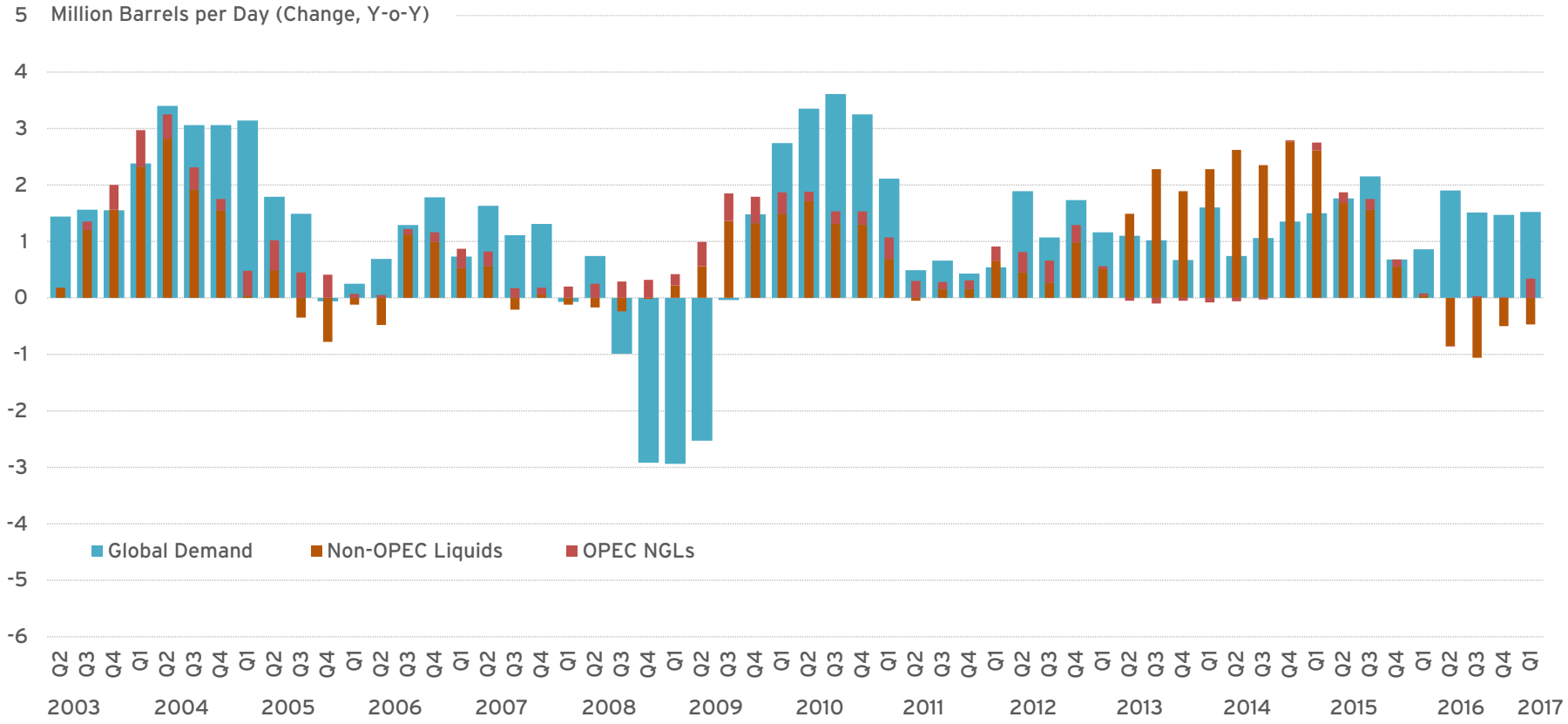
Non-OPEC Supply Growth Stays Negative

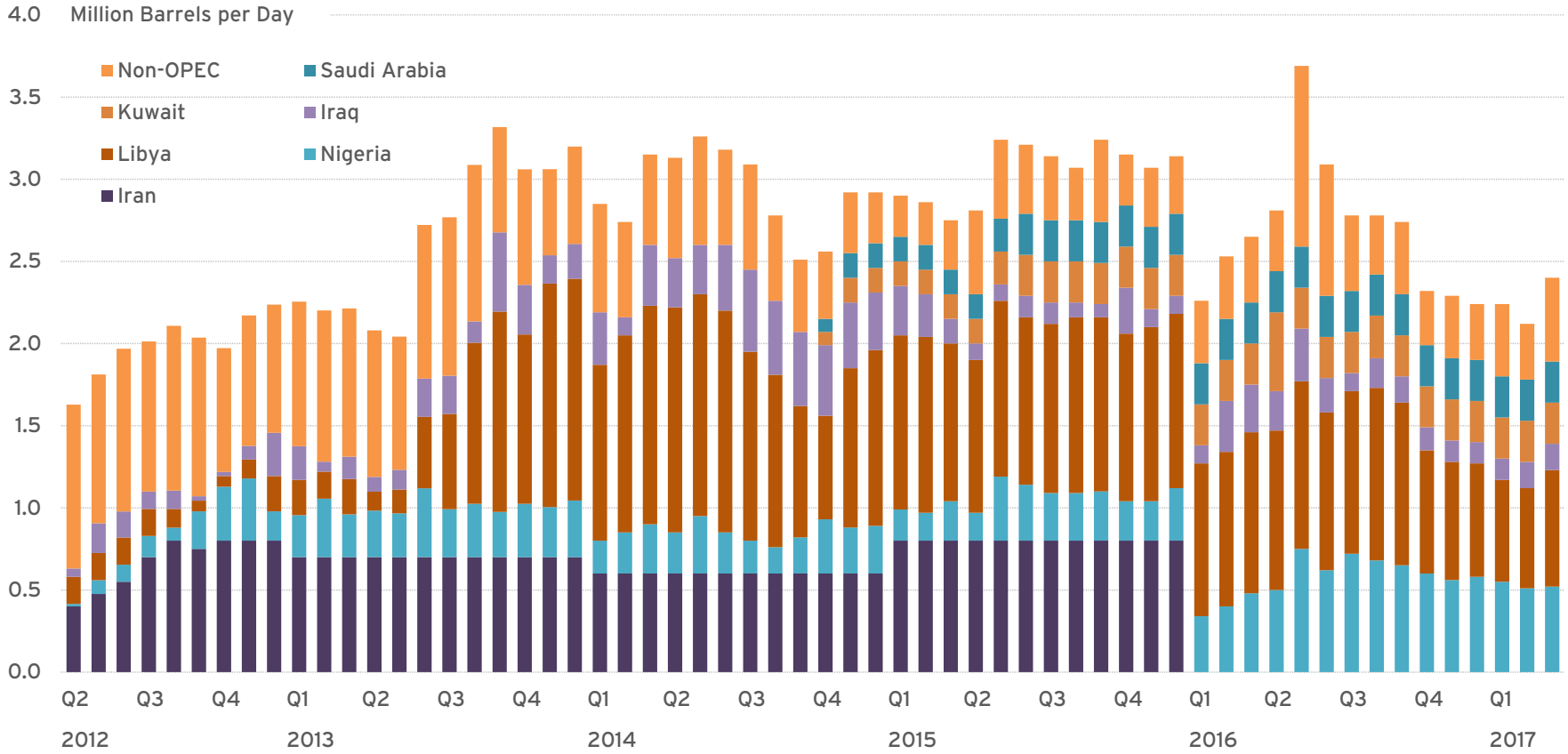
Non-OPEC supply declined for a fourth consecutive quarter (-0.5 mbd y-o-y). Global oil demand growth has exceeded non-OPEC liquids supply growth for eight quarters, a reversal versus Q2 2013 and Q1 2015, and a pattern last seen between Q2 2012 and Q1 2013.



Source: SAFE analysis based on data from EIA

Unplanned Crude Oil Outages Steady

Global unplanned outages fell to 2.3 mbd in Q1 2017, roughly no change q-o-q. Ongoing political instability in Nigeria and Libya has contributed to extended disruptions. Non-OPEC countries faced a slight increase in unplanned outages (+ 0.1 mbd q-o-q).



Source: SAFE analysis based on data from EIA

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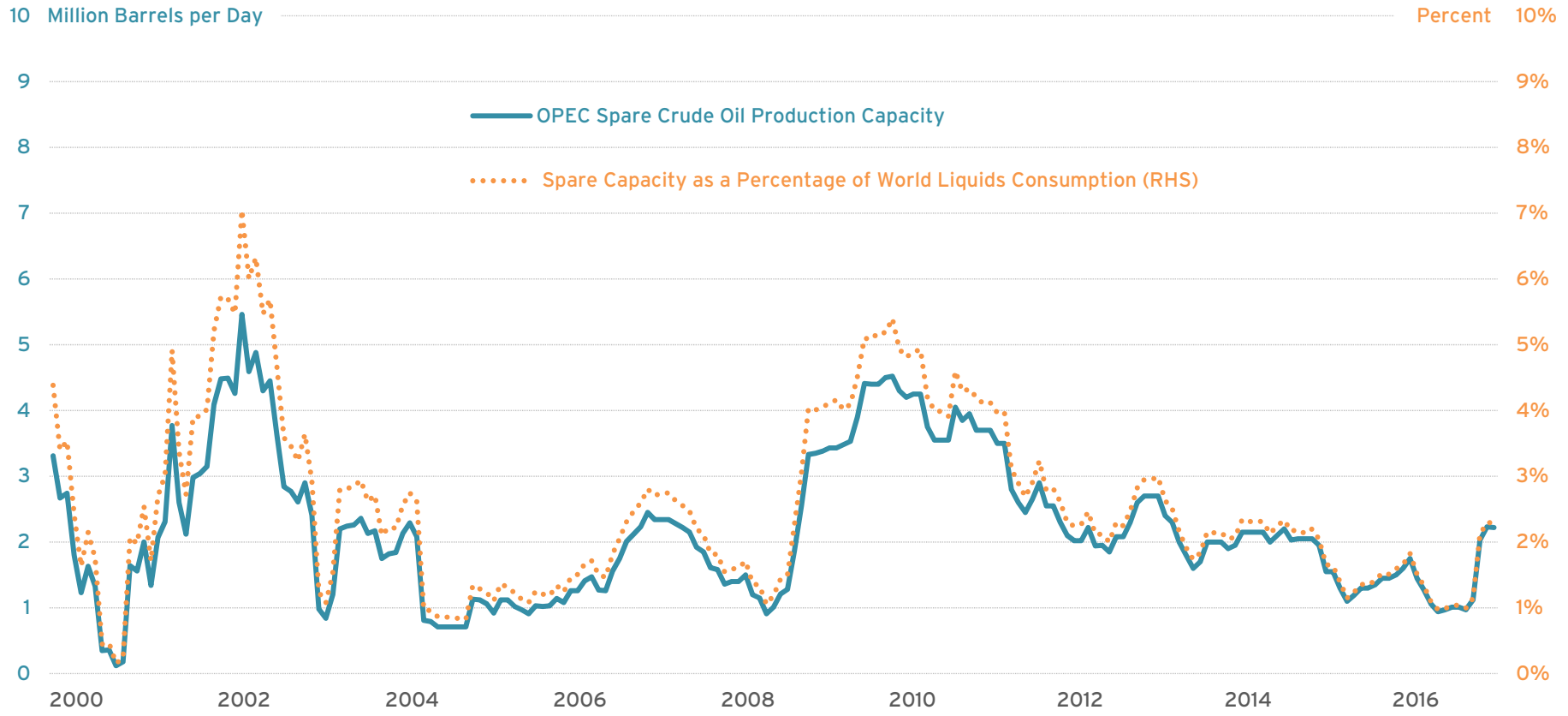
OPEC Spare Crude Oil Production Capacity Rises

OPEC spare crude oil production capacity increased to 2.2 mbd at the end of Q1 2017 (+0.5 y-o-y). This is equivalent to approximately 2% of global consumption. The majority of OPEC's spare production capacity is held by Saudi Arabia.



Source: SAFE analysis based on data from EIA

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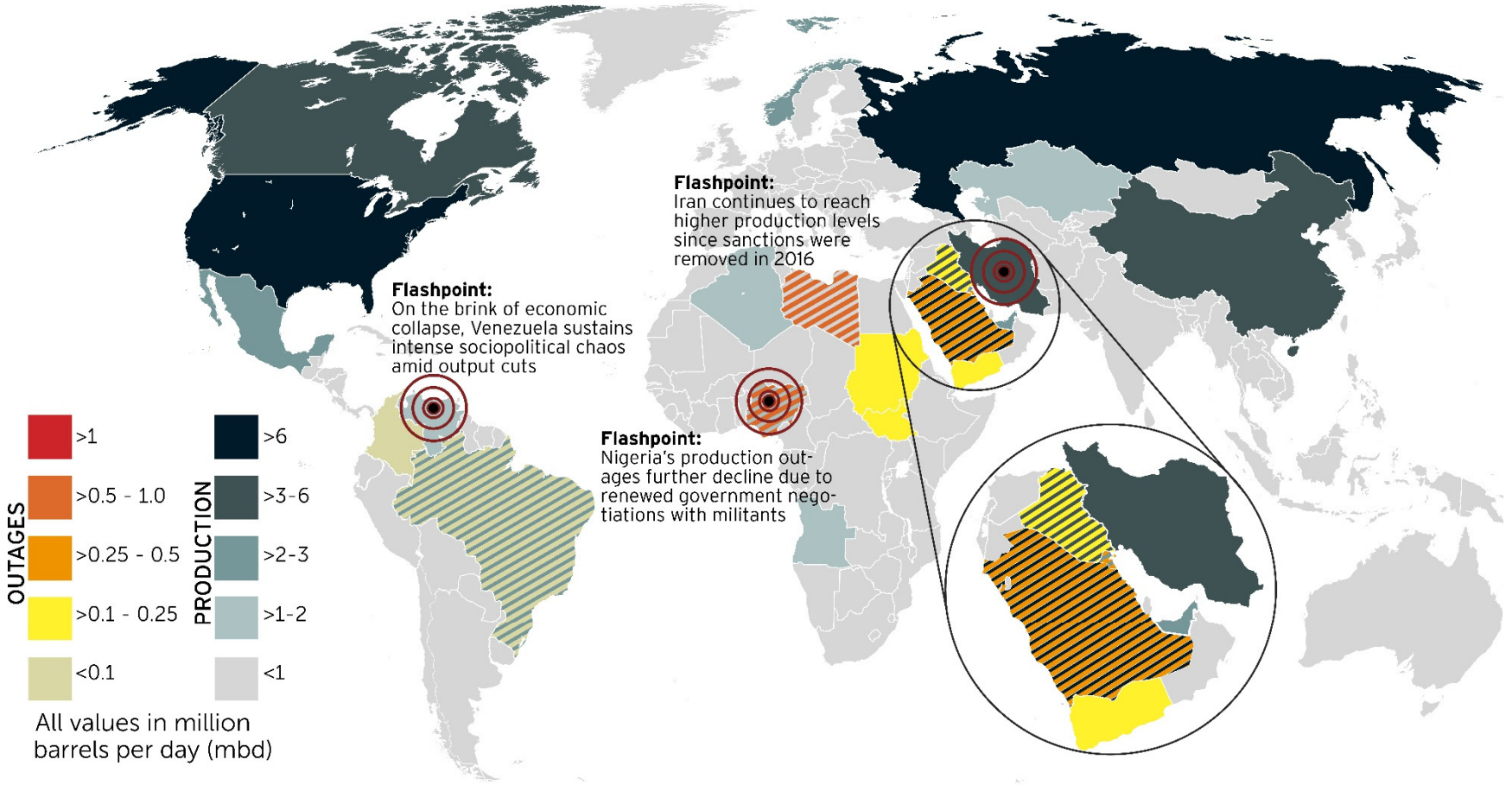
Barrels at Risk Map

Total oil supply outages declined by 0.1 mbd to 2.1 mbd in Q1 2017. Nigeria's new policy to reconcile with militants has slightly reduced outages. Venezuela and Libya continue to face disruptions from political instability.



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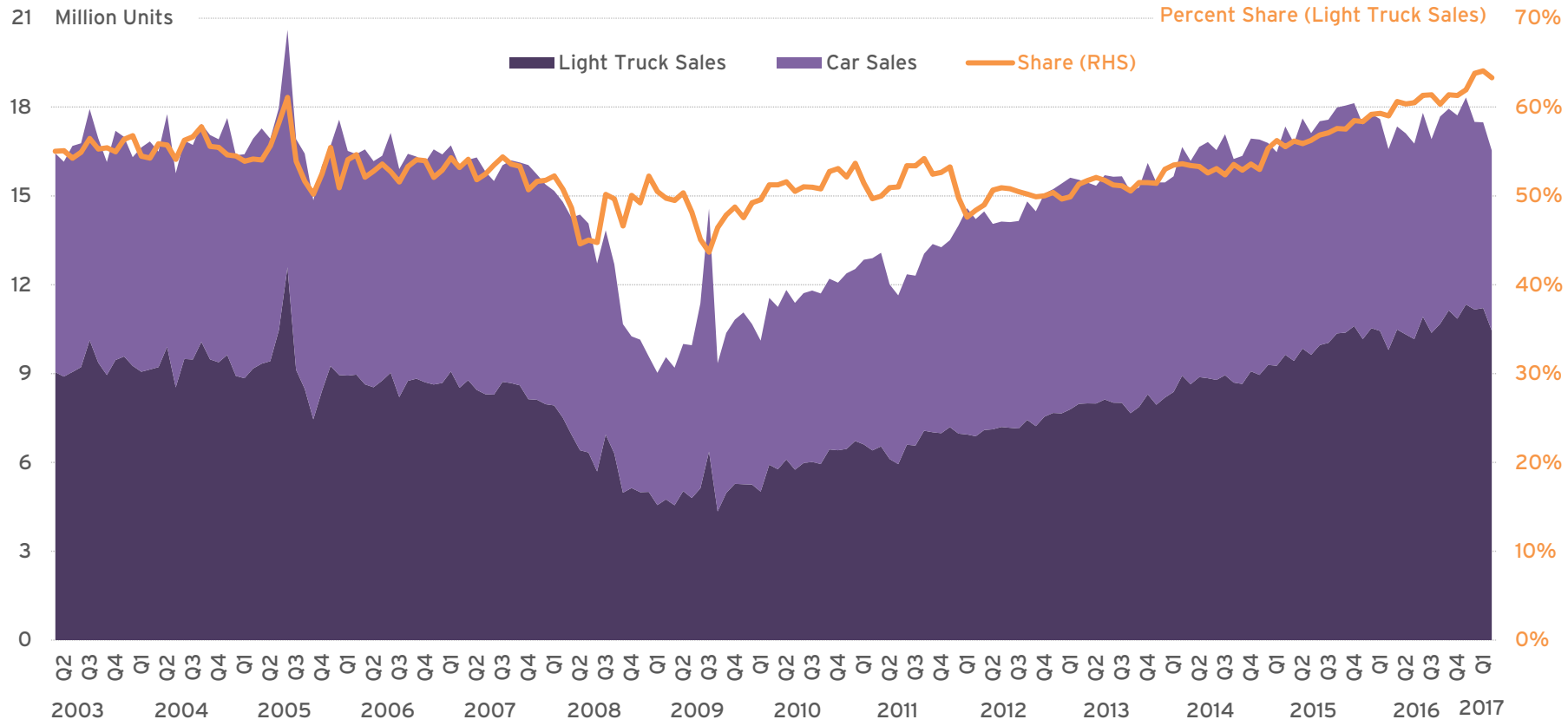
Light Truck Sales Surge

New light truck sales averaged 10.9 million units in Q1 2017, increasing by approximately 0.6 million units y-o-y. Light trucks now account for roughly 64% of LDV sales, a 4.6 percentage point increase y-o-y.



Source: SAFE analysis based on data from BEA

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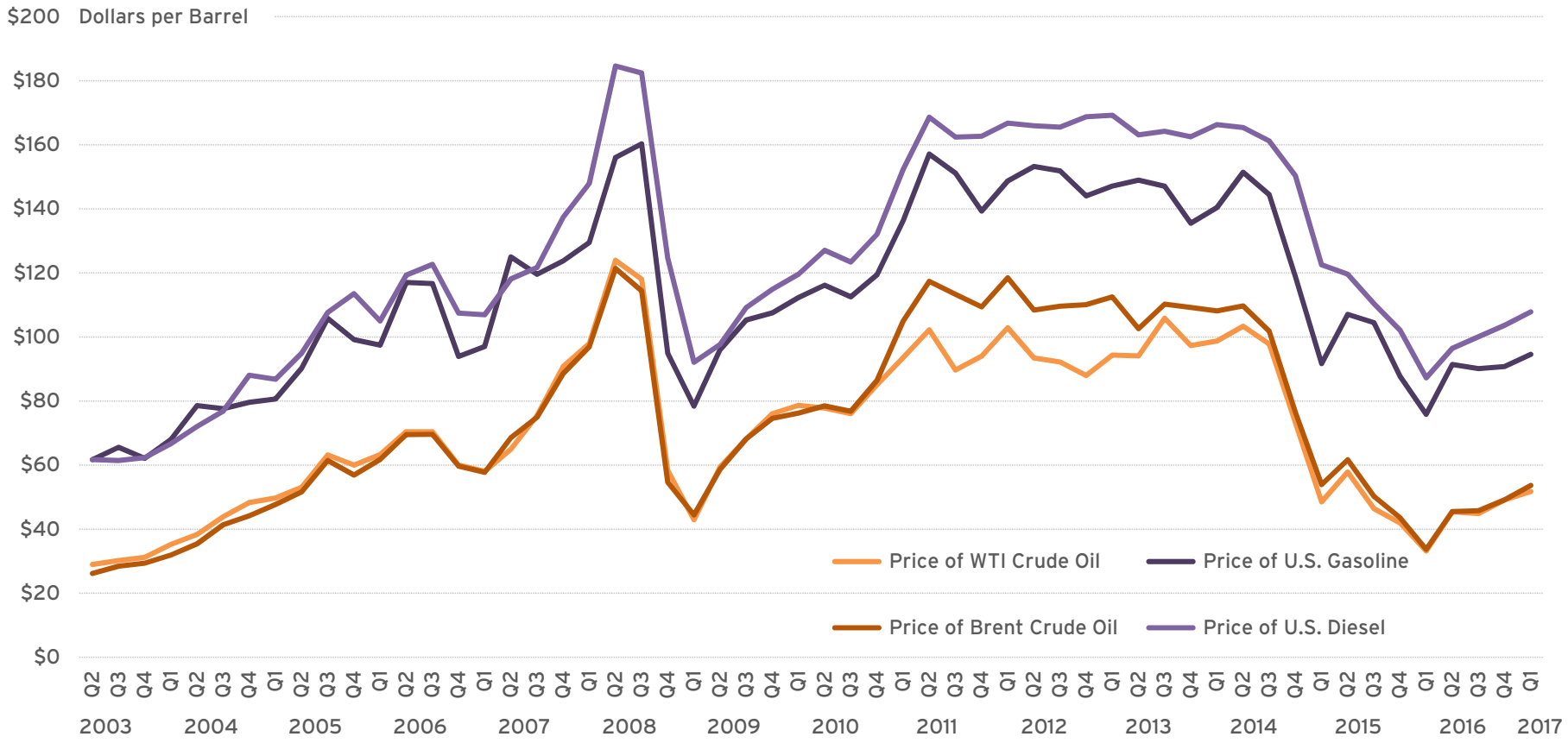
Brent and WTI Prices Rise

Oil and product prices increased in January and February 2017 before dropping slightly in March. March average Brent = $51.59/bbl, WTI = $49.33/bbl, U.S. gasoline = $2.24/gal.



Source: SAFE analysis based on data from EIA

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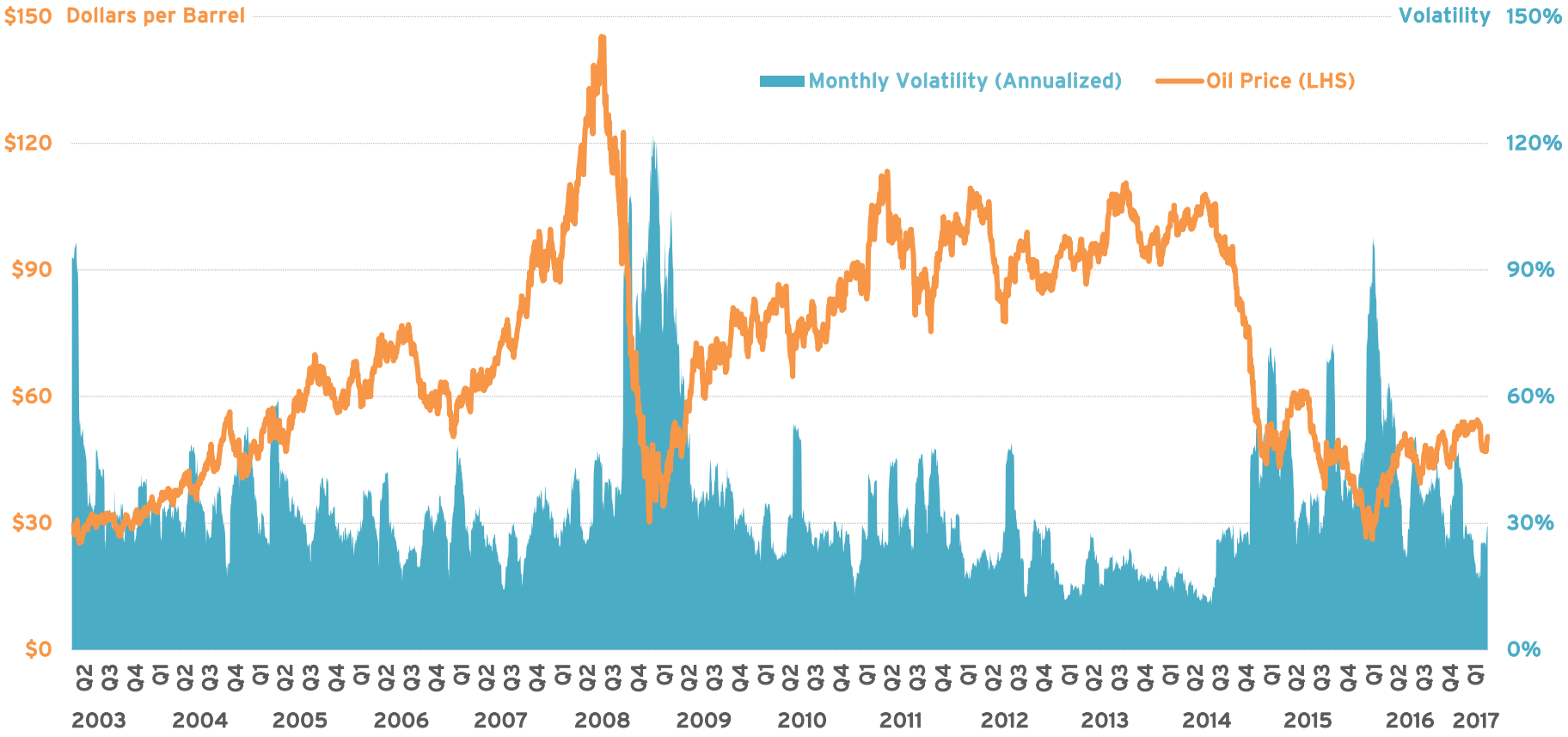
Oil Price Volatility Reflects Shale Resurgence

Oil price volatility averaged 69% in Q1 2016 and dropped 45 percentage points y-o-y to an average of 25% in Q1 2017. In March 2017, 30-day volatility averaged 25%, reflecting U.S. crude oil production's sustained recovery.



Source: SAFE analysis based on data from EIA

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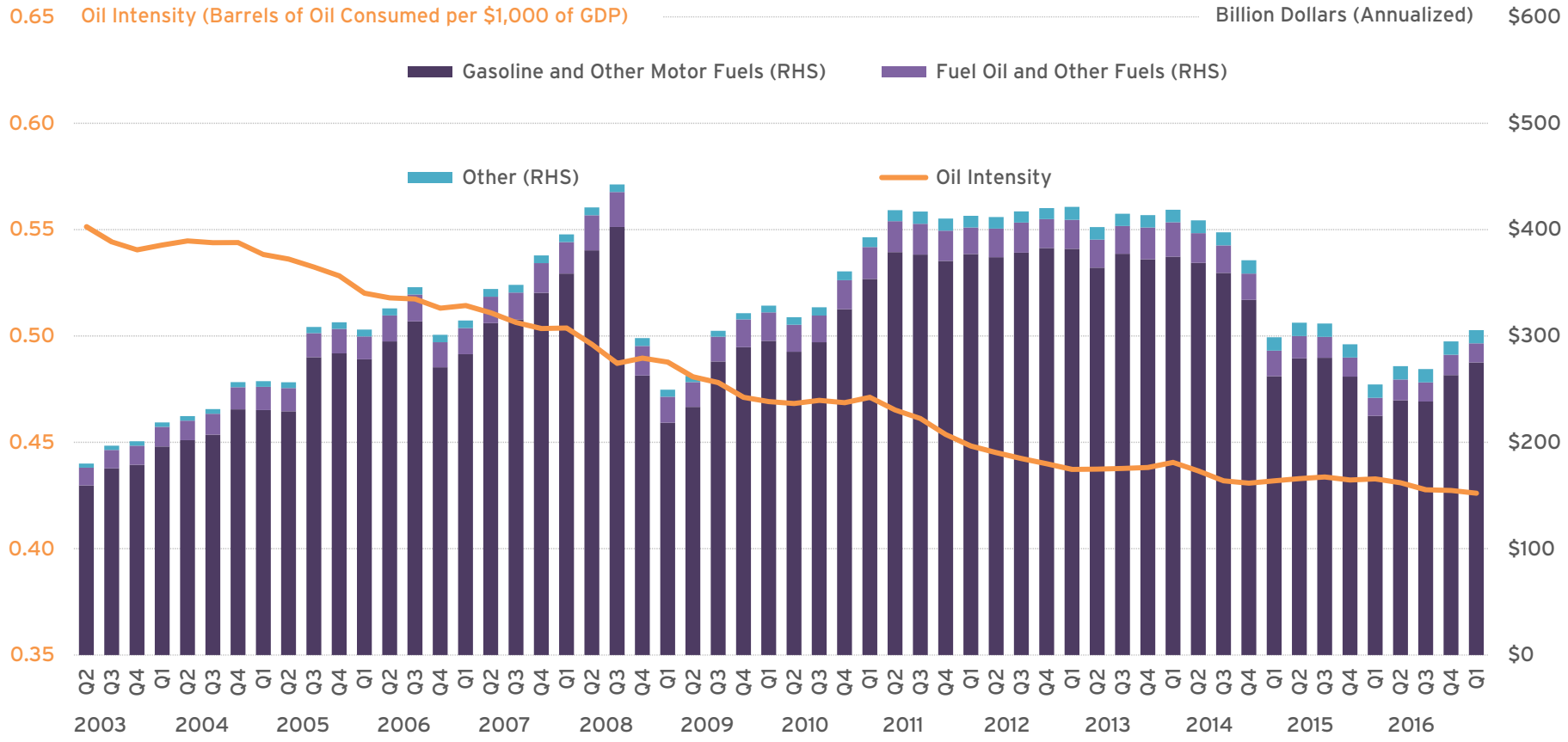
Oil Intensity Flat As Household Expenditures Rise

U.S. household spending on petroleum fuels increased approximately $50 billion y-o-y to $305 billion in Q1 2017, reflective of the increase in retail gasoline prices. The oil intensity of the economy has remained steady at 0.43 barrels per $1,000 of GDP.



Source: SAFE analysis based on data from EIA and BEA

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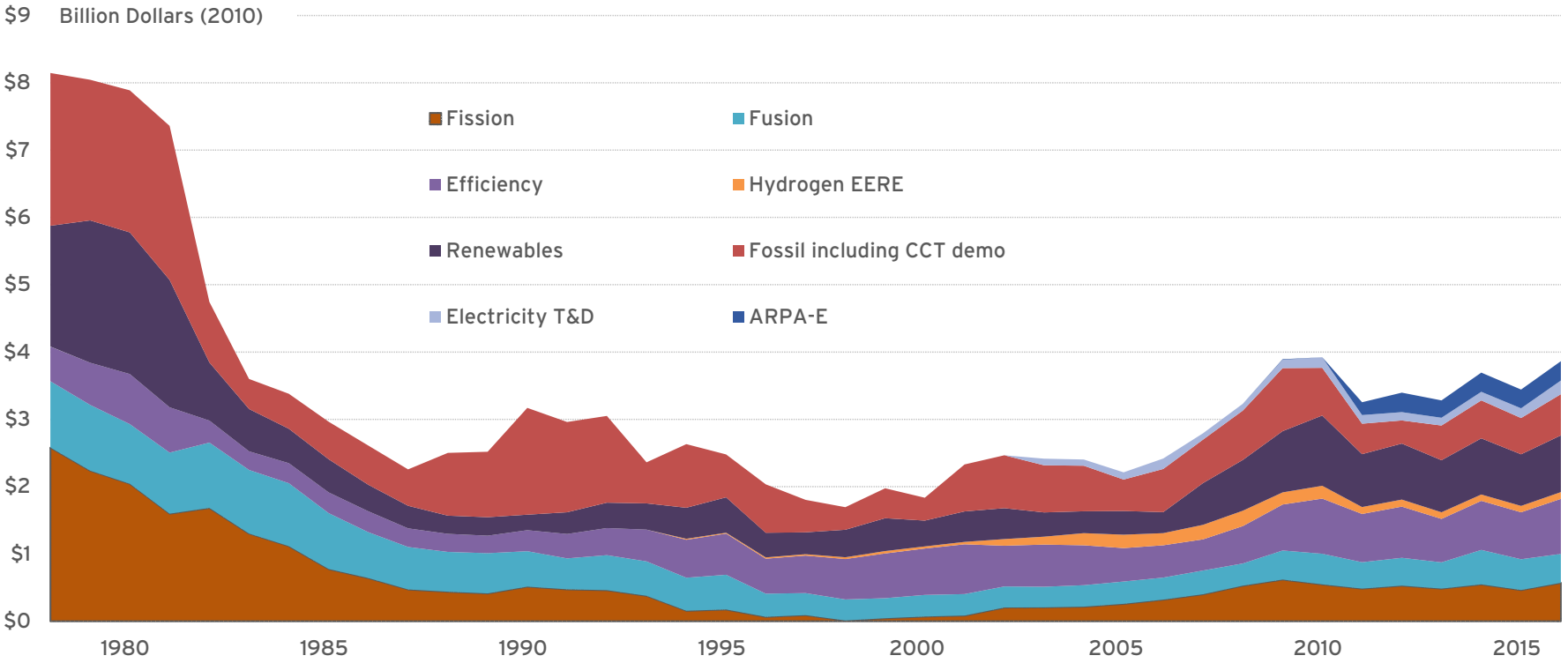
DOE's R&D Budget Prioritizes Alternatives and Efficiency

DOE's annual R&D budget has fluctuated within the $3.5 to $4 billion range since 2009. DOE has channeled a total of 74% of funds towards renewables ($5.7 bn), efficiency ($5 bn), fossil fuels ($4 bn) and fission ($3.7 bn) over the past eight years.

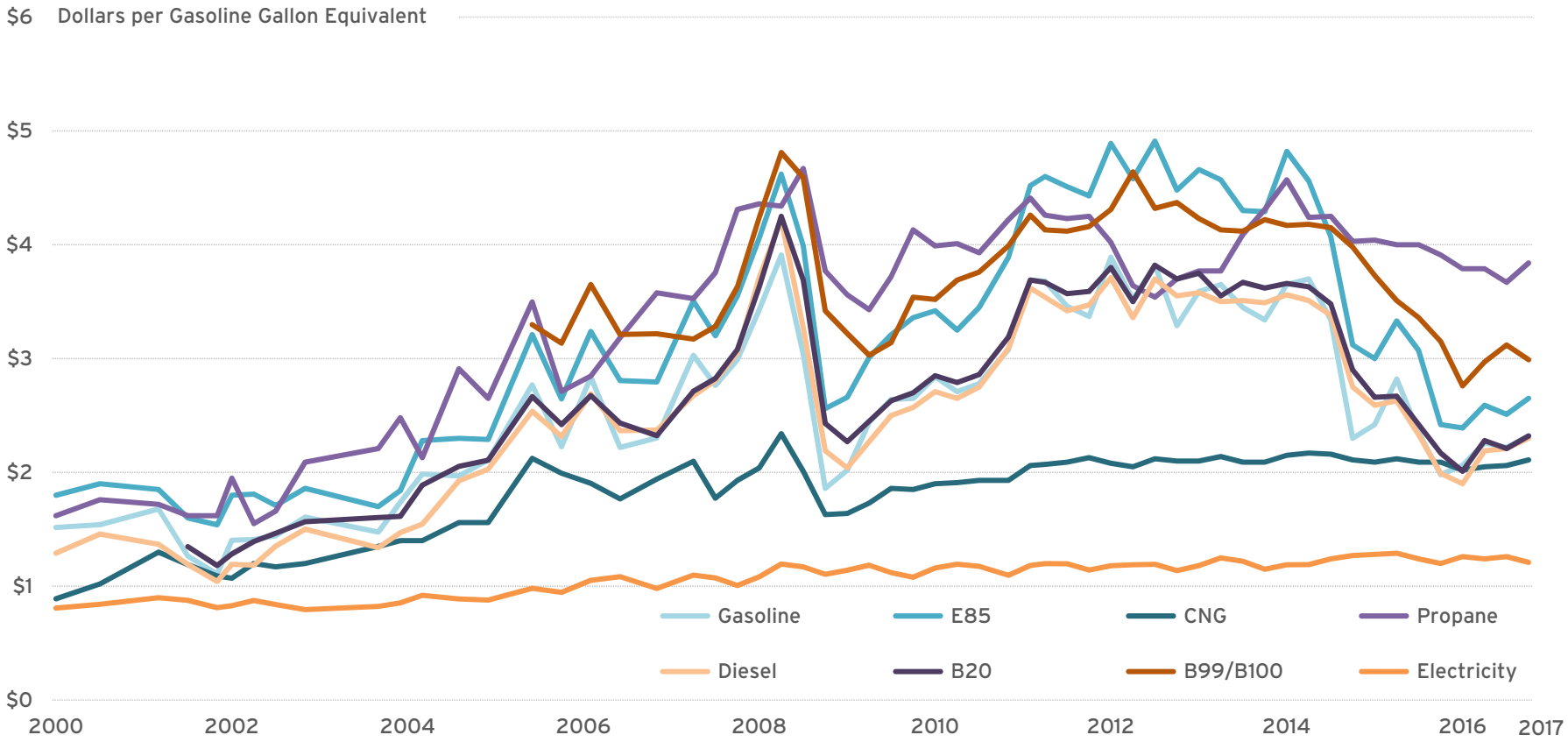


Note: Figure excludes one-time funding from the American Recovery and Reinvestment Act of 2009.

Source: Kelly Sims Gallagher and Laura Diaz Anadon, DOE Budget Authority for Energy Research, Development, & Demonstration Database, Belfer Center for Science and International Affairs, March 2016

Electricity and Natural Gas Prices Remain Roughly Stable

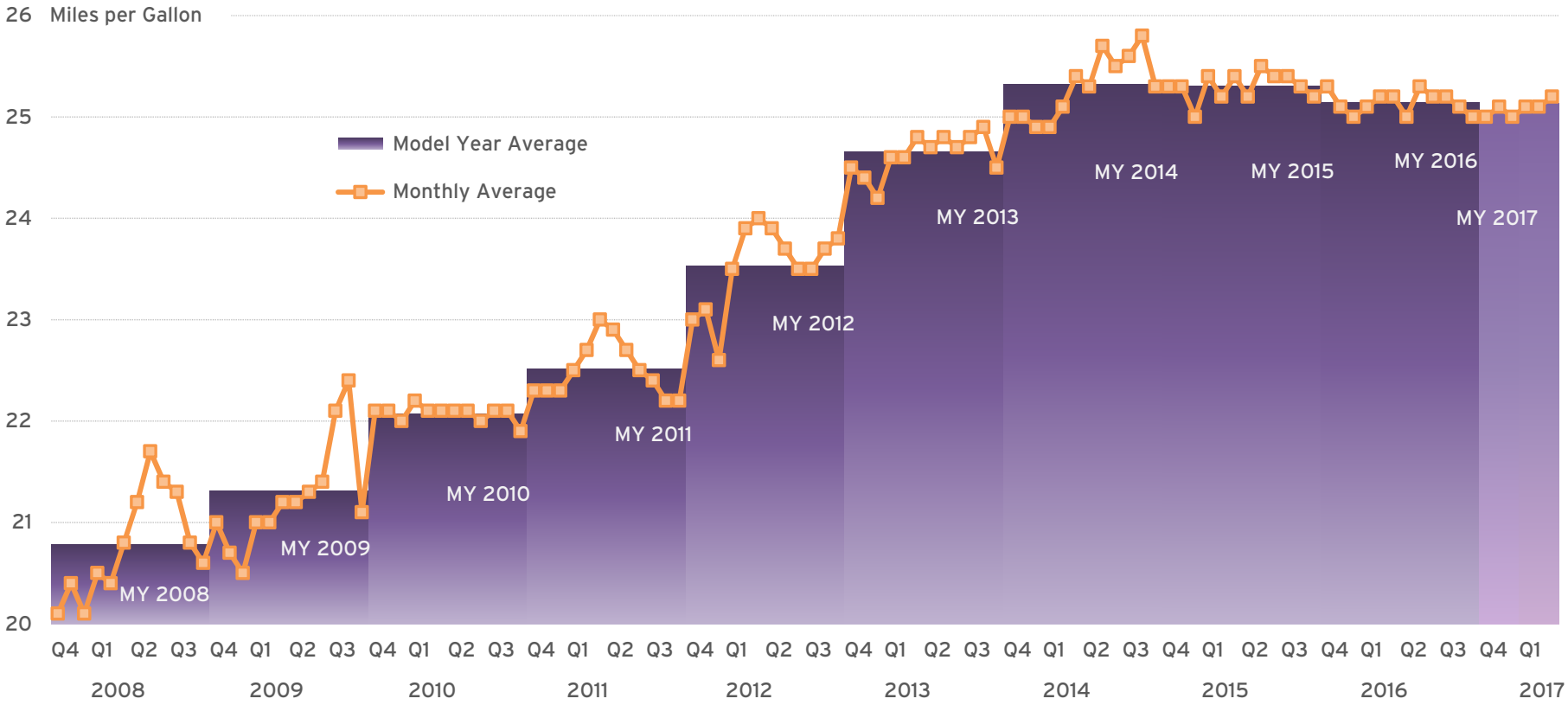
Despite recent decreases, liquid fuel prices have experienced substantial volatility since 2000. The prices of compressed natural gas (CNG) and electricity have remained relatively stable during the same time period.



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

New Light-Duty Vehicle Fuel Economy Ratings Declining

The average fuel economy rating of new light duty vehicles fell 0.1 miles per gallon (mpg) y-o-y in Q1 2017 to 25.1 mpg, continuing a two-year trend. MY 2016 fuel economy was 25.1 mpg, approximately 18% higher than 2009 levels.

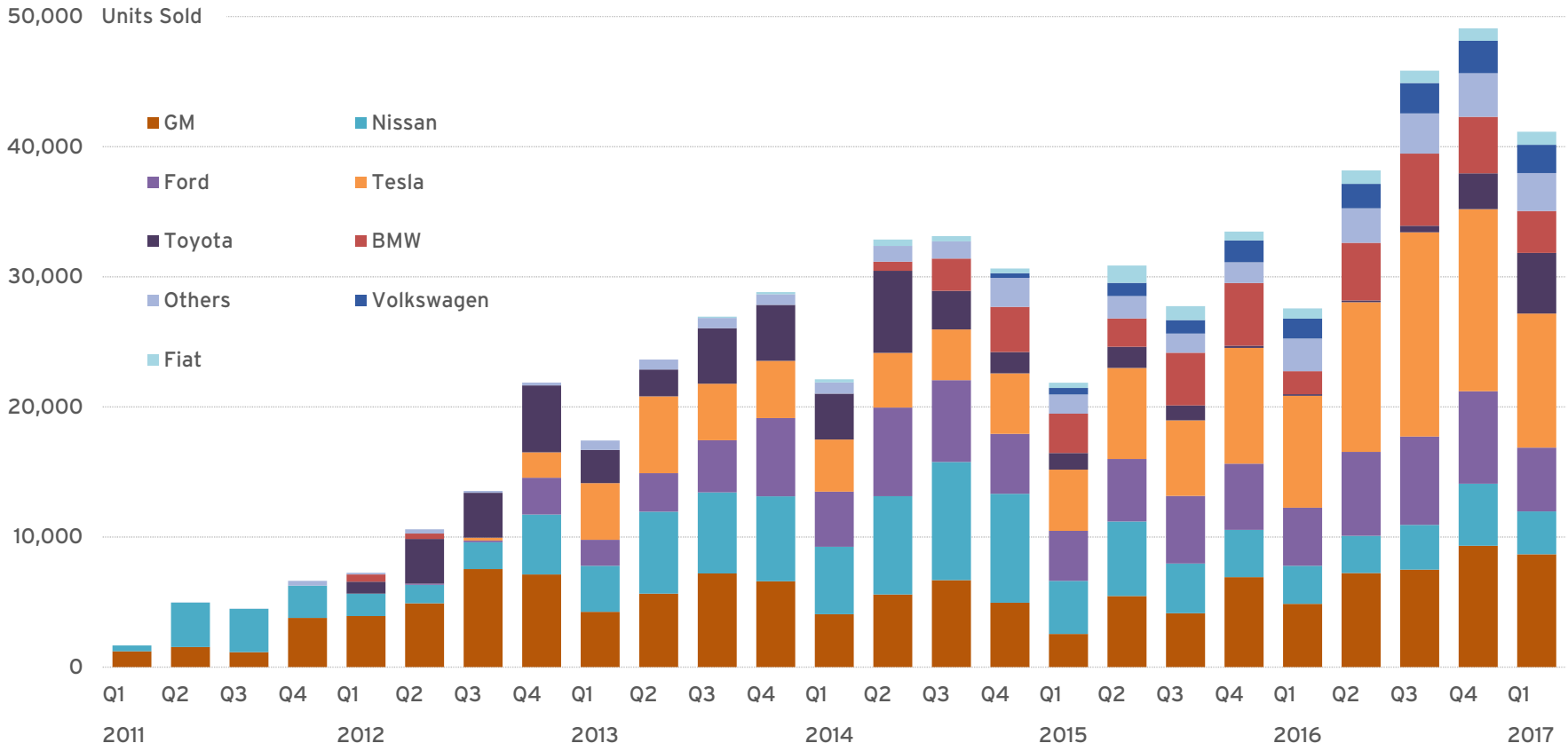


Note: Average sales-weighted fuel-economy rating of purchased new light-duty vehicles.

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

Plug-in Electric Vehicle Sales Remain on Upward Trend

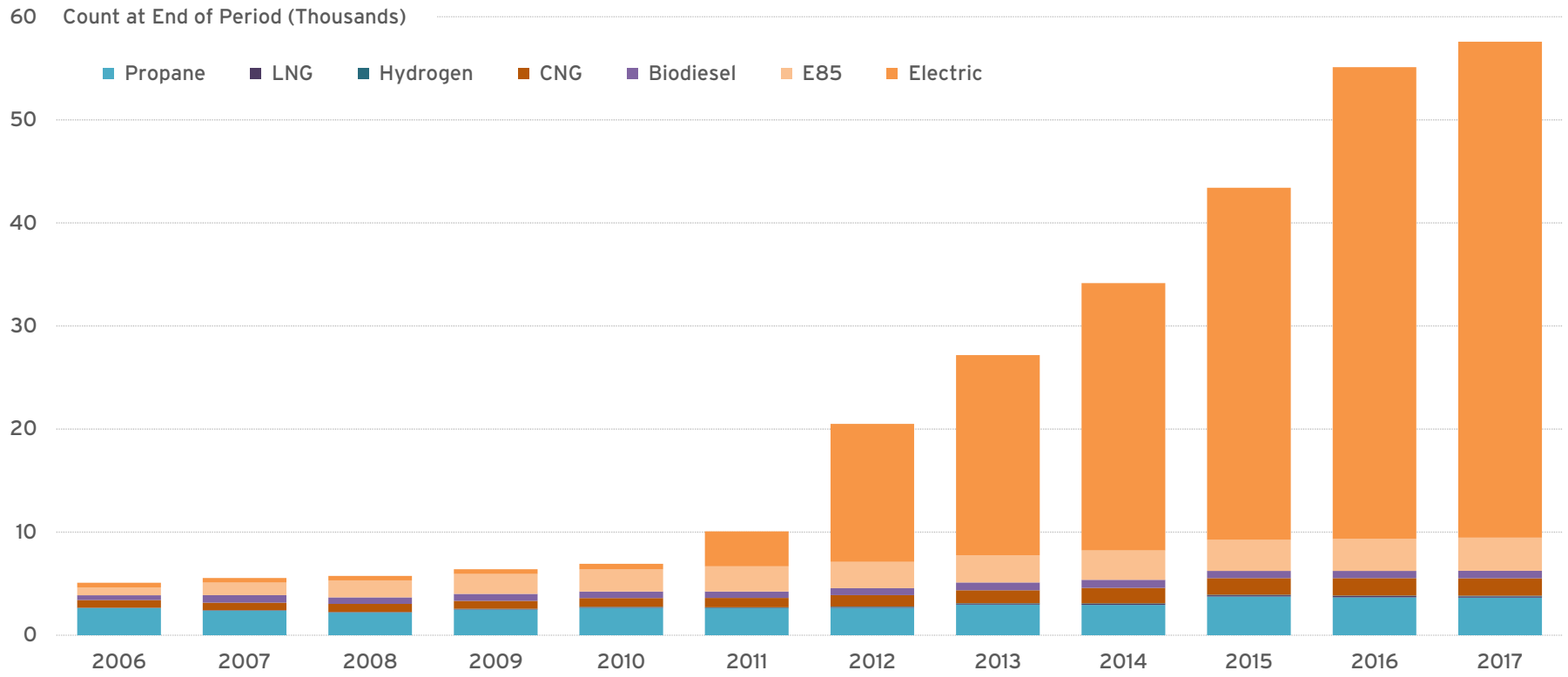
Approximately 41,000 plug-in electric vehicles were sold in Q1 (+43% y-o-y), the third-best quarter on record. Popular models included Tesla's Model S and Model X and the Chevrolet Volt. The six best-selling vehicles accounted for approximately 65% of total sales.



Source: SAFE analysis based on data from HybridCars.com

Advanced Fueling Stations Continue to Climb

The number of advanced fueling stations nationwide increased 112% between 2013 and 2017, a net addition of approximately 30,400 stations. The vast majority of these new additions (94%) 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: Alternative Fuels Data Center

About, Links, and Contact

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
Electrification Coalition: www.electrificationcoalition.org
The Fuse: www.energyfuse.org

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