

An American flag is shown on the left side of the image, partially obscured by a white, curled-up corner effect that reveals the text on the right. The flag features the stars and stripes of the United States flag.

# AN AMERICAN ENERGY REVOLUTION

ENERGY IN CHARTS

2016

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**Our nation's economy continues to improve while America has become a world leader in energy production and in the reduction of greenhouse gas emissions, achievements long thought to be mutually exclusive.** America's 21<sup>st</sup> century energy revolution is the result of industry-led innovations and entrepreneurial spirit, not government

regulation and mandates. America's brighter energy reality benefits consumers and our economy by providing abundant, affordable and reliable energy and a cleaner environment. To continue America's positive energy, economic and environmental progress, we need to get our nation's energy policy right today.

**HERE ARE THE FACTS...**

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## HOW TO STOP THE AMERICAN ENERGY REVOLUTION

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**ENERGIZING  
AMERICA**  
**ENERGY IN CHARTS**



# **WHAT DOES AN ENERGY REVOLUTION LOOK LIKE**

**Global Energy Leadership.**

**Affordable, Domestically-Produced Energy.**

**Enhanced National Security.**



**HYDRAULIC FRACTURING HAS UNLOCKED**

**VAST AMOUNTS OF OIL AND NATURAL GAS**

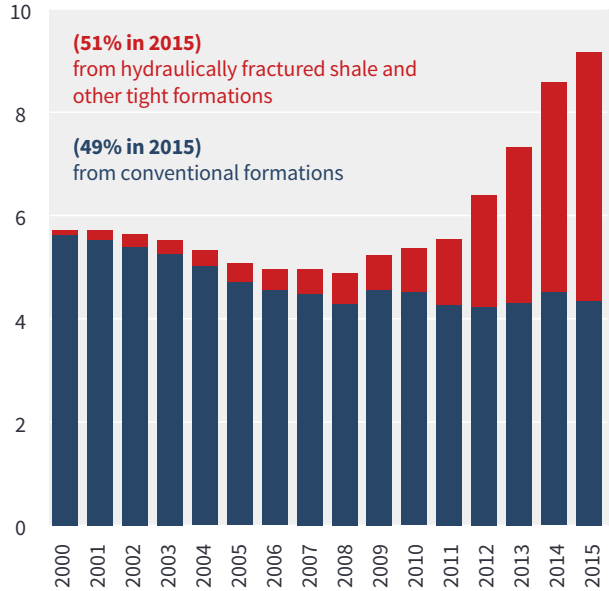
**WHAT DOES AN ENERGY REVOLUTION  
LOOK LIKE**

As a result, our nation has become the world's leading producer of oil and natural gas.



## OIL PRODUCTION IN U.S. (2000-2015)

Million Barrels Per Day

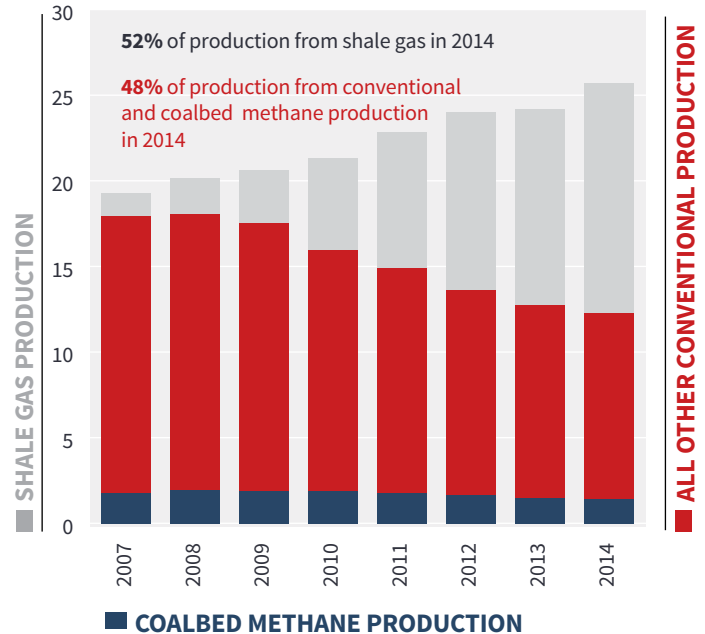


**(51% in 2015)**  
from hydraulically fractured shale and other tight formations

**(49% in 2015)**  
from conventional formations

## U.S. DRY NATURAL GAS PRODUCTION

Trillion Cubic Feet



**52%** of production from shale gas in 2014

**48%** of production from conventional and coalbed methane production in 2014

■ COALBED METHANE PRODUCTION

■ ALL OTHER CONVENTIONAL PRODUCTION

Note: Some Conventional Formations are Also Hydraulically Fractured to Increase Production.

Source: Today In Energy, March 15, 2016. EIA.



**TODAY, THE U.S. IS THE WORLD'S LEADING**

**PRODUCER OF OIL AND NATURAL GAS**

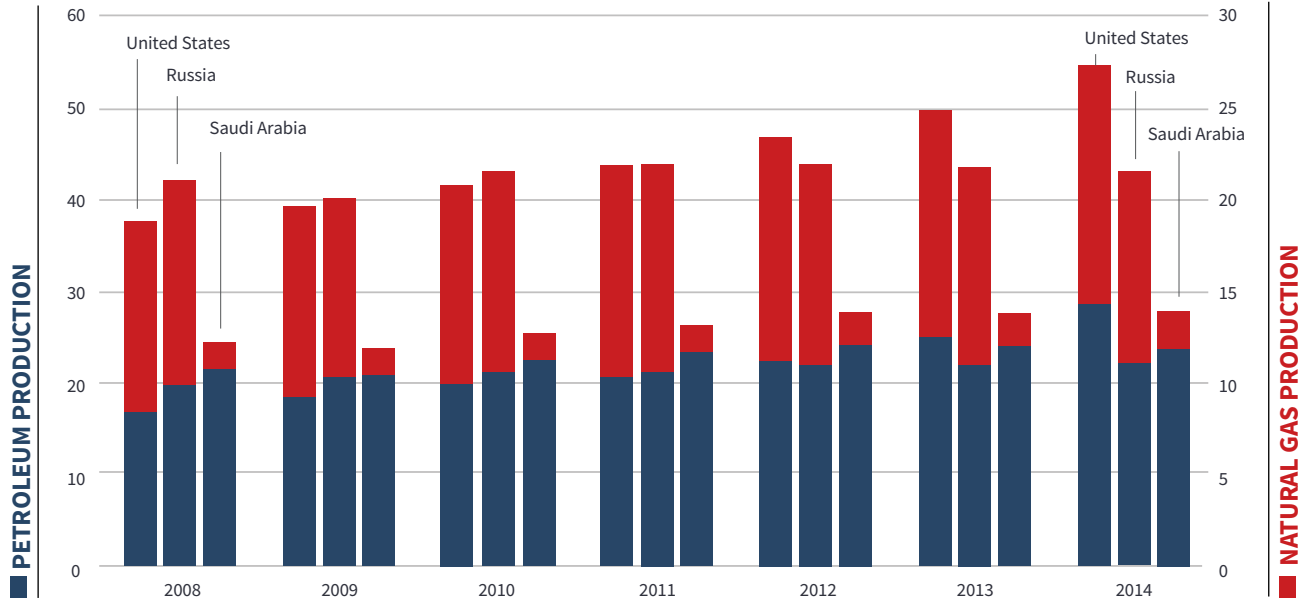
**WHAT DOES AN ENERGY REVOLUTION  
LOOK LIKE**

A dramatic change from just a few years ago.  
More American energy benefits our nation's economy  
and consumers, and enhances our national security.

# U.S., RUSSIA AND SAUDI ARABIA PETROLEUM AND NATURAL GAS PRODUCTION

Quadrillion British Thermal Units

Million Barrels Per Day of Oil Equivalent



Source: EIA, <http://www.eia.gov/todayinenergy/detail.cfm?id=20692>.



**THE U.S. IS A WORLD LEADER**

**IN CRUDE OIL REFINING**

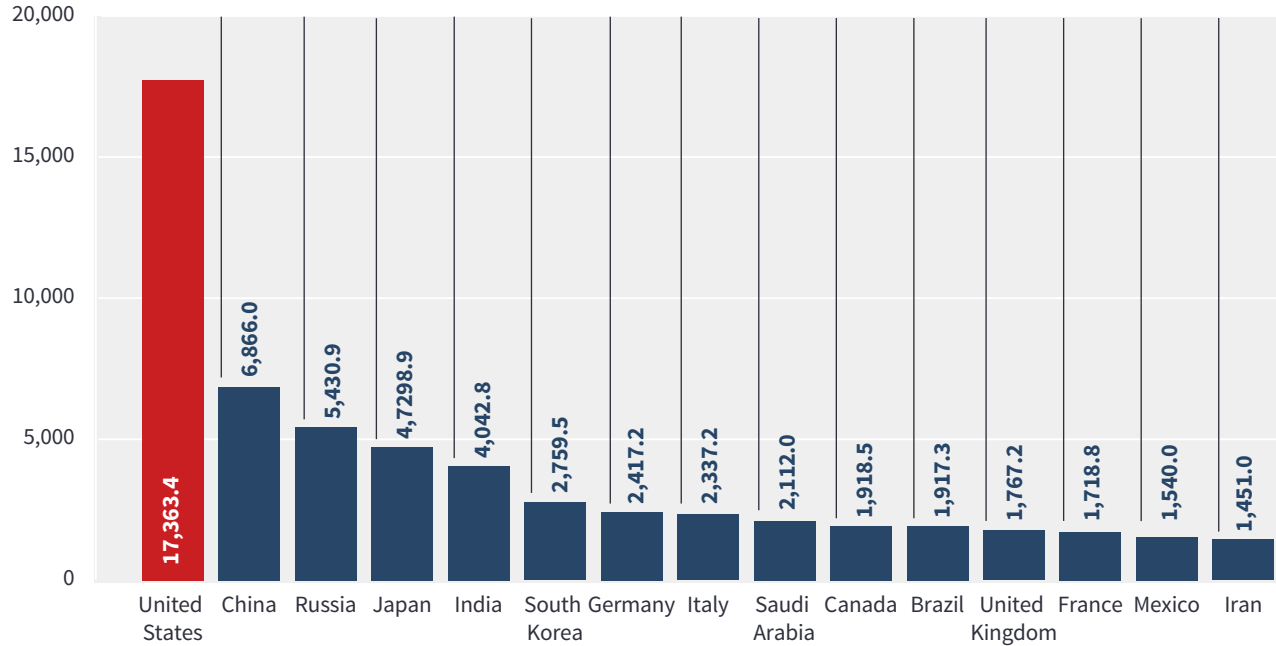
**WHAT DOES AN ENERGY REVOLUTION  
LOOK LIKE**

America also leads the world in refining capacity, supplied by our world-leading refineries, which provides the American consumer and the world with cleaner more efficient fuels.



## CRUDE OIL DISTILLATION CAPACITY - 2012

Thousand Barrels Per Calendar Day



Source: EIA, <https://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=5&pid=72&aid=7>.






**WHAT DOES THE AMERICAN  
ENERGY REVOLUTION MEAN**

**Energy Security.**

**Continued Environmental Progress.**

**Economic Growth and Opportunity.**



**THE RIGHT ENERGY POLICY CHOICES COULD MEAN  
LONG-TERM U.S. ECONOMIC GROWTH, AND  
SUSTAINED GLOBAL ENERGY LEADERSHIP**

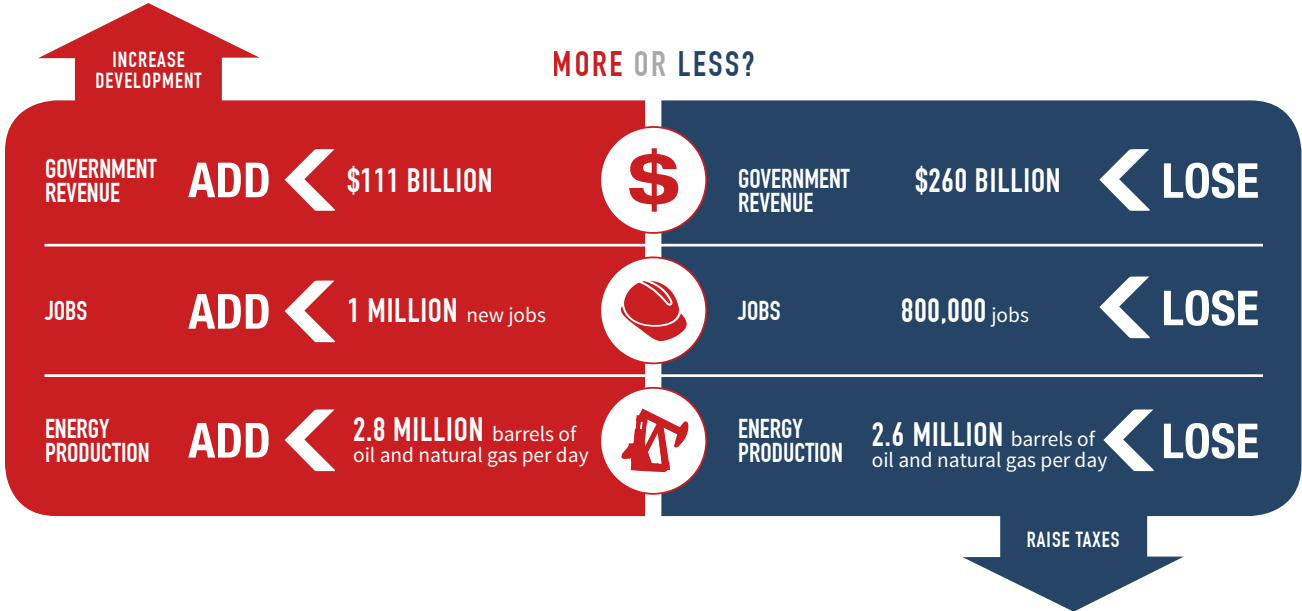
**WHAT DOES THE AMERICAN ENERGY  
REVOLUTION MEAN**

The energy policy decisions our country makes today will determine America's energy future for generations to come.



# IMPACTS OF POLICY CHOICES

Projected 2025 numbers



Source: Wood Mackenzie. A Comparison of US Oil and Natural Gas Policies.



**DEMAND FOR ENERGY FROM ALL SOURCES**

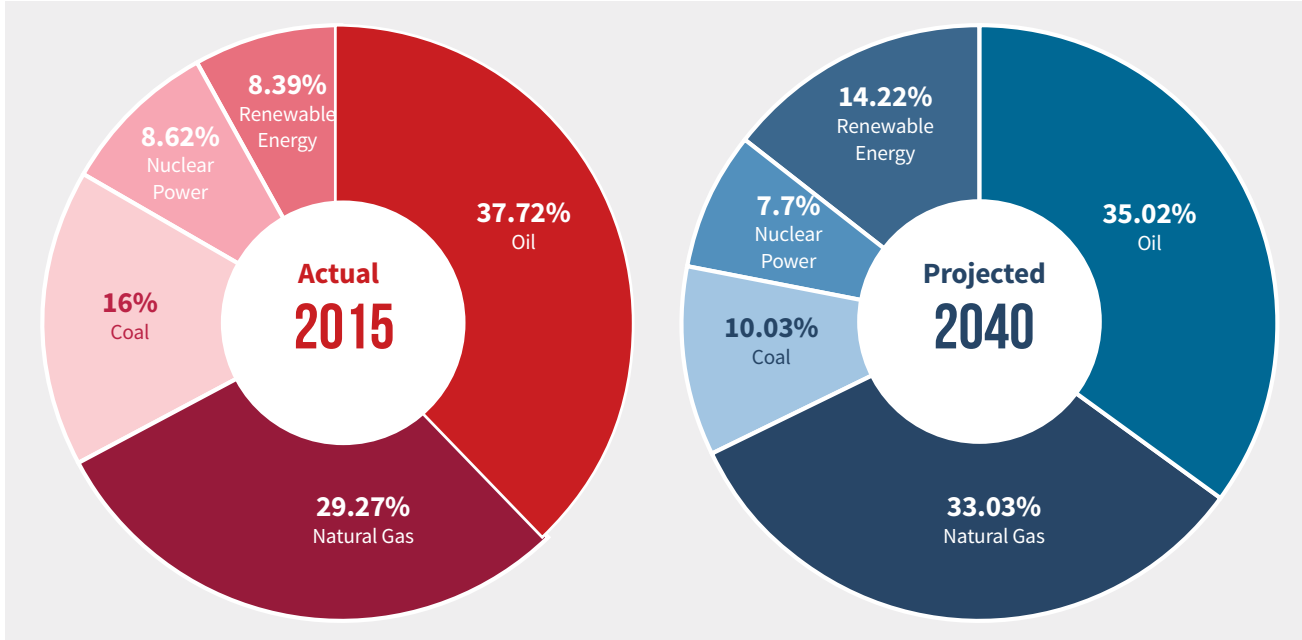
**WILL CONTINUE TO GROW**

**WHAT DOES THE AMERICAN ENERGY  
REVOLUTION MEAN**

Today, oil and natural gas provide the bulk of America's energy; and government and private analysis agree they will continue to do so for decades come.

# TOTAL ENERGY CONSUMPTION BY FUEL

2015-2040



Source: AEO 2016 Early Release, Total Energy Supply, Disposition, and Price Summary, May 2014.



**THE WORLD COULD REQUIRE 56 PERCENT**

**MORE ENERGY IN 2040 THAN IN 2010**

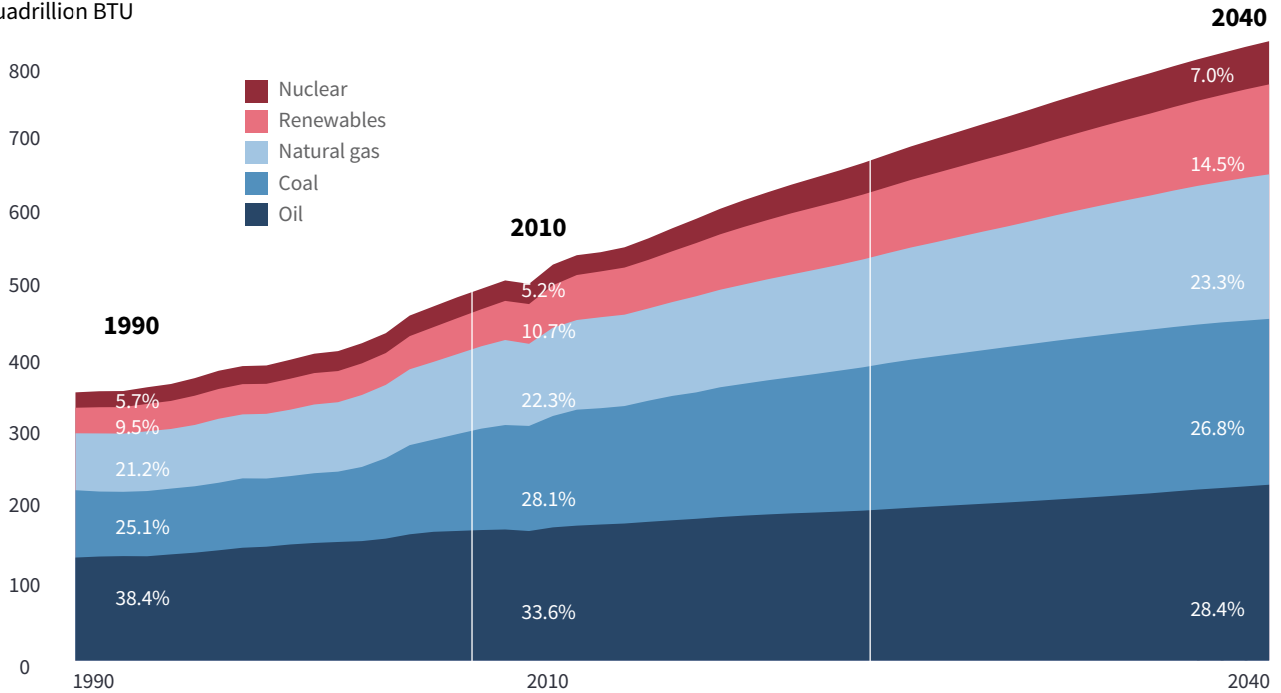
**WHAT DOES THE AMERICAN ENERGY  
REVOLUTION MEAN**

What is true for America is also true for the world, demand for energy from all sources will continue to grow.



# FUTURE GLOBAL ENERGY DEMAND

Quadrillion BTU



Source: EIA, International Energy Outlook 2015.



**U.S. OIL PRODUCTION HAS INCREASED**

**MORE THAN 88 PERCENT SINCE 2006**

**WHAT DOES THE AMERICAN ENERGY  
REVOLUTION MEAN**

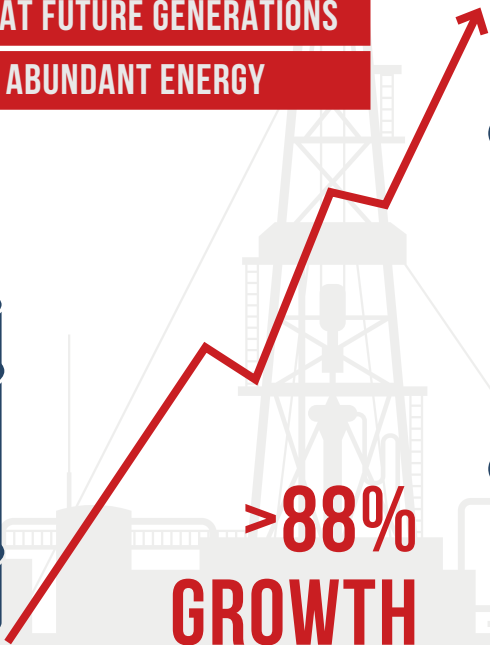
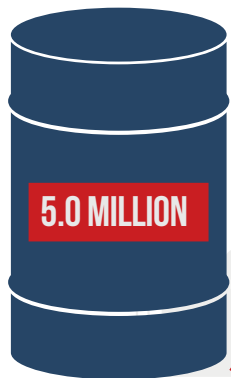
Increased U.S. domestic energy production helps to ensure that future generations enjoy an affordable, abundant and reliable supply of energy for years to come.

**INCREASED U.S. DOMESTIC ENERGY PRODUCTION**

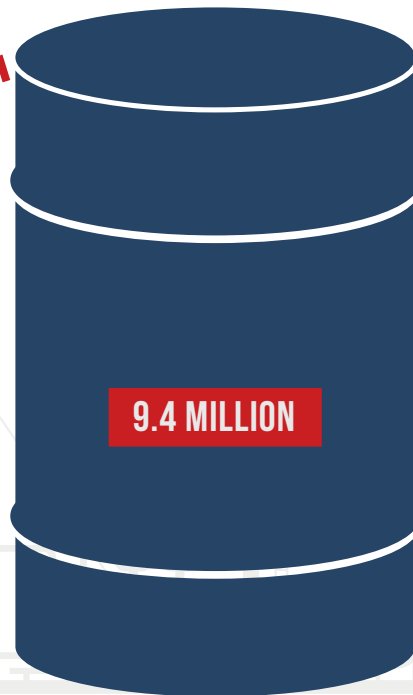
**HELPS TO ENSURE THAT FUTURE GENERATIONS**

**ENJOY RELIABLE AND ABUNDANT ENERGY**

**2006**  
Barrels Per Day



Barrels Per Day  
**2015**



The background of the entire page is a faded, grayscale image of an industrial oil field. On the left, a large pumpjack is visible, partially obscured by a chain-link fence. In the center and right, another pumpjack stands tall against a cloudy sky. In the lower right foreground, a worker wearing a hard hat and safety gear is standing on a piece of equipment, possibly a wellhead or valve, looking towards the camera. The overall scene is desaturated, emphasizing the industrial and technical nature of the subject.

**THE U.S. ENERGY REVOLUTION IS THANKS**

**IN LARGE PART TO INDUSTRY INNOVATIONS**

**WHAT DOES THE AMERICAN ENERGY  
REVOLUTION MEAN**

Today, the U.S. is more energy self-sufficient and has transitioned from an era of energy scarcity and dependence into a global energy leader.

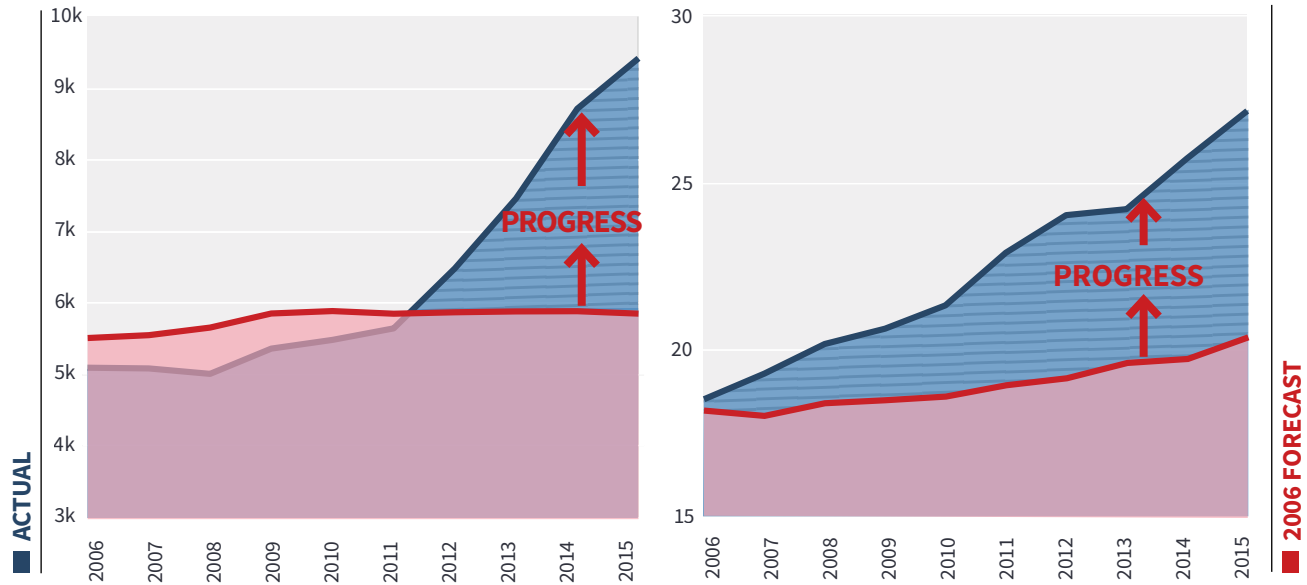
## U.S. FIELD PRODUCTION OF CRUDE OIL

Million Barrels Per Day

## U.S. DRY NATURAL GAS PRODUCTION

Trillion Cubic Feet

America's energy progress can be measured by the actual amount of energy we produce today versus the forecasts from a decade ago.



Source: EIA, AEO2006 - Table 14; January 2016 Monthly Energy Review.



**INCREASED DOMESTIC OIL AND NATURAL**

**GAS PRODUCTION MEANS A MORE ENERGY**

**SECURE NATION**

**WHAT DOES THE AMERICAN ENERGY  
REVOLUTION MEAN**

The U.S. energy revolution has increased the supply of domestically produced energy and lessened the need to import energy resources.

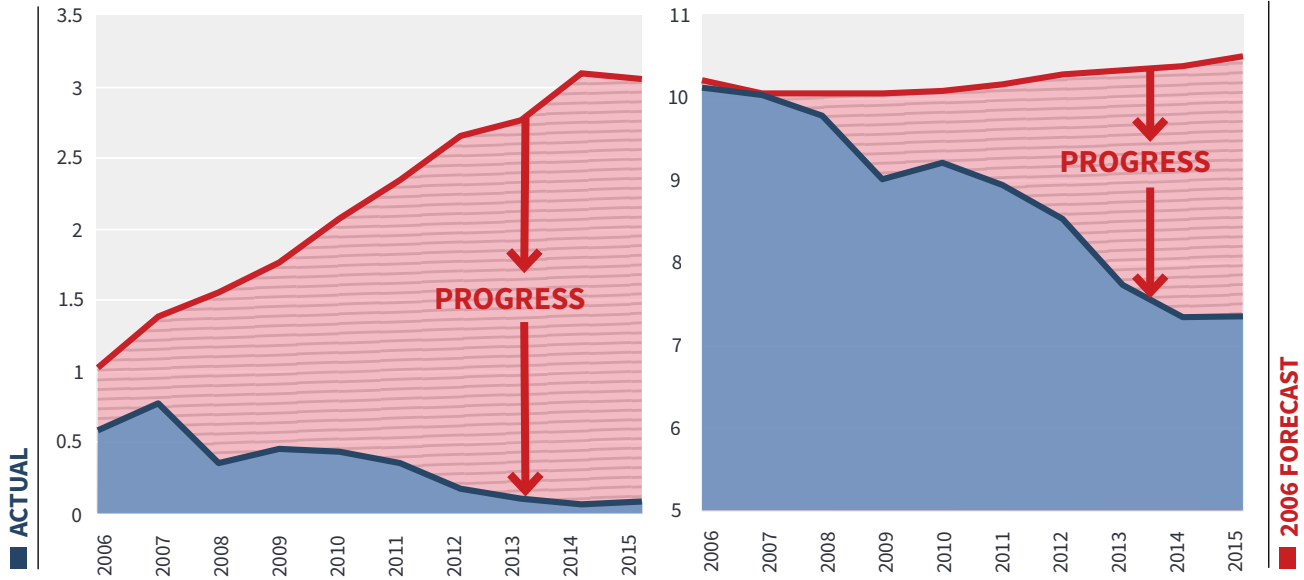
## U.S. NATURAL GAS IMPORTS

Trillion Cubic Feet

## U.S. CRUDE OIL IMPORTS

Million Barrels Per Day

America's energy progress can be measured by the actual amount of energy we import today versus the forecasts from a decade ago.



Source: EIA, AEO2006 - Table 13; EIA, AEO2006 - Table 11; January 2016 Monthly Energy Review.

ENERGY IN CHARTS/27





**WORLD-LEADING INNOVATION CONTINUES TO**

**INCREASE THE EFFICIENCY AND CAPACITY OF**

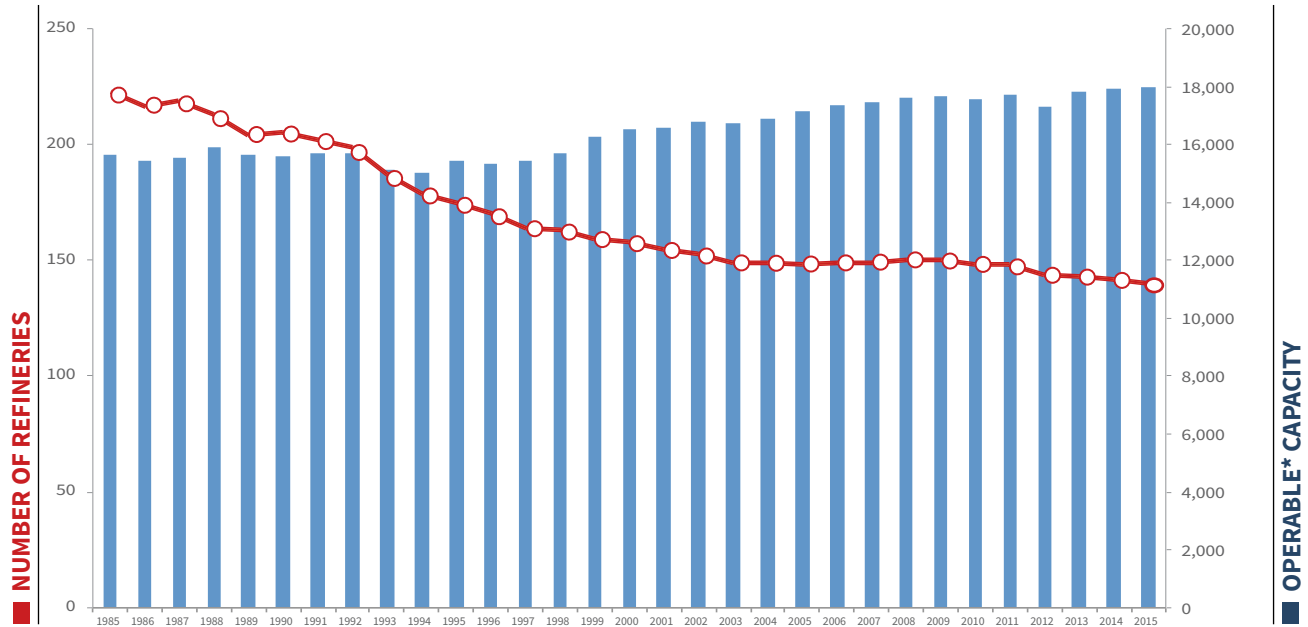
**AMERICA'S REFINERIES**

**WHAT DOES THE AMERICAN ENERGY  
REVOLUTION MEAN**

Refining capacity is crucial to our nation's economy and security. Our military depends on American refineries to provide secure, available fuels wherever and whenever they are needed. American refineries also supply the nation with clean and affordable fuels that are required to manufacture and produce hundreds of thousands of consumer products.

## NUMBER OF REFINERIES DECLINES BUT CAPACITY EXPANDS

Thousands of Barrels Per Day



\*Operable as of January 1<sup>st</sup> of each year.

Source: EIA, Petroleum Supply Annual and EIA, Annual Energy Review. <http://www.eia.gov/petroleum/refinerycapacity/>.





# **WHAT ABOUT THE ENVIRONMENT**

**Reduced Emissions.**

**Increased Production.**

**Increased Economic Growth.**



**MORE U.S. ENERGY,**

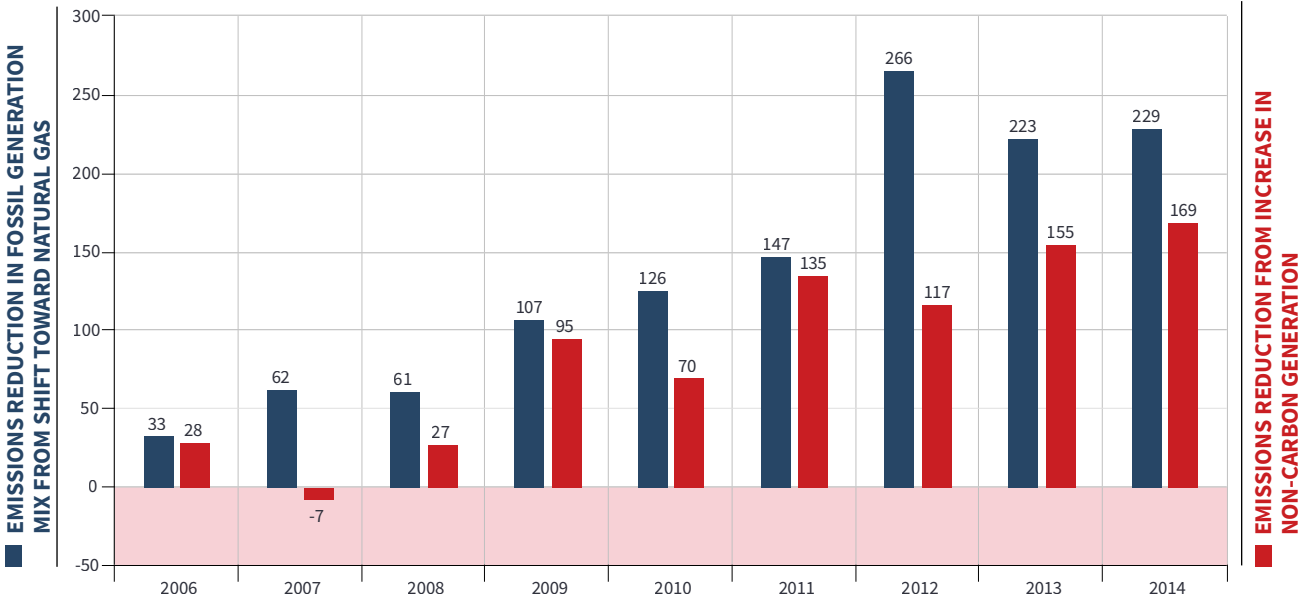
**LOWER U.S. EMISSIONS**

**WHAT ABOUT THE ENVIRONMENT**

A fundamental shift to natural gas continues to reduce our nation's CO<sub>2</sub> emissions from electricity generation from 2006 – 2014.

# ELECTRIC POWER SECTOR CO<sub>2</sub> REDUCTION

Million Metric Tons of CO<sub>2</sub>



Source: EIA.





**LOWER CO<sub>2</sub> EMISSIONS FROM**

**ELECTRICITY GENERATION**

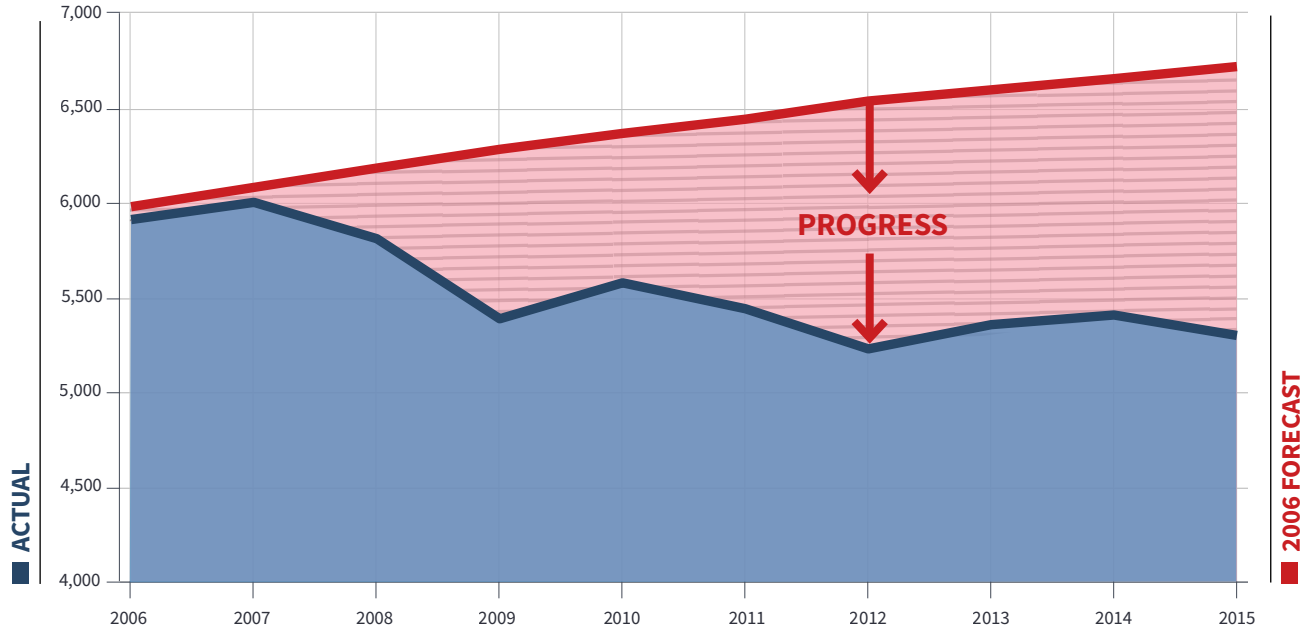
### **WHAT ABOUT THE ENVIRONMENT**

America's energy revolution has not only increased production and economic growth, but also helped decrease greenhouse gas emissions. Today, the U.S. is leading the world in energy production while it simultaneously leads the world in reductions of greenhouse gas emissions, an achievement that stands alone on the world stage.



# U.S. LOWER CO<sub>2</sub> EMISSIONS

Emissions From Energy



Source: EIA, AEO2006 - Table 18; 2015, Feb 2016 STEO for 2015.



**CLEANER BURNING NATURAL GAS**

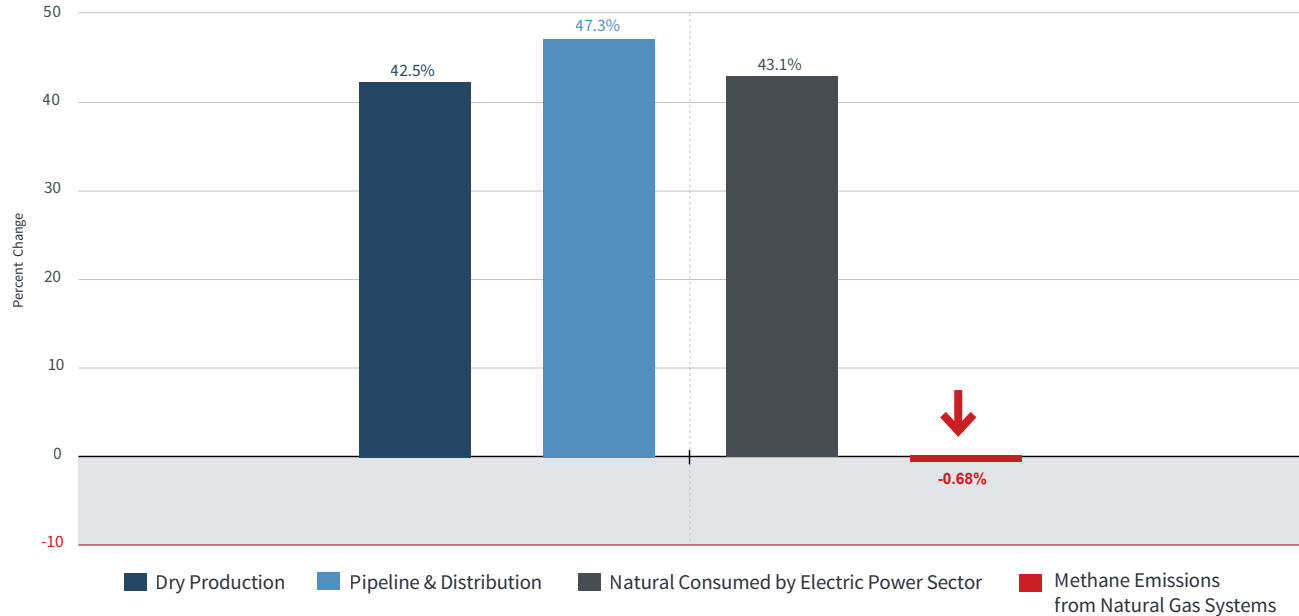
**LEADS TO LOWER EMISSIONS**

#### **WHAT ABOUT THE ENVIRONMENT**

Our nation's abundant supply of domestically produced natural gas, driven by innovations in hydraulic fracturing and horizontal drilling, continues to drive down greenhouse gas emissions for the nation.

# METHANE EMISSIONS FALLING WHILE PRODUCTION RISES

U.S. Natural Gas 2005 to 2014



Source: EPA, Emissions and Production Data.



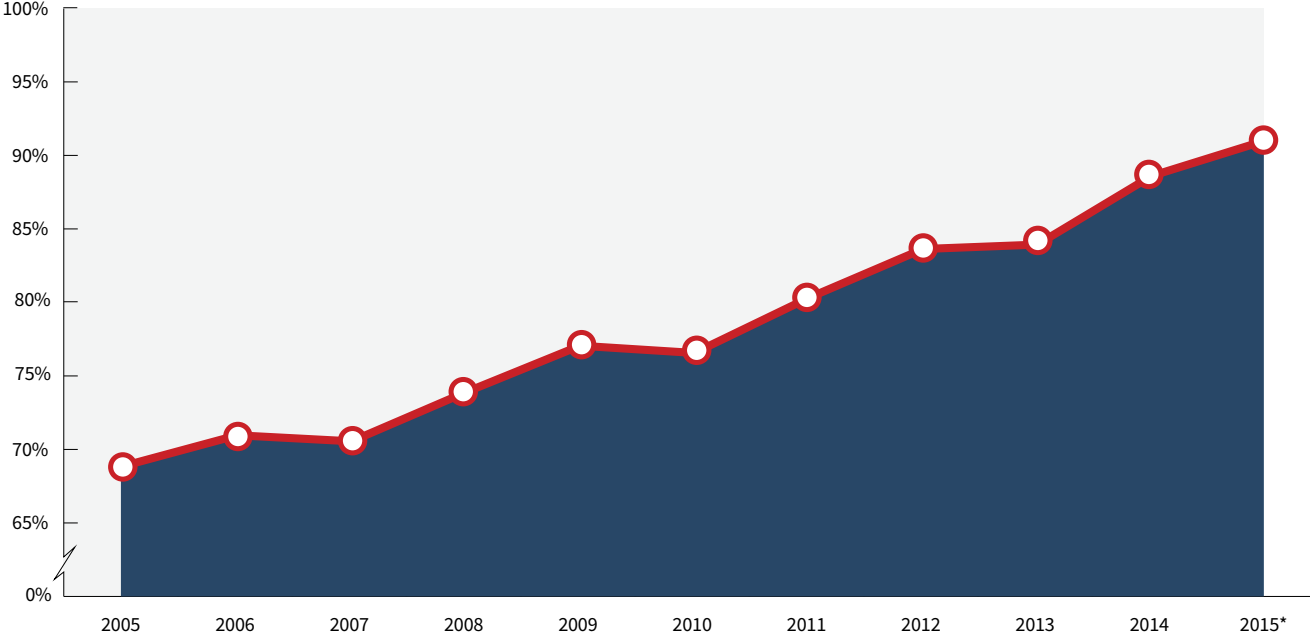
**THE U.S. ENERGY REVOLUTION HAS MADE**

**OUR NATION MORE ENERGY SECURE**

**WHAT ABOUT THE ENVIRONMENT**

The vast majority of the energy we consume is produced right here in North America by the world's most efficient and advanced refineries.

# U.S. ENERGY PRODUCTION AS PERCENTAGE OF CONSUMPTION



\* Data through November 2015.

Source: EIA , February 2016. Monthly Energy Review, Table 1.1.







# **HOW TO STOP THE AMERICAN ENERGY REVOLUTION**

**Substitute Government Mandates  
for Economic and Market Realities.**

A person in a white shirt is stacking coins into a bar chart. The background is a blurred image of the person's hands and the coins. The text is overlaid on the image.

**THE RENEWABLE FUEL STANDARD IS A**

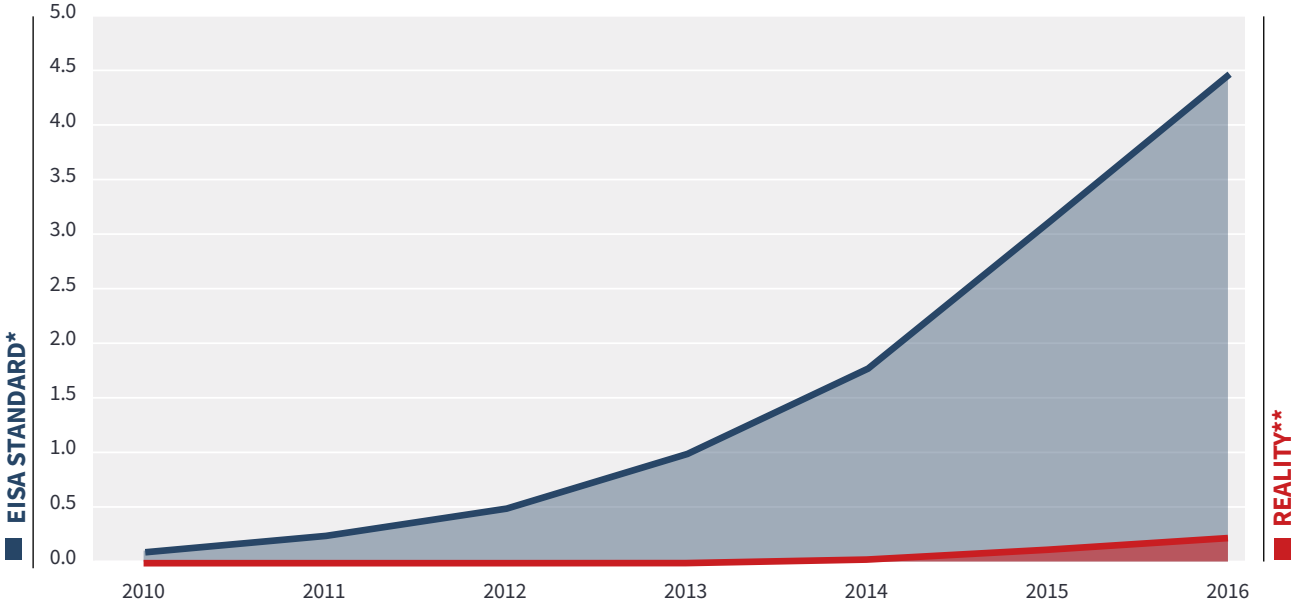
**FAILED POLICY THAT ENDANGERS CONSUMERS**

**HOW TO STOP THE AMERICAN  
ENERGY REVOLUTION**

The RFS should be repealed or significantly reformed. Its artificial mandates are based on consumption forecasts that are much different from market reality.

# EISA CELLULOSIC VOLUMES EXCEED REALITY

Billions of Gallons



Source: Energy Independence and Security Act of 2007. EPA EMTS data and 2016 Final Rule. <https://www.epa.gov/renewable-fuel-standard-program>.

\*Applicable volume of cellulosic biofuel (in billions of gallons); \*\* Cellulosic RINs (billions).

A grayscale photograph of a woman with blonde hair standing next to a car. The car's hood is open, and a large plume of white smoke is rising from the engine compartment. The woman is looking down at the car while holding a cell phone to her ear. The background is a blurred outdoor setting, possibly a parking lot or road. The text is overlaid on the image in three horizontal bars.

**THE RENEWABLE FUEL STANDARD**

**IS A DANGEROUS RELIC OF OUR NATION'S**

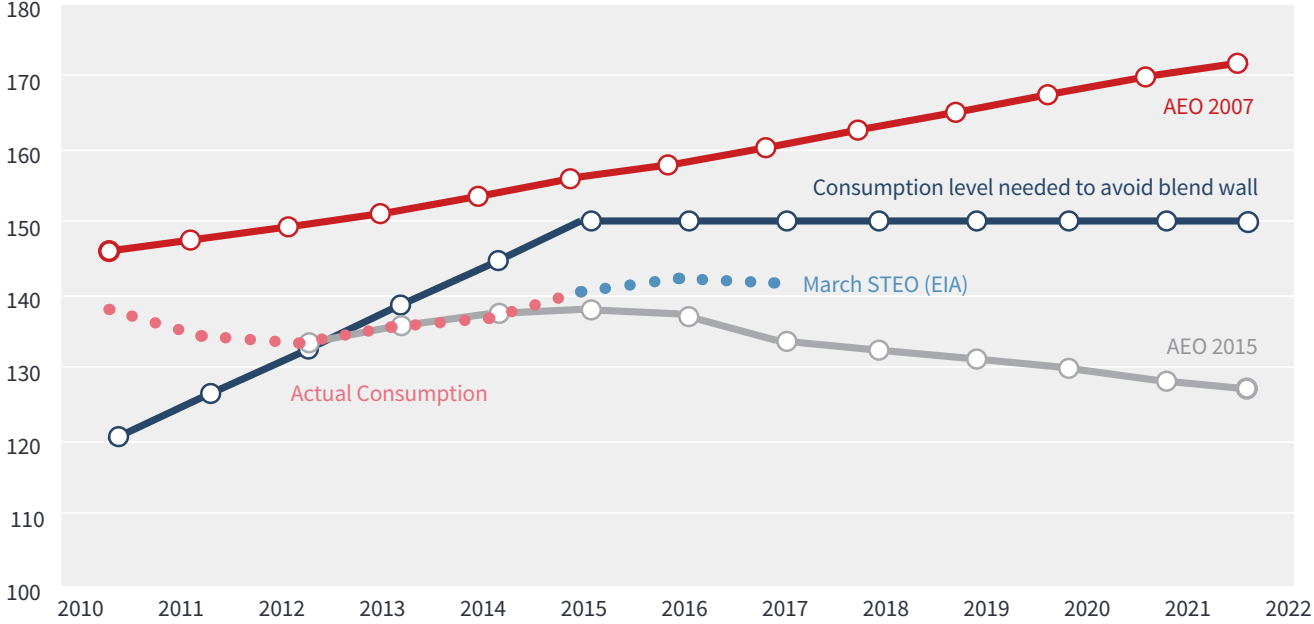
**ENERGY PAST**

**HOW TO STOP THE AMERICAN  
ENERGY REVOLUTION**

The Renewable Fuel Standard's disconnect with market reality could send our nation into the blend wall, which could cost consumers millions of dollars in unexpected engine repair costs.

# MARKET REALITY VS. RFS MANDATES

Billions of Gallons



Source: EIA and EISA.



# E85 NOT A SOLUTION TO THE BLEND WALL

## HOW TO STOP THE AMERICAN ENERGY REVOLUTION

Biofuels have an important role to play in meeting the fuel needs of America's consumers. Our nation's world-class refiners will continue to use biofuels due to their valuable blending properties with or without the RFS mandate. Unfortunately the continued implementation of biofuel mandates untethered from market reality or consumer demand poses a significant potential risk to consumers through engine repair costs.

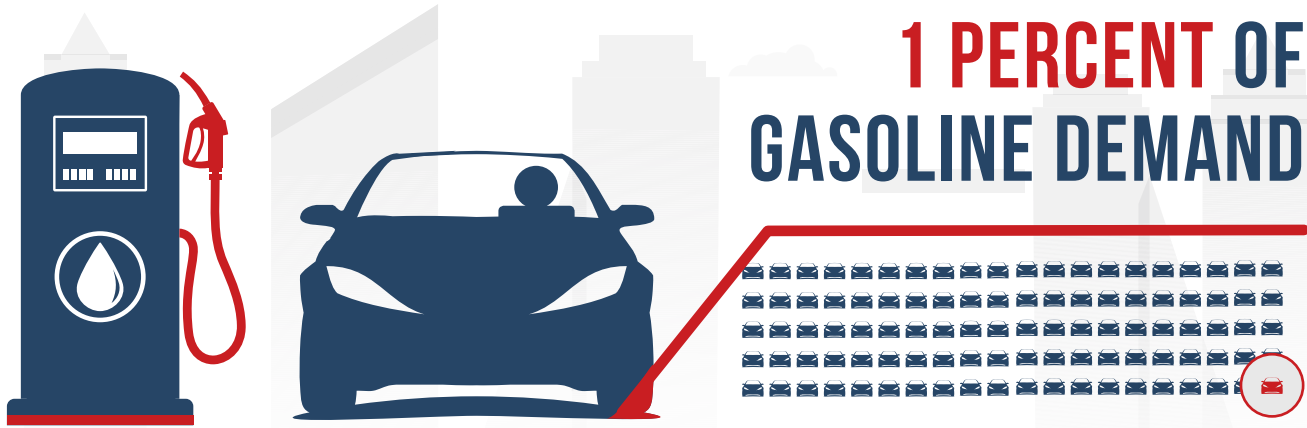


## E85 NOT A SOLUTION TO BLEND WALL

Annual Gasoline Demand

ACCORDING TO THE EIA THE ANNUAL AMOUNT OF  
E85 SOLD IN 2015 IS LESS THAN ONE PERCENT  
OF ANNUAL GASOLINE DEMAND.

LESS THAN  
**1 PERCENT** OF  
GASOLINE DEMAND



Source: U.S. Department of Energy.





# **HOW TO STOP THE AMERICAN ENERGY REVOLUTION**

**Keep Most Federal Land Off Limits to Safe  
and Responsible Energy Production.**

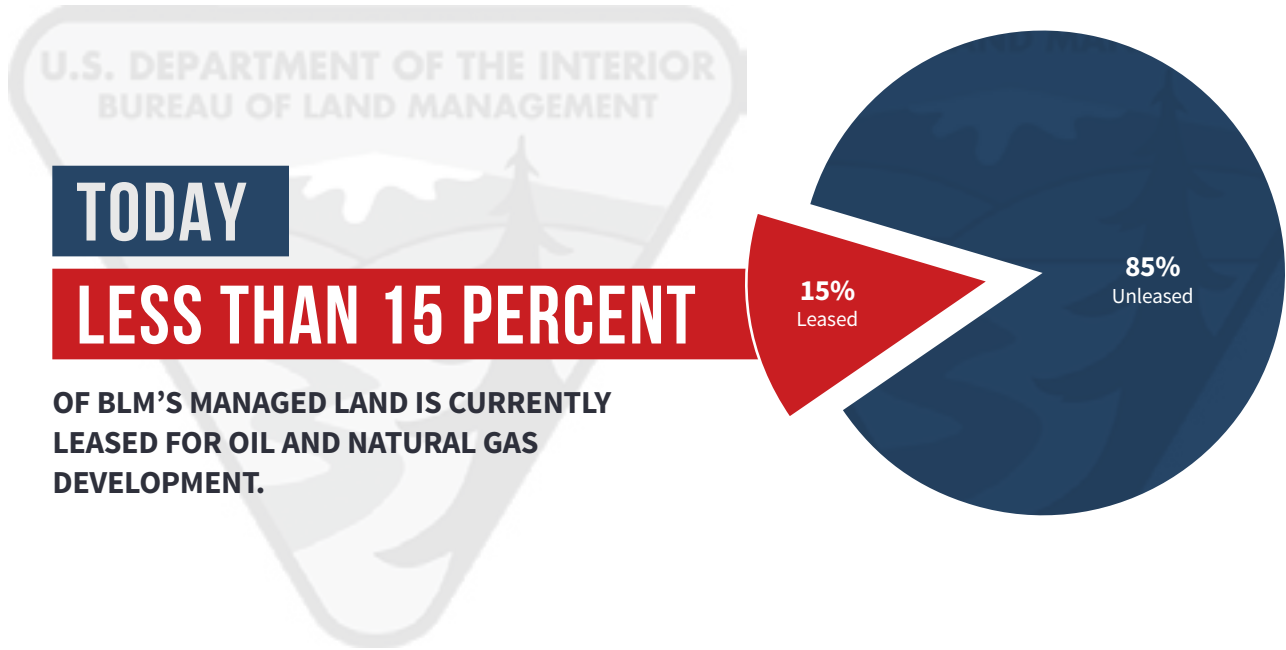
# AMERICAN ONSHORE ENERGY RESOURCES

## OFF LIMITS

### HOW TO STOP THE AMERICAN ENERGY REVOLUTION

The U.S. energy revolution is unnecessarily constrained by limited access to energy resources on the vast majority of land under federal jurisdiction.

## MOST ONSHORE AMERICAN ENERGY RESOURCES ARE OFF LIMITS





**ACCESS TO OFFSHORE RESOURCES IS VITAL**

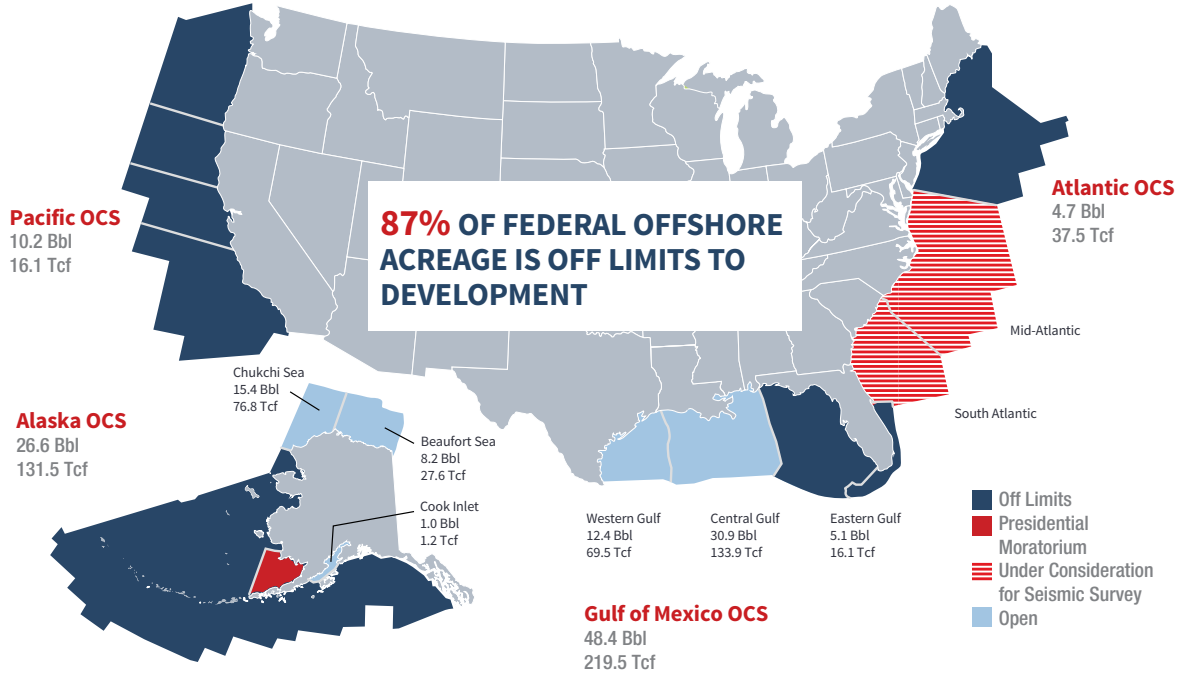
**TO AMERICA'S ENERGY FUTURE**

**HOW TO STOP THE AMERICAN  
ENERGY REVOLUTION**

Approximately **87 percent of our nation's offshore acreage is off-limits to energy production.** If production on federal lands had grown at the same rate as overall U.S. production, from **2009 through 2014, total royalties would have been 22 percent higher, with an additional \$11 billion in royalties collected by the federal government.** That glaring difference is not just bad energy policy; it is also bad fiscal policy.

# UNLOCKING AMERICA'S OFFSHORE ENERGY OPPORTUNITY

(Billion Barrels — Bbl and Trillion Cubic Feet — Tcf)



Source: The Bureau of Ocean Exploration and Management (BOEM) - <http://www.boem.gov>.



An aerial view of an offshore oil rig in the ocean, with a helipad on top and various structures and walkways. The image is faded and serves as a background for the text.

IN ORDER TO REMAIN A GLOBAL ENERGY

SUPERPOWER, THE U.S. NEEDS A TRUE ALL

OF THE ABOVE APPROACH TO ENERGY POLICY

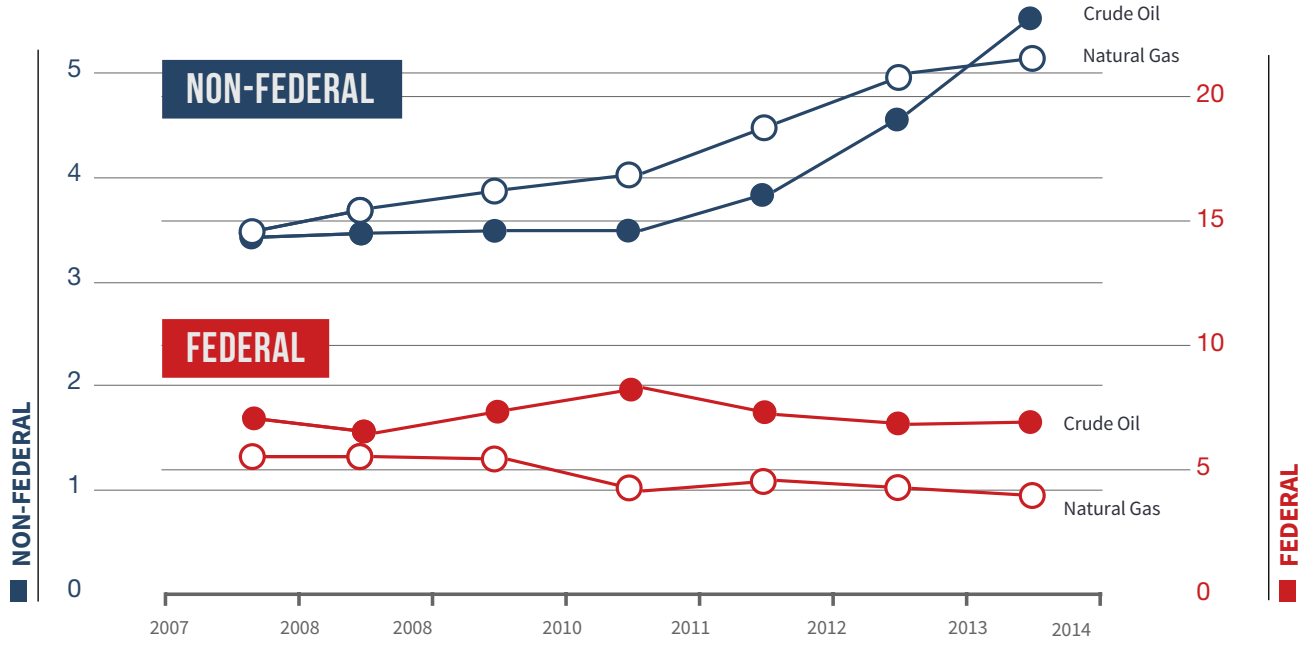
### HOW TO STOP THE AMERICAN ENERGY REVOLUTION

In the **private sector**, on state-controlled and private property, crude oil production increased by **88 percent**, and production grew **43 percent** for natural gas **between 2009 and 2014**. Conversely, on **federally controlled** land crude oil production has **remained flat** and natural gas production has **declined by 35 percent** during the same time period. Unnecessary restrictions on energy resource development on most federal land stifles our nation's ability to produce the energy we need and hinders our ability to maintain American global energy leadership.

# U.S. OIL AND NATURAL GAS PRODUCTION ON FEDERAL VS. NON-FEDERAL LANDS AND WATERS

Millions Barrels Per Day (Crude Oil)

Trillion Cubic Feet Per Day (Natural Gas)



Source: CRS, "U.S. Crude Oil and Natural Gas Production in Federal and Non-Federal Areas," April 10, 2014 and February 28, 2013.



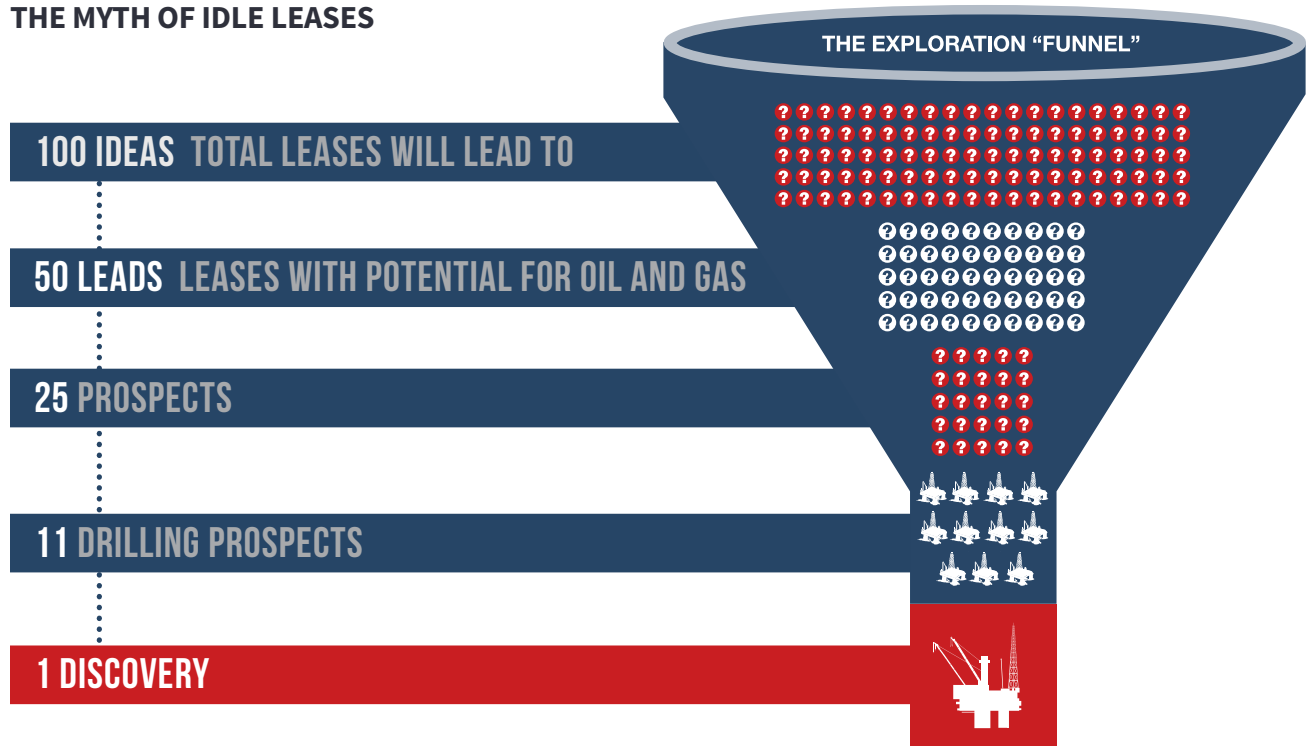
**HOW MANY LEASES ARE REQUIRED TO**

**ENSURE A 90% CHANCE OF DISCOVERY?**

**HOW TO STOP THE AMERICAN  
ENERGY REVOLUTION**

Leases are widely misunderstood. There is no guarantee that a leased area actually has recoverable oil or natural gas resources. In fact, most do not! Additionally, leases that are labeled “idle,” or non-producing, are often under geological evaluation or in development.

# THE MYTH OF IDLE LEASES



Source: API, 2008.







**CONCLUSION**

**Energy is fundamental to our society.** The policies that influence it should be based on facts with a focus on what's best for consumers and our economy. We have a once-in-a-generation opportunity to show the world how energy abundance can be used as a positive force.

Future generations are looking to us to get our nation's energy policy right. They are counting on us to leave them a country that is second-to-none in energy production, security and economic prosperity.

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**ENERGY  
RESOURCES  
ENERGY IN CHARTS**





# INDUSTRY LOGISTICS

**Production, Consumption and Storage.**



**HYDRAULIC FRACTURING HAS UNLOCKED**

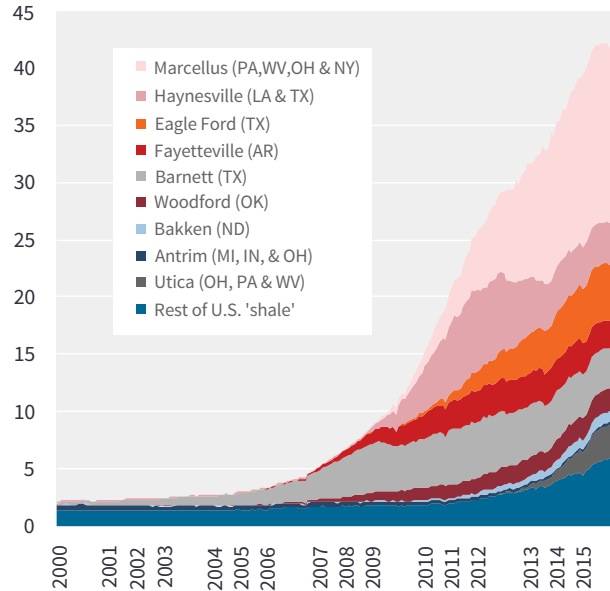
**VAST AMOUNTS OF OIL AND NATURAL GAS.**

**INDUSTRY LOGISTICS**

Innovations in the decades-old technique of hydraulic fracturing combined with horizontal drilling have unlocked vast amounts of oil and natural gas.

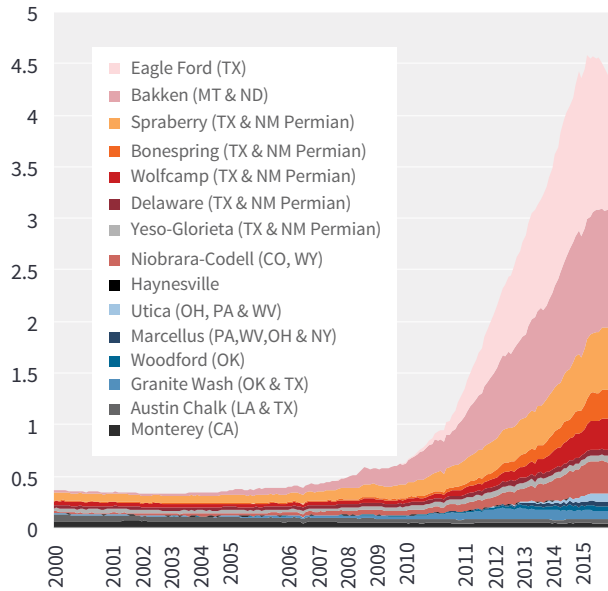
## U.S. DRY SHALE NATURAL GAS PRODUCTION

Billion Cubic Feet Per Day



## U.S. TIGHT OIL PRODUCTION

Million Barrels Per Day



A grayscale photograph of an oil pumpjack in a snowy field. The pumpjack is a large, complex mechanical structure with a long, curved arm and a counterweight. It is situated in a flat, snow-covered area with a line of trees in the background under a cloudy sky. The overall tone is muted and industrial.

# AMERICAN ENERGY

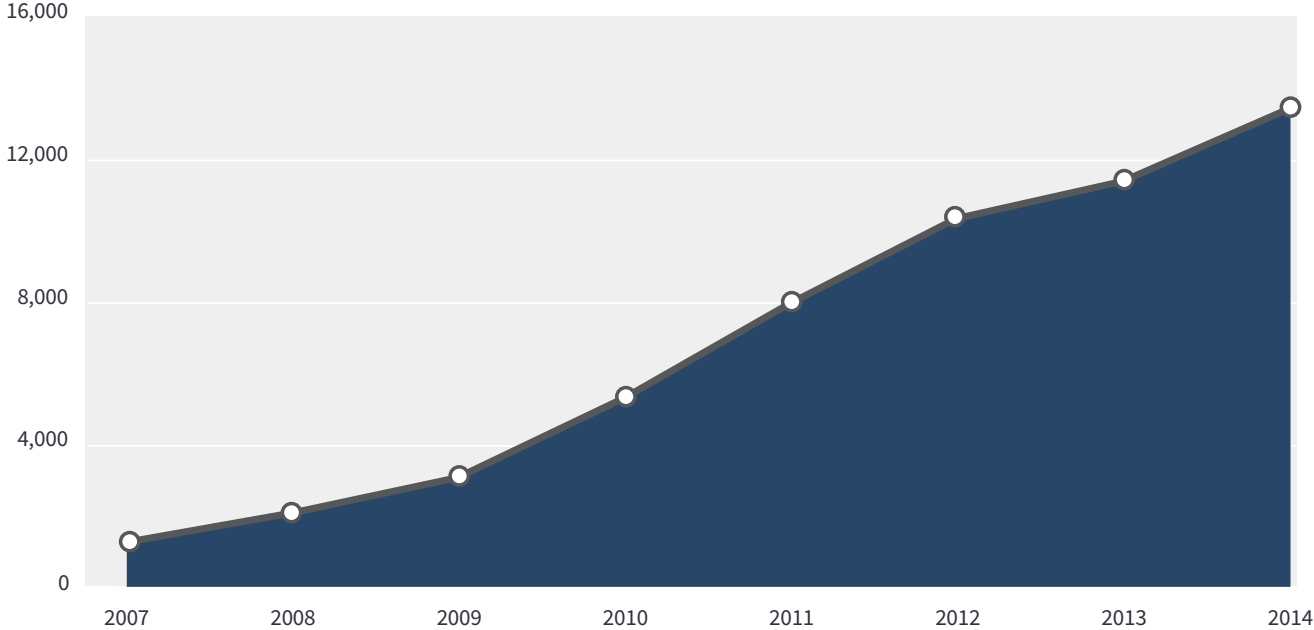
# LEADERSHIP

## INDUSTRY LOGISTICS

Increased domestic energy production helps to strengthen our nation's economy.

# U.S. NATURAL GAS PRODUCTION

Billion Cubic Feet



Source: U.S. Energy Information Administration. [https://www.eia.gov/dnav/ng/hist/res\\_egg0\\_r5302\\_nus\\_bcfa.htm](https://www.eia.gov/dnav/ng/hist/res_egg0_r5302_nus_bcfa.htm)





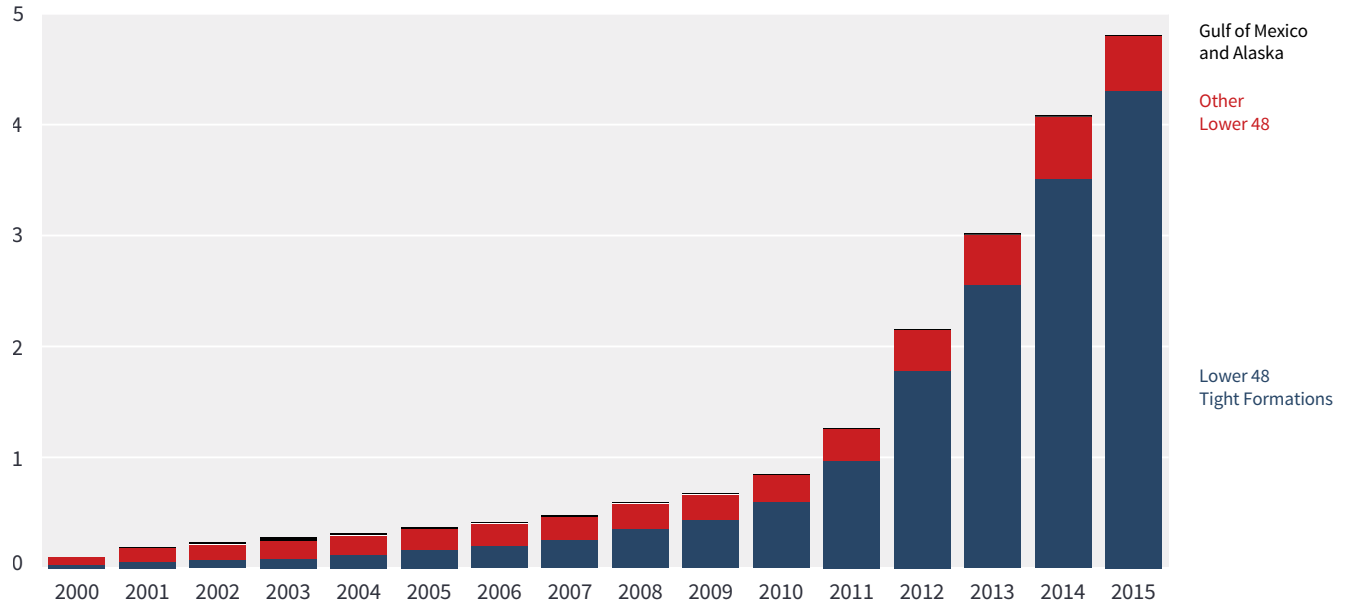
**HYDRAULIC FRACTURING AND HORIZONTAL**

**DRILLING ARE VITAL TO U.S. ENERGY PRODUCTION**

**INDUSTRY LOGISTICS**

Hydraulic fracturing, combined with horizontal drilling, has powered the U.S. energy revolution. Without this technology, the U.S. would not be the world energy leader that it is today.

## OIL PRODUCTION FROM HYDRAULICALLY FRACTURED WELLS IN THE UNITED STATES (2000-2015) Million Barrels Per Day



Source: CIA, <https://www.cia.gov/redirects/ciaredirect.html?id=25372>



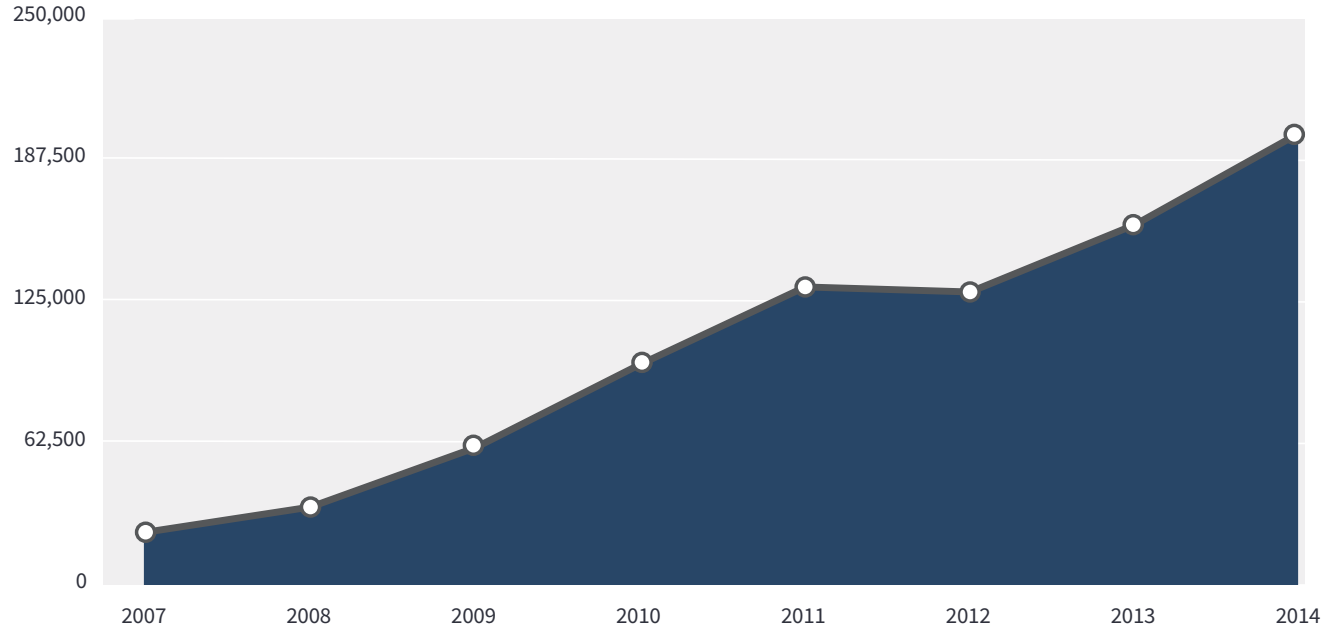
# AMERICAN ENERGY SECURITY

## INDUSTRY LOGISTICS

Increases in proved reserves allow the U.S. to remain a world energy leader and add to our nation's future energy security.

## U.S. SHALE PROVED RESERVES

Billion Cubic Feet



Source: U.S. Energy Information Administration. [https://www.eia.gov/dnav/ng/hist/res\\_epg0\\_r5301\\_nus\\_bcfa.htm](https://www.eia.gov/dnav/ng/hist/res_epg0_r5301_nus_bcfa.htm)

ENERGY IN CHARTS/ 77

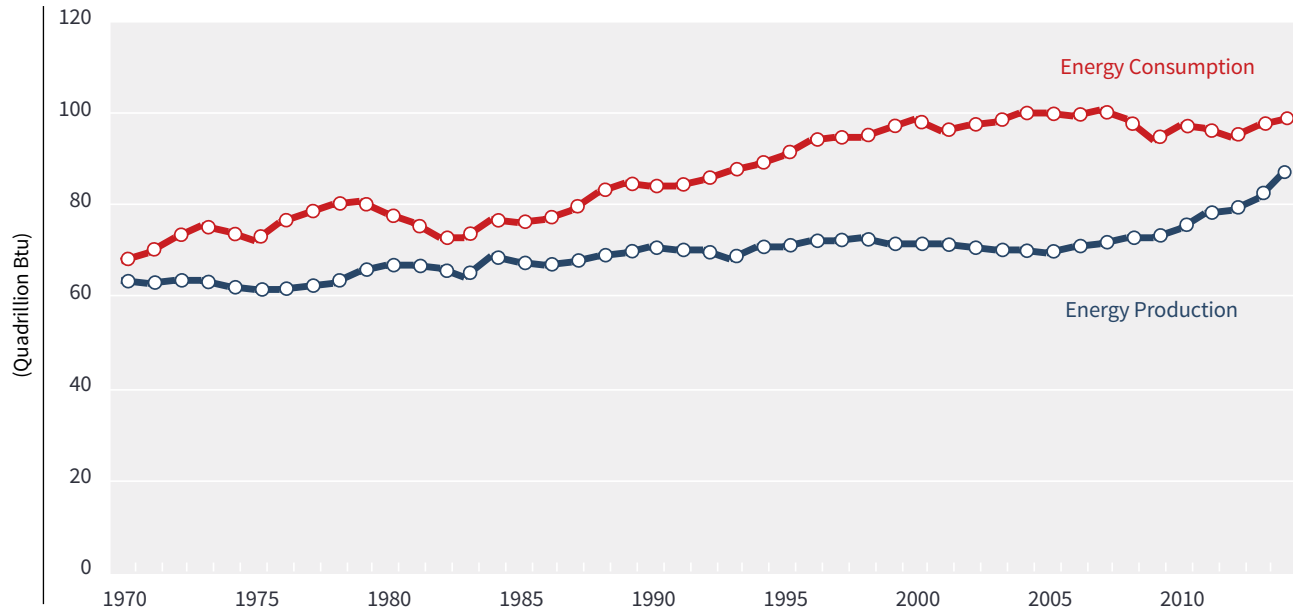
# CONSUMPTION **VS.** PRODUCTION

## INDUSTRY LOGISTICS

America's energy revolution is closing the gap between energy consumption and production.

# PRIMARY ENERGY OVERVIEW

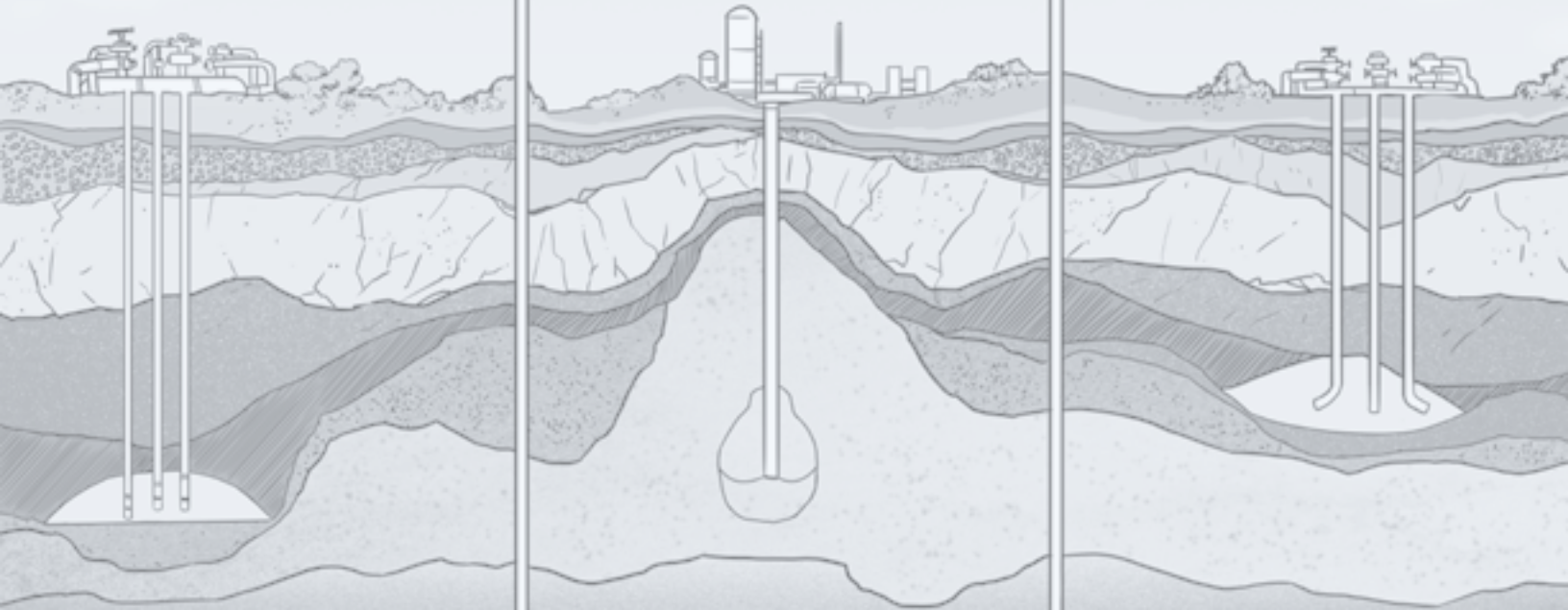
Annual Totals, 1970-2014



Source: EIA, <http://www.eia.gov/totalenergy/data/monthly/dataunits.cfm>

**WHERE NATURAL GAS UNDERGROUND**

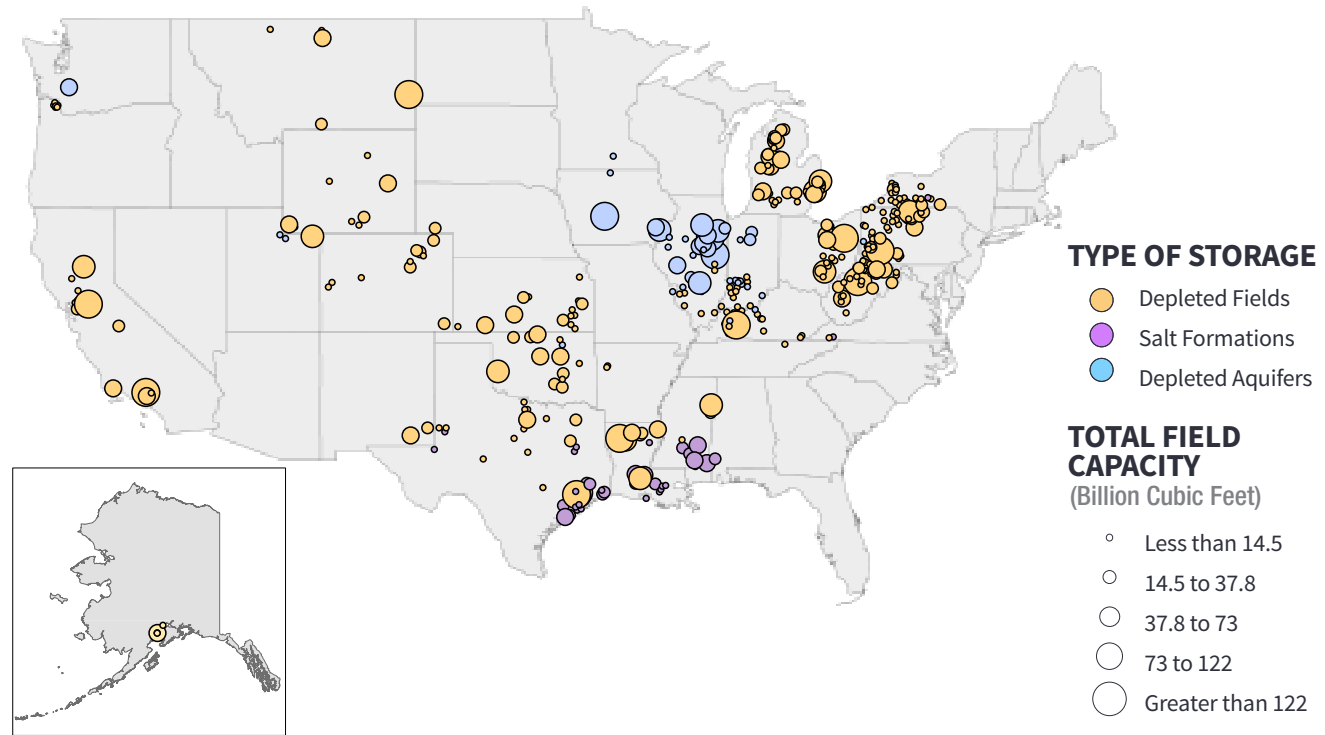
**STORAGE FIELDS ARE LOCATED**





# WHERE NATURAL GAS UNDERGROUND STORAGE FIELDS ARE LOCATED

Type of Storage and Total Field Capacity, 2015



Source: EIA Energy Mapping System; EIA-191 Monthly Underground Gas Storage Report, 2015.

[https://www.eia.gov/cfapps/ngqs/ngqs.cfm?f\\_report=RP7](https://www.eia.gov/cfapps/ngqs/ngqs.cfm?f_report=RP7)

Note: The map includes both active and inactive fields.



# CHANGES IN GASOLINE AND DIESEL PRICES

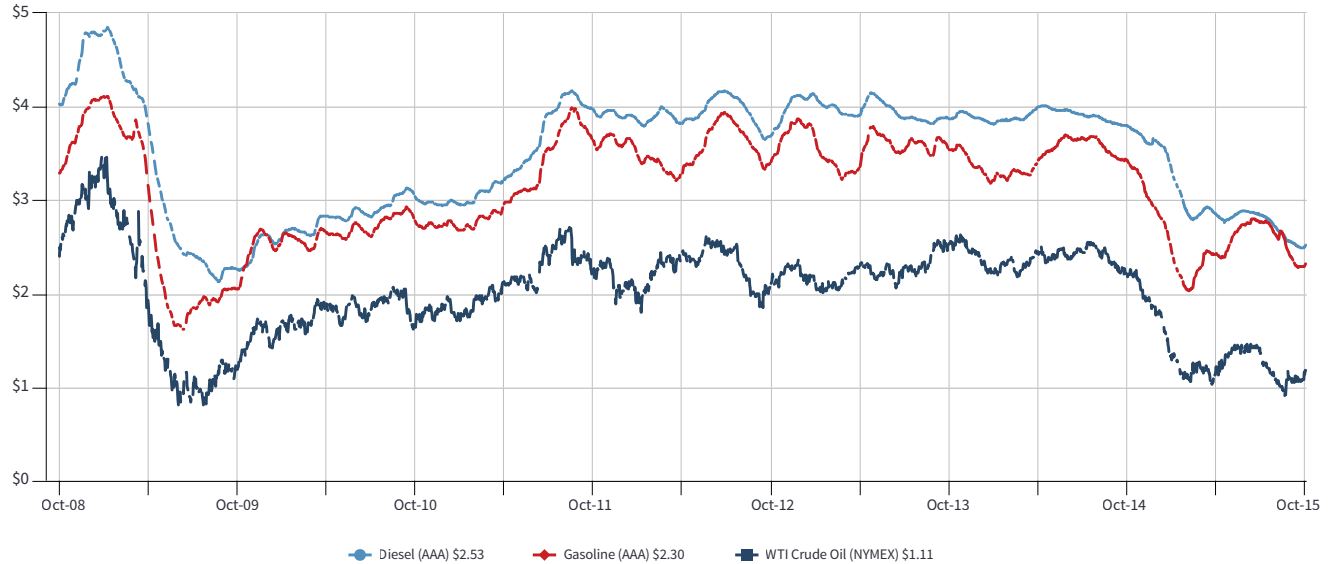
## MIRROR CHANGES IN **CRUDE OIL PRICES**

### **INDUSTRY LOGISTICS**

Price changes are determined in the global crude oil market by the worldwide demand for, and supply of, crude oil. Weak economic conditions in the U.S. and around the world in 2008 and into 2009 led to less demand, which helped push prices down.

# GASOLINE, DIESEL AND CRUDE OIL PRICES

October 14, 2015



Source: NYMEX (WTI crude oil) and AAA (gasoline and diesel).

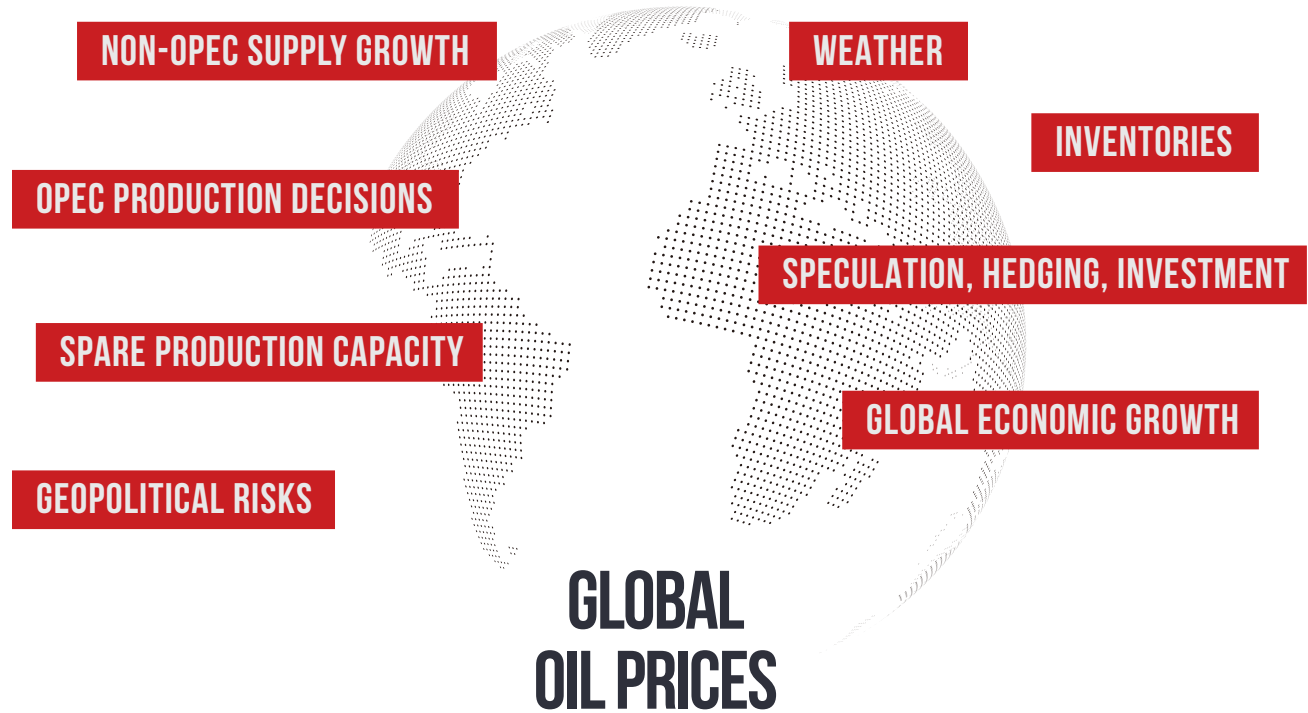
The background of the slide features a grayscale, semi-transparent image of a gas station. On the right side, a hand is shown holding a gas pump nozzle, pointing it towards the left. On the left side, the rear portion of a car is visible, including the trunk and the rear wheel. The overall image is faded and serves as a backdrop for the text.

## OIL PRICES

# RELATE TO MANY UNCERTAIN FACTORS

### INDUSTRY LOGISTICS

Crude oil prices are set globally through the daily interactions of thousands of buyers and sellers in both physical and futures markets, and reflect participants' knowledge and expectations of demand and supply. In addition to economic growth and geopolitical risks, other factors, including weather events, inventories, exchange rates, investments, spare capacity, OPEC production decisions, and non-OPEC supply growth all figure into the price of crude oil.



The background of the slide is a grayscale image. The top portion shows the stars and stripes of the United States flag. The bottom portion shows a close-up of a \$100 bill, with the portrait of Benjamin Franklin and the text 'ONE HUNDRED DOLLARS' and 'UNITED STATES OF AMERICA' visible. The overall tone is professional and financial.

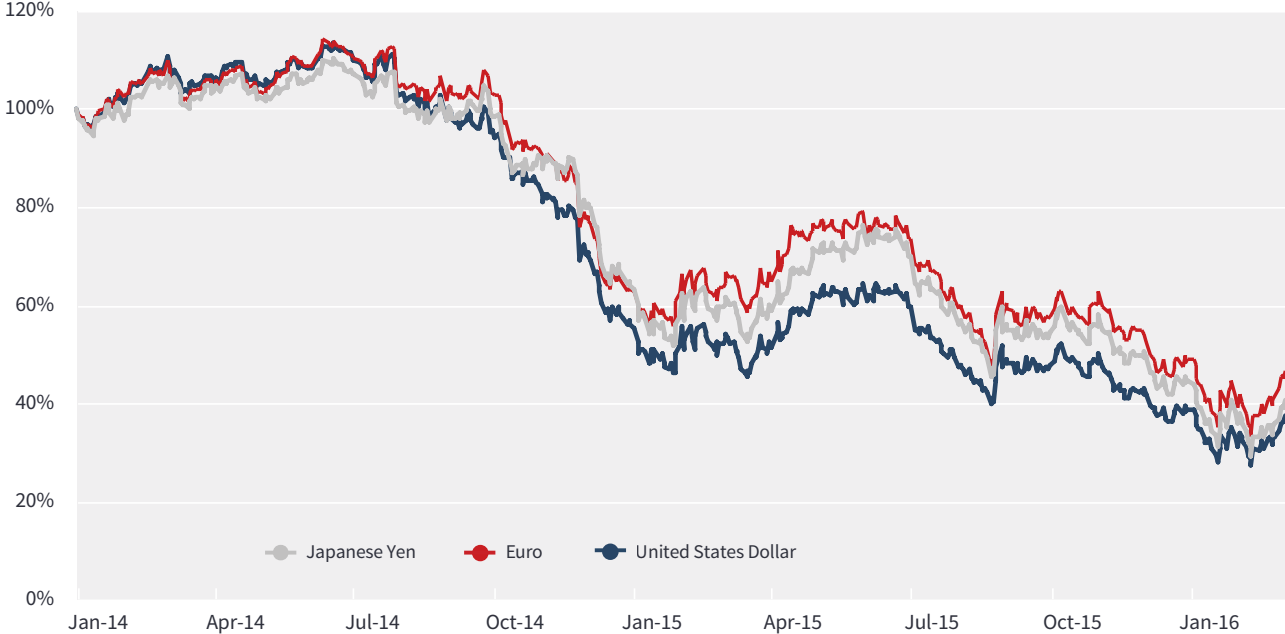
**THE VALUE**

**OF THE DOLLAR MAKES A DIFFERENCE**

### **INDUSTRY LOGISTICS**

The strength of the U.S. dollar against other currencies around the world has widened compared to the Yen and the Euro.

# PERCENT CHANGE OF WEST TEXAS INTERMEDIATE CRUDE (WTI) IN DOLLARS, EUROS, AND YEN



Source: Federal Reserve Bank of St. Louis, Energy Information Administration.







# ENVIRONMENT AND EMISSIONS



A young girl with blonde hair is shown in profile, hugging a large tree trunk. She is looking upwards with a joyful expression. The background is a soft-focus outdoor setting with trees and sunlight filtering through the leaves.

THE OIL AND NATURAL GAS INDUSTRY HAS INVESTED

**\$90 BILLION IN ZERO- AND LOW-CARBON EMITTING**

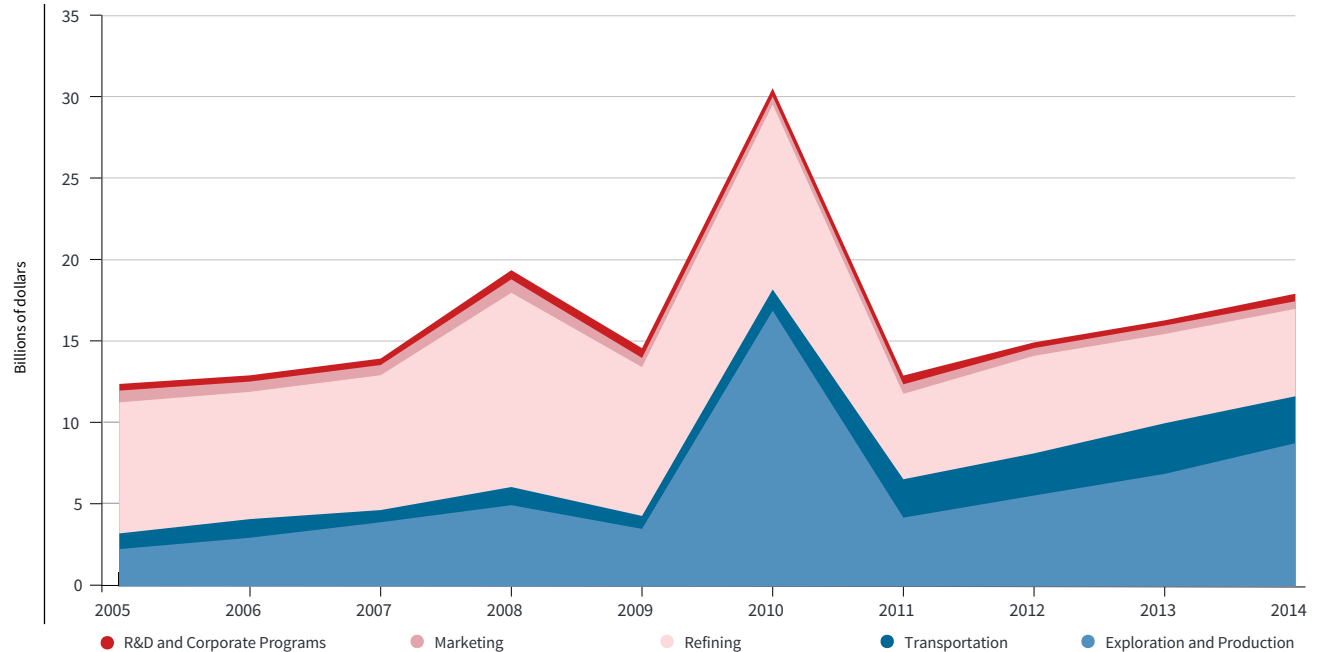
**TECHNOLOGIES FROM 2000 THROUGH 2014.**

#### **ENVIRONMENT AND EMISSIONS**

That's almost as much as the federal government's investment of **\$110.3 billion**.

## U.S. ENVIRONMENTAL EXPENDITURES SINCE 2005

(Includes Expenditures on Remediation and Spills)



All expenditures are estimated except for remediation and spills.

In 2010, Remediation and spills are unusually high because of an outlier event.

Source: API Report: <http://www.api.org/~media/Files/Publications/Environmental-Expenditures-2015.pdf>



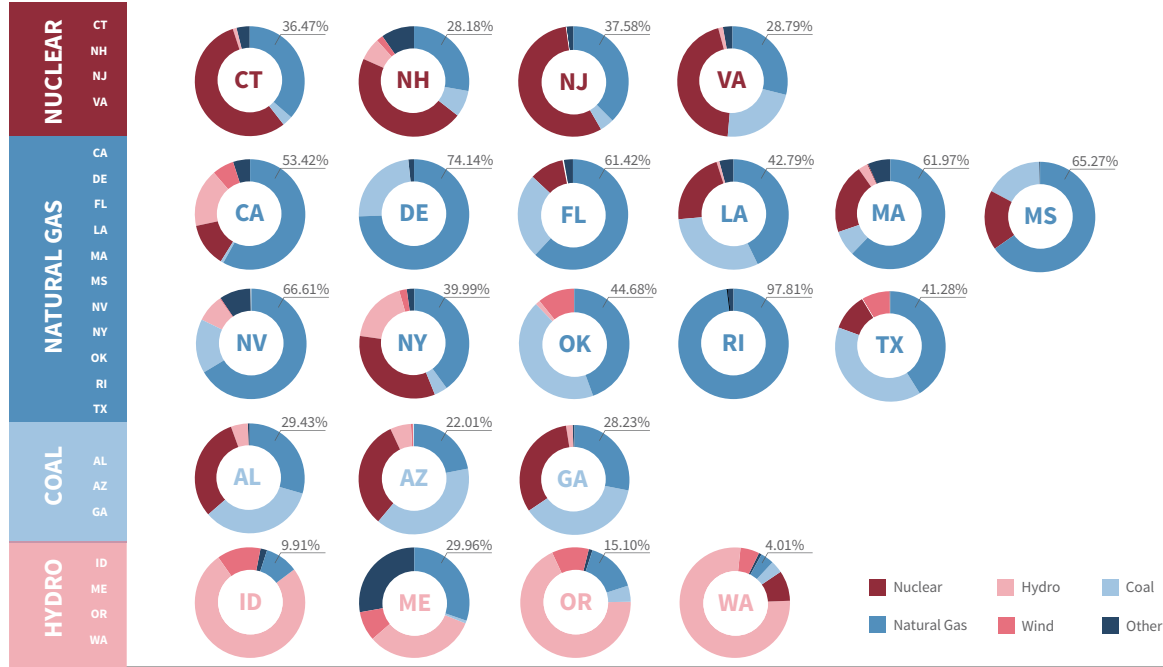
# LETTING MARKETS **WORK**

## **ENVIRONMENT AND EMISSIONS**

**Natural gas is a leading energy source in many states with below average emissions.** Yet , EPA seeks to downplay natural gas use. This is what happens when ideology and politics trump science.

# STATES WITH BELOW AVERAGE EMISSION RATES

## Primary Fuel Sources



Source: U.S. Energy Information Administration, State Energy Data System.

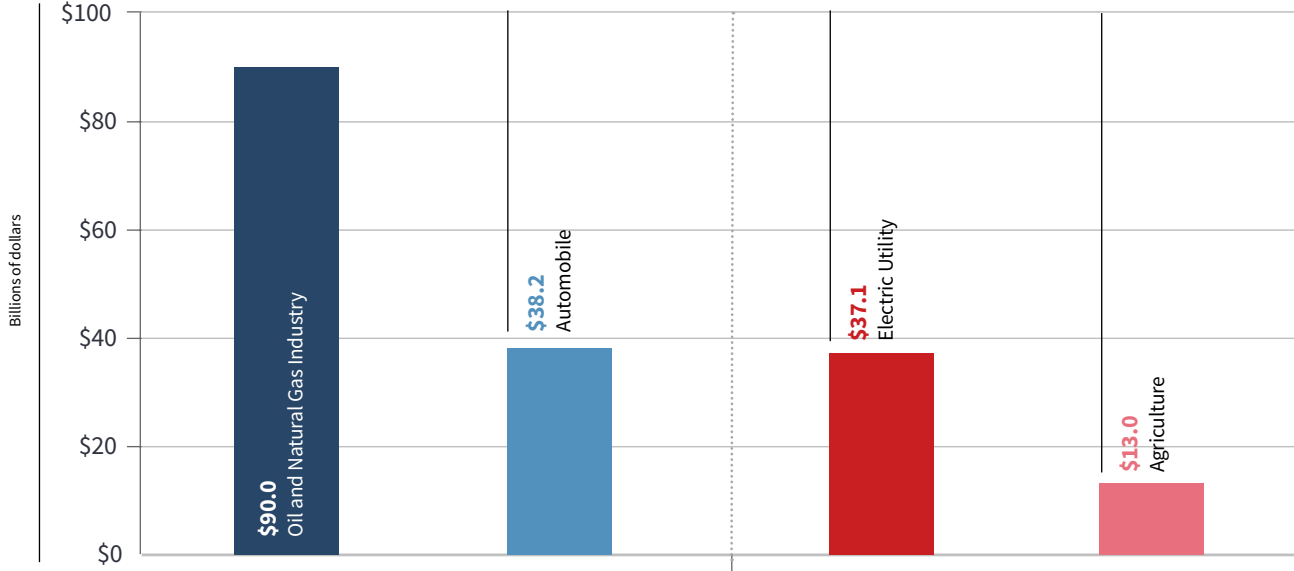
A grayscale photograph of industrial machinery, likely a factory or refinery, with various pipes, valves, and mechanical components. The background is slightly blurred, emphasizing the foreground elements.

**LEADING INVESTMENT**

**LEADING INNOVATION**

# SPENDING TO REDUCE GHG EMISSIONS

Leading Private Investors 2000-2014



Source: T2 & Associates, "Key Investments in Greenhouse Gas Mitigation Technologies from 2000 Through 2014 by Oil and Gas Firms, Other Industry and the Federal Government," September 2015.









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<http://www.api.org>

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