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# Renewable Energy: United States

November 2017



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# About This Report

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## Scope & Method

This report forecasts US renewable energy demand and production in British thermal units (Btu) to 2021. Total demand is segmented by resource in terms of:

- wood and waste biomass
- hydropower
- biofuels
- wind
- solar
- geothermal.

Total demand is also segmented by market as follows:

- electric power
- industrial
- transport
- residential
- commercial.

For the purposes of this report, energy is measured in terms of primary energy. As defined by the US Energy Information Administration, primary energy is the form of energy first accounted for before any conversion to secondary or tertiary forms of energy. To avoid double-counting, market totals represent primary energy consumption only. For example, the electric power market represents the consumption of energy (eg, hydropower, wind) to produce electricity, but retail sales of that electricity to the other markets (eg, industrial, residential) are excluded from market totals.

To illustrate historical trends, total demand, production, and the various segments are provided in annual series from 2006 to 2016.

This report quantifies trends in various measures of growth and volatility. Growth (or decline) expressed as an average annual growth rate (AAGR) is the least squares growth rate, which takes into account all available datapoints over a period. The volatility of datapoints around a least squares growth trend over time is expressed via the coefficient of determination, or  $r^2$ . The most stable data series relative to the trend carries an  $r^2$  value of 1.0; the most volatile – 0.0. Growth calculated as a compound annual growth rate (CAGR) employs, by definition, only the first and last datapoints over a period. The CAGR is used to describe forecast growth, defined as the expected trend beginning in the base year and

## About This Report

ending in the forecast year. Readers are encouraged to consider historical volatility when assessing particular annual values along the forecast trend, including in the forecast year.

Key macroeconomic indicators are also provided with quantified trends. Other various topics, including profiles of pertinent leading suppliers, are covered in this report. A full outline of report items by page is available in the Table of Contents.

## Sources

*Renewable Energy: United States* (FF45041) represents the synthesis and analysis of data from various primary, secondary, macroeconomic, and demographic sources including:

- firms participating in the industry, and their suppliers and customers
- government/public agencies
- national, regional, and international non-governmental organizations
- trade associations and their publications
- the business and trade press
- indicator forecasts by The Freedonia Group
- the findings of other reports and studies by The Freedonia Group.

Specific sources and additional resources are listed in the Resources section of this publication for reference and to facilitate further research.

## Industry Codes

Table 6 | Industry Codes Related to Renewable Energy

NAICS/SCIAN 2007		SIC	
North American Industry Classification System		Standard Industry Codes	
221111	Hydroelectric Power Generation	2046	Wet Corn Milling
221119	Other Electric Power Generation	2869	Industrial Organic Chemicals, NEC
221330	Steam and Air-Conditioning Supply	2911	Petroleum Refining
311221	Wet Corn Milling	4911	Electric Services
324110	Petroleum Refineries	4931	Electric and Other Services Combined
325110	Petrochemical Mfg	4939	Combination Utilities, NEC
325193	Ethyl Alcohol Mfg	4953	Refuse Systems
325199	All Other Basic Organic Chemical Mfg	4961	Steam and Air-Conditioning Supply
562920	Materials Recovery Facilities		

Source: US Census Bureau

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## Resources

### The Freedonia Group

#### Freedonia Industry Studies

*Oklahoma Oil & Gas Drilling Outlook*, May 2017

*Texas Oil & Gas Drilling Outlook*, April 2017

*Midstream Oil & Gas Equipment*, February 2016

*Electric Transmission & Distribution Equipment*, February 2015

#### Freedonia Focus Reports

*Coal: United States*

*Crude Petroleum: United States*

*Energy: United States*

*Motor Vehicle Biofuels: United States*

*Natural Gas: United States*

*Power Transmission Components: United States*

*Refined Petroleum Products: United States*

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### Trade Publications

*Alternative Energy News*

*Biodiesel Magazine*

*Biomass Magazine*

*Ethanol Producer Magazine*

*Hydro Review*

*Power Engineering*

*Renewable Energy World*

### Agencies & Associations

American Wind Energy Association

Clean Fuels Development Coalition

Geothermal Energy Association

National Hydropower Association

Renewable Fuels Association

US Army Corps of Engineers

US Census Bureau

US Department of Energy

Federal Energy Regulatory Commission

Office of Energy Efficiency & Renewable Energy

US Energy Information Administration

## About This Report

US Department of the Interior

US Bureau of Reclamation

US Department of Transportation

National Highway Traffic Safety Administration

US Environmental Protection Agency