

September 25, 2014

Consumer Gasoline Spending Near All-Time High in 2013 Despite Domestic Oil Boom

Summary

- Earlier this month, the Bureau of Labor Statistics released the 2013 edition of its Consumer Expenditure Survey. The survey, which tracks consumer spending on a wide variety of goods and services, found that the average American household spent more than \$2,600 on gasoline last year, in line with data for 2011 and 2012, representing an increase of 111 percent from 2002 levels.
- According to the survey, spending on gasoline increased by an average of 8 percent annually over the past decade, while (non-gasoline) discretionary spending increased by an average of just 1 percent annually.
- The burden of higher fuel prices was felt most strongly by lower income households. The lowest quintile spent almost 13 percent of pre-tax income on gasoline, compared to just 2.5 percent for the highest quintile. Geographically, spending on gasoline tended to be highest in rural Midwestern states and lowest in more densely populated states along the coasts.
- The BLS data suggests that, while the U.S. oil boom has generated sizeable macroeconomic benefits, including a reduced trade deficit, higher overall domestic investment, and job growth in extractive industries, consumers have yet to benefit in any sustained way at the pump. Notably, U.S. gasoline prices are most closely correlated with global crude streams, leaving consumers directly exposed to events in the global oil market.
- Advancements in alternative fuel vehicles provide reason to be optimistic that spending on transportation fuels will decline in the future. The price of electric vehicles (EVs) is falling and attributes like range and recharging time continue to improve. In the sub-compact segment, EVs will reach cost parity with conventional internal combustion engine vehicles by 2016.

Introduction

From 2011 through 2013, total oil consumption in the United States fell to its lowest levels since the late 1990s as growth in vehicle miles traveled stalled, cars and trucks became more efficient, and a number of economic indicators lagged expectations. Meanwhile, U.S. oil production increased to near-record highs, and net liquids imports fell to levels last seen in the 1980s. In this environment, many

observers anticipated that U.S. petroleum fuel prices would decline substantially and that transportation fuel expenditures by households and businesses—which were high by historical standards—would also decline, resulting in sizeable economic benefits.

In reality, the price impact of surging domestic oil production has been somewhat mixed. U.S. average regular-grade gasoline prices increased from \$3.53 per gallon in 2011 to \$3.63 per gallon in 2012 before retreating slightly to \$3.51 per gallon in 2013.¹ From a historical perspective, prices in 2011 and 2012 were the highest in modern U.S. history, adjusted for inflation.² The figure for 2013 ranked as the sixth highest, only slightly trailing the inflation-adjusted levels for 1980, 1981, 2008, 2011, and 2012.³

In this context, we sought to provide additional insight on recent trends in consumer spending on gasoline using the most up-to-date data available from the federal government. Specifically, earlier this month, the Bureau of Labor Statistics (BLS) released its annual Consumer Expenditure Survey (CES). Collected by the Census Bureau, the CES provides information on American consumer spending habits and is the only federal survey to include spending estimates for the entire range of consumer expenditures, including gasoline.

According to BLS, the dollar amount that American households are spending on gasoline has remained close to all-time highs over the past several years, in line with gasoline prices. This is a function of stubbornly high global oil prices and American consumers' near-complete reliance on oil as a transportation fuel. The required financial outlay leaves all consumers—especially those with lower incomes—with less to spend on other goods and services, the negative effects of which reverberate throughout the economy.

This Issue Brief examines the latest CES, with a particular focus on gasoline spending. This examination is complemented by SAFE analysis and similar expenditure data from the Bureau of Economic Analysis.

2002 to 2012: Rising global oil prices, rising domestic fuel prices

In 2002, the average U.S. household spent approximately \$1,235 on gasoline⁴, equivalent to 3.0 percent of total expenditures and 2.5 percent of pre-tax income.⁵ Over the following six years, as global oil prices (Brent) increased—from \$24.96 per barrel in 2002 to \$96.85 per barrel in 2008—and domestic fuel prices followed, household spending on gasoline increased as well, reaching \$2,715 in 2008, approximately 4.3 percent of pre-tax income (see Figure 1).⁶ The increase in household gasoline spending was almost entirely a function of price increases, not consumption growth. Miles driven per household remained essentially flat over the period, as did vehicle fuel economy.⁷ Gasoline prices increased from \$1.34 per gallon in 2002 to \$3.25 in 2008.⁸ This increase in price functioned essentially as a tax on consumers, providing no additional utility and displacing spending on other goods and services.

This cycle repeated itself as a result of the post-recession oil price spikes that occurred in late 2010 and early 2011 amidst surging global oil demand and escalating violence in the Middle East, most

¹ U.S. Energy Information Administration (EIA), Short-Term Energy Outlook (STEO), September 2014

² U.S. EIA, Real Prices Viewer, last accessed on September 23, 2014

³ Id.

⁴ The Bureau of Labor Statistics (BLS) "gasoline" expenditures presented in this Issue Brief include gasoline, diesel fuel, and motor oil.

⁵ SAFE analysis based on data from: BLS, Consumer Expenditure Survey (CES), 2002

⁶ SAFE analysis based on data from: BLS, CES, 2008

⁷ SAFE analysis based on data from: U.S. EIA; Oak Ridge National Laboratory (ORNL), 2009 National Household Travel Survey

⁸ U.S. EIA, STEO, Custom Table Builder, Gasoline Regular Grade Retail Price Including Taxes (U.S. Average)

notably the onset of hostilities in Libya. Prices entered 2010 averaging approximately \$75 per barrel, but were approaching \$100 per barrel by year's end. Global prices averaged more than \$111 per barrel in both 2011 and 2012, the highest levels since the mid-1800s.⁹

From an economic policy perspective, the price spikes that occurred in 2007–2008 and 2011–2012 created real challenges. In the first case, the increase in spending on gasoline by the average household between 2001 and 2008 nearly offset the effects of all income tax reductions over the same period. The tax cuts, which averaged \$1,900 per household by 2008, were intended to stimulate consumer spending on other goods and services and provide a boost to the economy, particularly in the aftermath of the 2001 recession.¹⁰ Instead, the cuts simply allowed households—and the economy—to pay for the rising cost of fuel, with household gasoline spending rising by nearly \$1,500 over the same period.

The 2011 price spike created a similar policy challenge for Congress and the Obama administration as they sought to stimulate the economy during a sluggish recovery. The payroll tax cut signed into law in 2011 provided American households with an additional \$108.6 billion in take-home pay.¹¹ Once again, the intended effect of this policy was to stimulate consumer spending on goods and services. However, the increase in gasoline prices that occurred in 2011 cost U.S. households an additional \$73 billion in fuel spending compared to 2010.¹² In other words, higher gasoline spending largely offset the cut and negated its intended effect.

FIGURE 1
CONSUMER SPENDING ON GASOLINE AND MOTOR OIL, 1993 TO 2013

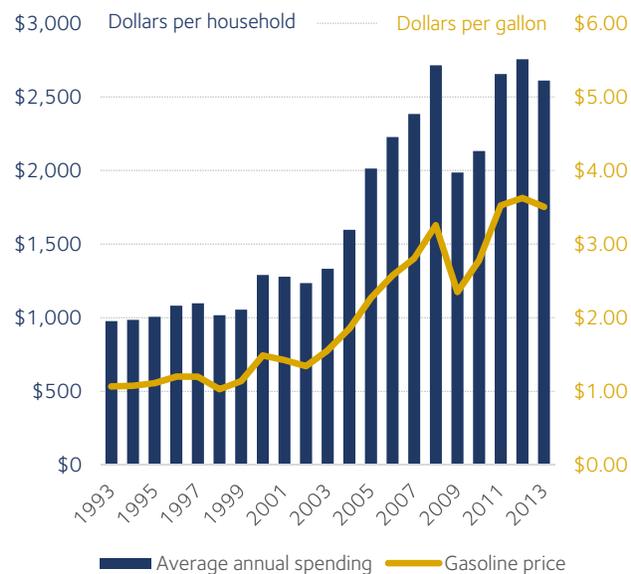
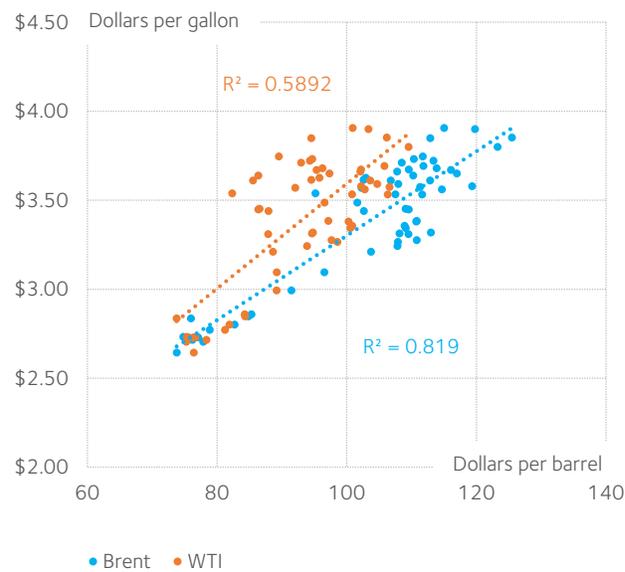


FIGURE 2
RELATIONSHIP BETWEEN CRUDE OIL AND GASOLINE PRICES, 2010 TO 2014



Source: Figure 1—SAFE analysis based on data from BLS; Figure 2—SAFE analysis based on data from U.S. EIA

⁹ BP plc., Statistical Review of World Energy 2014

¹⁰ Tax Policy Center, Urban Institute and Brookings Institution, Individual Income and Estate Tax Provision in the 2001–08 Tax Cuts, Table T08–0147, 2008

¹¹ U.S. Department of Treasury, Office of Tax Policy, “A State-by-State Look at the President’s Payroll Tax Cut for Middle Class Families,” November 30, 2011; and Bureau of Economic Analysis (BEA), NIPA Tables, Table 2.4.5

¹² SAFE analysis based on data from: BEA

2013: Household spending above \$2,600 for third consecutive year

The price of Brent crude oil retreated from historical highs in 2013, but remained elevated by historical standards, averaging more than \$108 per barrel.¹³ As a result, U.S. gasoline prices declined little from 2012 levels (just 3 percent), and for the third consecutive year, American households spent more than \$2,600 in total on gasoline and motor fuels.¹⁴

In the context of increasing U.S. oil production and domestic crude streams that are discounted from global prices—sometimes more than \$20 per barrel—high household spending on gasoline may seem counterintuitive. However, it is important to understand that U.S. gasoline prices most closely correlate with global crude oil prices, not domestic crude streams (see Figure 2). This is because gasoline, like oil, is a globally traded commodity. Therefore, as events throughout the global market have kept prices relatively high over the past several years, U.S. consumers have continued to pay the global price.

FIGURE 3
HOUSEHOLD GASOLINE AND DISCRETIONARY SPENDING AS A SHARE OF TOTAL EXPENDITURES

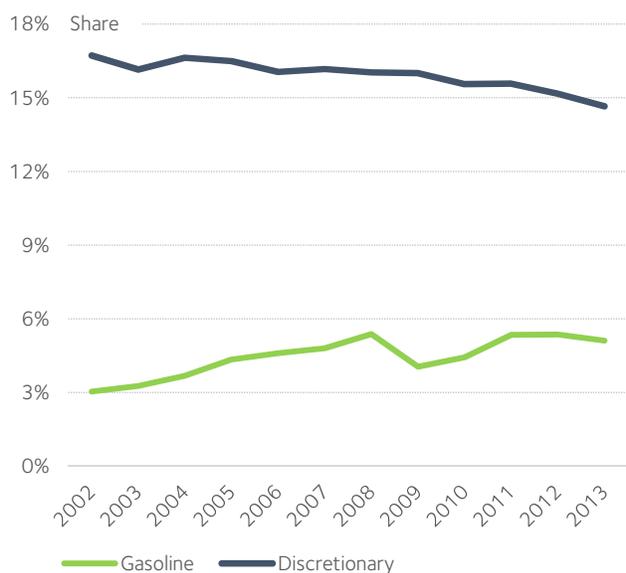
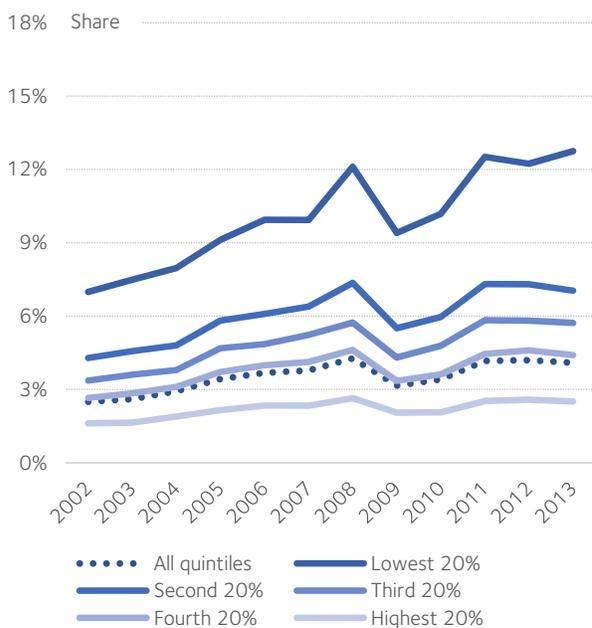


FIGURE 4
CONSUMER EXPENDITURES ON GASOLINE AS A SHARE OF PRE-TAX INCOME BY QUINTILE



Source: Figure 3—U.S. EIA; Figure 4—SAFE analysis based on data from BLS

In 2013, households spent more on gasoline than they spent on several other items including entertainment, electricity, and clothing.¹⁵ Since 2002, as a percentage of total expenditures, discretionary spending¹⁶—on items such as dining out, clothing, and entertainment—has trended steadily downwards, falling 2.1 percentage points from 16.7 percent to 14.6 percent, as spending on gasoline has trended steadily upwards by 2.1 percentage points (from 3.0 percent to 5.1 percent) (see

¹³ U.S. EIA, STEO, Custom Table Builder

¹⁴ BLS, CES, 2011-2013

¹⁵ BLS, CES, 2013

¹⁶ SAFE estimates of “discretionary spending” include restaurant dining, clothing and apparel, entertainment, alcohol, and tobacco. If alcohol and tobacco are excluded, the discretionary spending as a percentage of total expenditures declines from 15.0 percent in 2002 to 13.1 percent in 2013 (-1.9 percentage points).

Figure 3).¹⁷ Over the past decade, spending on gasoline increased by an average of 8 percent annually, while (non-gasoline) discretionary spending increased just 1 percent annually.¹⁸

Perhaps unsurprisingly, the burden of higher fuel prices was felt most strongly by lower income (bottom quintile) households, which actually experienced an increase in gasoline spending in 2013 even as all other income groups experienced a slight decrease (see Figure 4).¹⁹ In fact, the bottom quintile spent almost 13 percent of pre-tax income on gasoline, compared to just 2.5 percent for the highest quintile.²⁰ Spending on gasoline is estimated to be more than 5 percent of pre-tax income for households with pre-tax income of \$70,000 or less, a full percentage point above the average for all households.²¹

Moreover, estimates gathered or calculated using data from other U.S. government agencies suggest that \$2,611 per household may be underestimating total consumer spending on gasoline. Data from the Bureau of Economic Analysis (BEA), for example, estimates consumer expenditures at \$382 billion in 2013 and is between 12 percent and 23 percent higher each year over the past decade.²² Estimates generated by Securing America's Future Energy (SAFE) using household vehicle-miles traveled (VMT), fuel economy, and gasoline price data are similar to those from the BEA (See Figure 5).²³ BEA and SAFE estimates place consumer spending at approximately \$3,100 and \$3,300 per household, respectively, in 2013, equivalent to 4.9 and 5.2 percent of pre-tax income, respectively (versus 4.1 percent using BLS estimates).²⁴

BEA also provides consumer spending data for petroleum fuels state-by-state. This data shows substantial variations in spending nationwide, from a low of \$882 per capita in Hawaii to a high of \$3,916 per capita in North Dakota.²⁵ North Dakota and Wyoming allocate the highest percentages of total expenditures to petroleum fuels, 8.9 percent and 9.4 percent, respectively.²⁶ All other states fall between a low of 2.2 percent (New York) and 6.8 percent (South Dakota) (see Figure 6).²⁷

¹⁷ SAFE analysis based on data from: BLS, CES, 2001–2013

¹⁸ SAFE analysis based on data from: BLS, CES, 2003–2013

¹⁹ SAFE analysis based on data from: BLS, CES, 2012–2013

²⁰ SAFE analysis based on data from: BLS, CES, 2013

²¹ *Id.*

²² BEA, Personal Consumption Expenditures; and SAFE analysis based on data from: BEA and BLS

²³ SAFE analysis based on data from: BLS; Census Bureau; U.S. EIA; ORNL; and Federal Highway Administration

²⁴ *Id.*

²⁵ BEA, Personal Consumption Expenditures by State, 1997–2012 (Prototype Estimates), August 7, 2014

²⁶ SAFE analysis based on data from: BEA

²⁷ *Id.*

FIGURE 5
ANNUAL GASOLINE SPENDING ESTIMATES BASED
ON DATA FROM BLS, BEA, AND SAFE

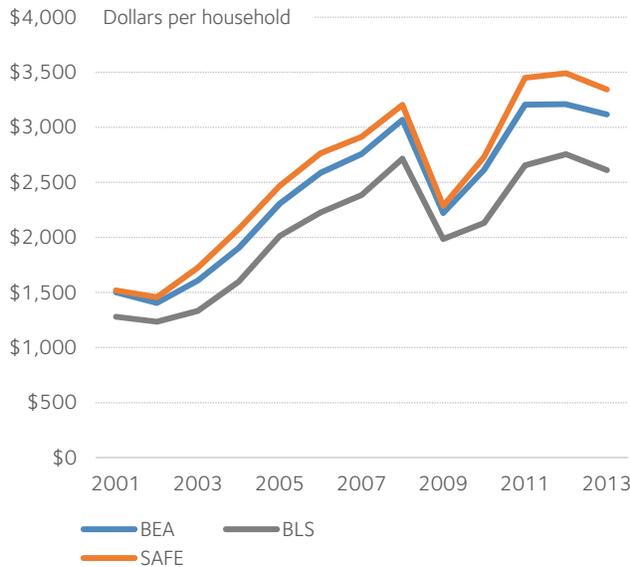
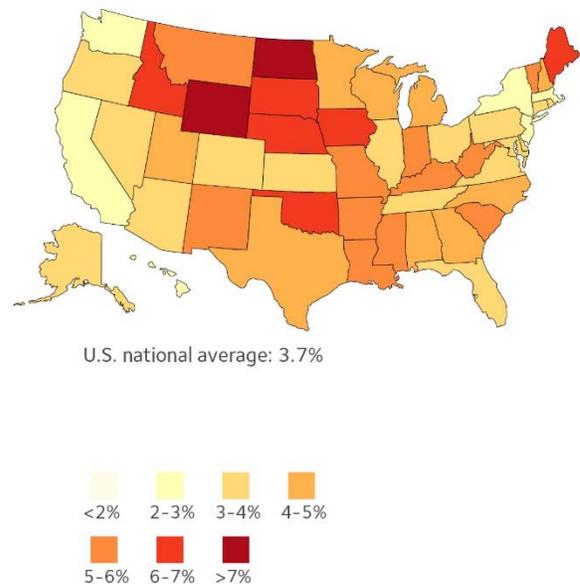


FIGURE 6
SHARE OF CONSUMER EXPENDITURES
DEDICATED TO GASOLINE BY STATE



Source: Figure 5—SAFE analysis based on data from BLS, BEA, ORNL, Census Bureau, FHWA, and U.S. EIA; Figure 6—SAFE analysis based on data from BEA

Conclusion

Although consumer spending on gasoline has increased substantially since the turn of the century, there are reasons to be optimistic, particularly with respect to the availability and sales of more efficient vehicles and vehicles powered by non-petroleum fuels. Since the start of 2011, for example, more than 250,000 battery electric vehicles (EVs) and plug-in hybrid electric vehicles (PHEVs) have been sold in the United States. Perhaps more importantly, the prices of these vehicles are falling while critical attributes, such as range and recharging time, continue to improve.

Using a comprehensive model developed in partnership with PricewaterhouseCoopers (PwC), SAFE analysis shows that for sub-compact sedans, EVs will reach total cost of ownership (TCO) parity with conventional internal combustion engine vehicles (ICEs) by 2016.²⁸ Using U.S. EIA’s High Oil Price case, rather than the Reference case, this parity will occur next year (2015). For hybrid vehicles (HEVs like the Toyota Prius and others), TCO is already lower than that of ICEs. Electric vehicles will achieve cost parity with hybrids by 2018 (2016 in the High Oil Price case). For households today spending an average of more than \$2,600 annually on gasoline, the transition to vehicles powered by non-petroleum fuels could be of notable financial benefit. Adopting such vehicles will also shield drivers from the damaging effects of volatility in the global oil market that can cause major swings in domestic gasoline prices.

²⁸ Total cost of ownership is calculated using a seven-year expected vehicle life, 15,000 miles of annual driving, and gasoline price estimates from U.S. EIA’s Annual Energy Outlook 2014. The federal tax credit of \$7,500 available for EVs is included. The cost of home (Level 1) recharging is also included.

FIGURE 7
TOTAL COST OF OWNERSHIP FOR ICES,
HEVs, AND EVs (REFERENCE CASE)

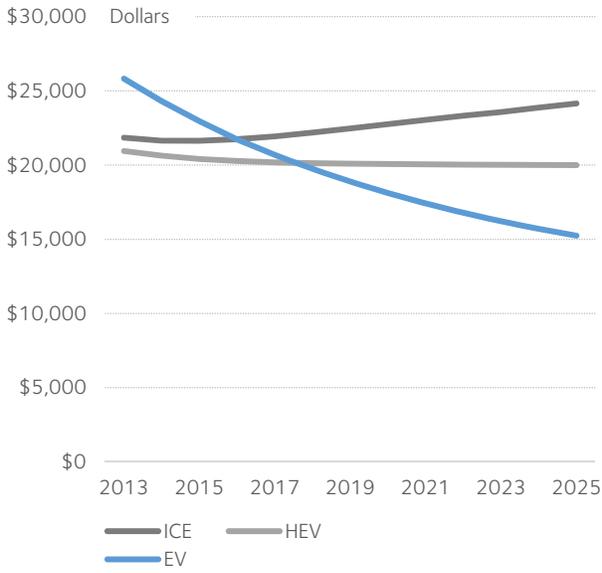
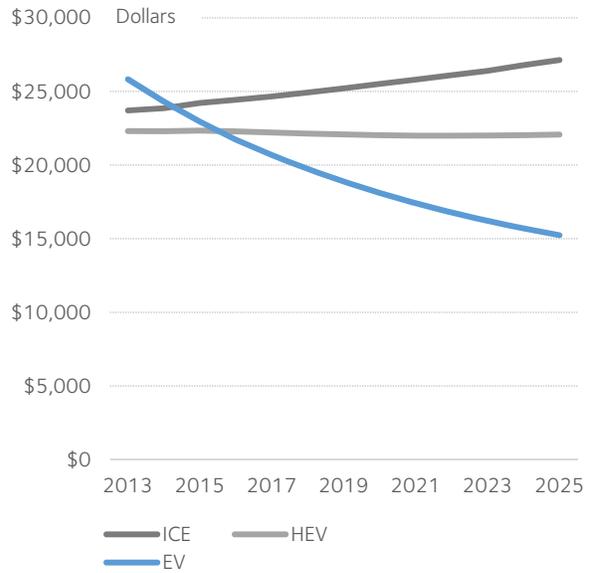


FIGURE 8
TOTAL COST OF OWNERSHIP FOR ICES,
HEVs, AND EVs (HIGH OIL PRICE CASE)



Source: Figure 7—PwC/SAFE analysis; Figure 8—PwC/SAFE analysis

Appendix

FIGURE 9
QUARTERLY U.S. LIQUID FUEL PRODUCTION AND
REGULAR GASOLINE PRICE, 2001 TO 2013

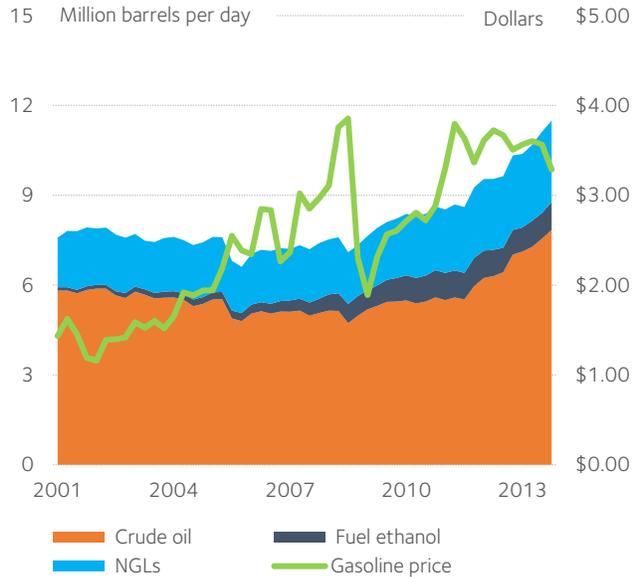
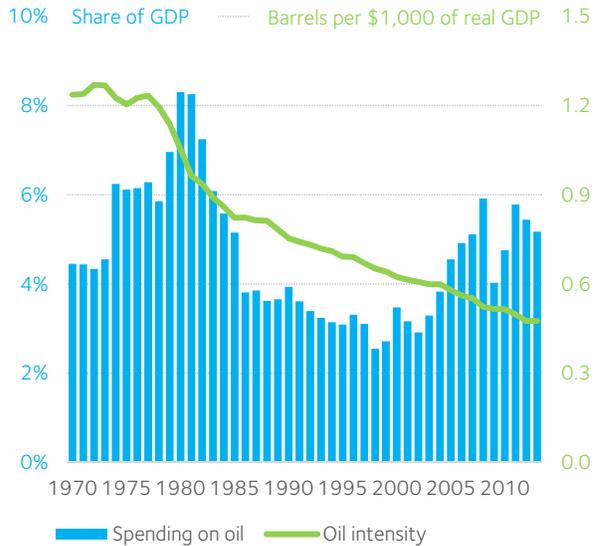


FIGURE 10
OIL SPENDING AS A SHARE OF GDP AND OIL
INTENSITY, 1970 TO 2013



Source: Figure 9—SAFE analysis based on data from U.S. EIA; Figure 10—SAFE analysis based on data from U.S. EIA and Department of Commerce

Contributors

Sam Ori, *Executive Vice President*

James Blatchford, *Director of Policy*

Mehrun Etebari, *Policy Analyst*

Leslie Hayward, *Manager of Online Content and Strategy*

For media inquiries please contact Ellen Carey, ecarey@secureenergy.org and (202) 461-2382.