

2018

Sustainable Energy in America

FACTBOOK

GROWTH SECTORS OF THE U.S. ENERGY ECONOMY



Energy Efficiency



Natural Gas



Renewable Energy



The Business Council
for Sustainable
Energy®

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Clean Energy Soars in 2017, Cements Its Foundation in U.S. Economy

The massive and historic transformation of the U.S. energy sector shifted into a higher gear in 2017. The rapid expansion of clean energy in America is delivering more jobs, greater energy productivity, increased economic growth, and fewer emissions.

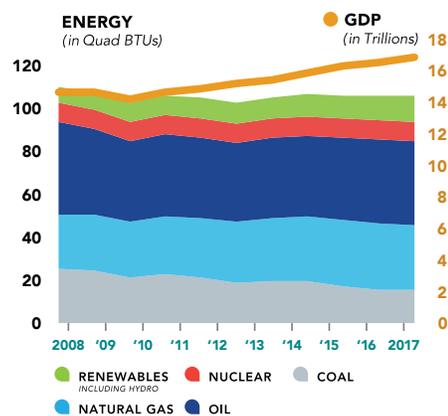
America witnessed a near-record rate of renewable energy deployment, the transition to become a consistent net exporter of liquefied natural gas (LNG), and continued improvement in the energy efficiency of its economy. Today, these shifts in the energy sector are forming the backbone of U.S. economic growth and support over 3 million jobs for Americans.

The Sustainable Energy in America Factbook provides up-to-date, accurate market information on the U.S. energy landscape. It includes an in-depth look at the energy efficiency, natural gas, and renewable energy sectors, and covers emerging technology areas such as battery storage and sustainable transportation.

Economic Growth and Energy Productivity On the Rise

The U.S. economy is accomplishing more with less energy. Over the past decade, America's gross domestic product (GDP) grew 15.3% while total energy use fell 1.7%. In other words, the energy productivity of the U.S. economy—the ratio of U.S. GDP to energy consumed—grew 17.3% since 2008.

U.S. Primary Energy Consumption vs. GDP



America Beats the Competition With Low Energy Prices

The U.S. is one of the most attractive markets in the world for companies whose operations entail significant energy-related costs. At 6.76 cents per kilowatt-hour, the retail price of electricity for the industrial sector in the U.S. in 2016 was lower than that in other major economies, such as China, Japan, and Mexico.

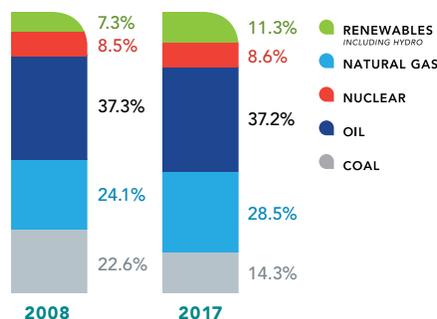
Consumers Are Dedicating a Smaller Share of Income to Energy

Consumers devoted a smaller share of their spending toward electricity than at any time ever recorded, while the total share of household expenses dedicated to energy costs also hovered near an all-time low, below 4%.

Shifts in U.S. Energy Demand

As total energy demand has continued to fall, the use of natural gas and renewable energy has increased. In 2017, natural gas met 28.5% of total U.S. energy demand, and renewable energy, including hydropower, met 11.3%.

U.S. Primary Energy Demand by Fuel Type



U.S. Attracts Substantial Clean Energy Investment

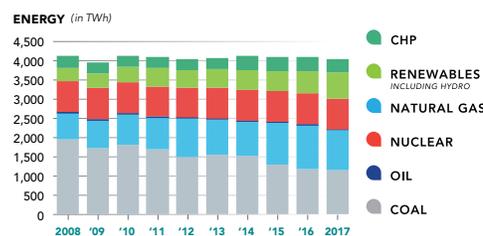
New investment in renewable energy and energy-smart technologies in the U.S. topped \$57 billion in 2017—17% of the global total—and totaled \$509 billion over the past decade. The U.S. finished the year as the second-highest-ranked country (after China) in total new investment dollars.

Energy-smart technologies attracted 25% more funding than in the preceding year, and wind investment expanded 19% over 2016 levels.

Changes in U.S. Electricity Mix

Since 2008, the U.S. power sector has made large strides toward a decarbonized grid. In the last decade, natural gas' share of electricity generation increased from 22% to 32%, and renewable energy's share climbed from 9% to 18%. Natural gas and renewable energy now account for half of U.S. power generation. Combined heat and power (CHP) contributed 8.5% in 2017.

U.S. Electricity Mix by Fuel Type



Source: EIA Monthly Energy Review, Bureau of Economic Analysis. Note: Values for 2017 energy consumption are projected, accounting for seasonality, based on latest monthly values from EIA (data available through October 2017). Electricity figures are projected based on EIA data through November 2017. GDP is real and chained (2009 dollars).

Natural gas and renewable energy accounted for 50% of all electricity generation in 2017, up from 31% in 2008.

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Industry Highlights

Energy Efficiency

- Total U.S. spending on energy efficiency through formal frameworks climbed to a record level of \$14.5 billion in 2016. Scaling up of residential Property Assessed Clean Energy (PACE) contributed the majority of the year-on-year growth, with \$1.7 billion in investment in 2016.
- Local benchmarking and disclosure policies for energy use in buildings jumped in 2017, covering an estimated of 13% of commercial floor space, an increase of 3.5 billion square feet or 47% since 2016.
- Smart meters have been deployed to 51% of U.S. households, and an estimated 14 million households now have a smart thermostat.
- The fuel economy of vehicles has improved 8% since 2012 and 21% over the past decade, propelled by federal fuel efficiency standards.

Natural Gas

- Natural gas is the number one source of power in the U.S., contributing 32% of the electricity mix in 2017.
- Total natural gas demand, including exports, reached an all-time high in 2017.
- Natural gas prices for retail customers in 2017, adjusted for inflation, were among the lowest in decades, according to the American Gas Association.
- New natural gas capacity build topped 10.7 gigawatts (GW) in 2017, the highest level since 2005. Combined-cycle technology contributed the majority at 9 GW.
- For the first time, the U.S. was a net exporter of natural gas every month in 2017. Top customers included Mexico and China.

Renewable Energy

- Renewable generation soared 14% in 2017, accounting for 18% of total U.S. generation—double the contribution a decade ago.
- Renewable energy added 18.4 GW of capacity in 2017, overall contributing 55% of the total new capacity build since 2008.
- Hydropower generation—excluding pumped storage—surged 13.3% in 2017.
- Wind and solar capacity has increased more than 471% since 2008 (from 25 GW to 143 GW).
- Biogas, biomass, geothermal, and waste-to-energy represented 16.7 GW of U.S. capacity in 2017. While these technologies can provide renewable, around-the-clock power, they have lacked access to the same incentives as the fast-growing sectors.



JOBS IN THE U.S.

Clean energy industries support over 3 million jobs in the United States.

Sustainable Transportation

- In 2017, U.S. sales of electric vehicles (EVs) increased 23%, putting 194,000 EVs on the road. The number of public charging sites grew 18%.
- The cost of lithium-ion battery packs dropped dramatically by 23% in 2017.
- The sale of vehicles with start-stop technology increased to 16.8% of new vehicles sold in U.S. in 2017.
- The amount of natural gas used in vehicles rose 4% in 2017, representing a 45% increase over 2013 levels.
- Three fuel cell vehicle (FCV) models are on the U.S. market; according to HybridCars 2,298 FCVs were sold in 2017, up 112.4% from 2016.

Clean Energy and Carbon Reductions

The transformation of the energy sector is reducing emissions. In 2017, U.S. power sector carbon emissions dropped 4.2% to 1.74 gigatonnes of carbon dioxide-equivalent (GtCO₂e), 28% below 2005 levels. Total U.S. carbon emissions hit a 25-year low, shrinking to an estimated 6.4 GtCO₂e, 13% below 2005 levels.

Energy Is Critical Infrastructure

The extensive power grid and natural gas system in the U.S. have fueled the nation's economic growth and ensured its global competitiveness. In 2017, investor-owned utilities and independent transmission developers spent an estimated \$22.9 billion on transmission in 2017, a 10% increase over the \$20.8 billion spent in 2016, and a 91% increase since 2011. Investment in midstream gas infrastructure—transmission, distribution, and storage—climbed to \$25 billion in 2016, a 19% increase from 2015.

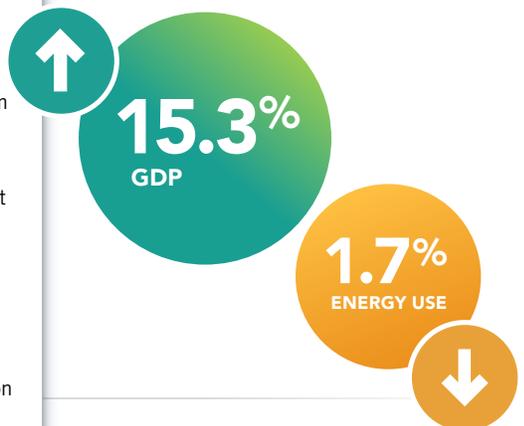
More investment is needed in certain areas of the country to bring clean energy and natural gas to customers. Additional electric transmission is needed to send clean power to regional demand centers. New pipelines can ease capacity constraints and move natural gas from supply basins to demand centers, especially in the Northeast.

LEADING THE ACTION

Businesses, Cities, and States

Large American corporations, across many industry sectors, contracted for a near-record high of 2.9 GW of off-site renewable energy capacity (wind and solar) by year-end 2017. Companies are investing in energy efficiency, too, using ISO 50001 as an energy management system or pledging to double their energy productivity under the global EP100 initiative. Cities and states are reaffirming their commitments to clean energy and climate change by adopting new policies and forming new partnerships to enhance ambition to reduce emissions and improve resilience.

The U.S. economy is doing more with less energy, experiencing a 15.3% growth in GDP while total energy use fell 1.7% since 2008.



GET THE FACTS

To view the **Sustainable Energy in America 2018 Factbook**, visit the link below

 [www.bcse.org/
sustainableenergyfactbook.html](http://www.bcse.org/sustainableenergyfactbook.html)



About the Sustainable Energy in America Factbook

The Sustainable Energy in America Factbook was produced for the Business Council for Sustainable Energy (BCSE) by Bloomberg New Energy Finance (BNEF). BNEF compiled, wrote, and edited this report and retained editorial independence and responsibility for its content throughout the process. Visit about.bnef.com for more information. BCSE members and partners provided additional data sets, and the project was commissioned with contributions from the following sponsors:

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What's Unique About the Sustainable Energy in America Factbook?

FIRST, the report is quantitative and objective, intended to provide policymakers, journalists, and industry professionals with up-to-date, accurate market intelligence.

SECOND, the report looks at clean energy broadly defined. The Factbook takes the pulse of the wide range of clean energy industries represented by the Council, including energy efficiency, distributed power, natural gas, and renewable energy sources (including solar, wind, hydropower, geothermal, biomass, biogas, and waste-to-energy).

THIRD, the report fills important data gaps. This Factbook seeks to accurately quantify some sectors that currently are small but are growing rapidly.