



# THE McCord Report

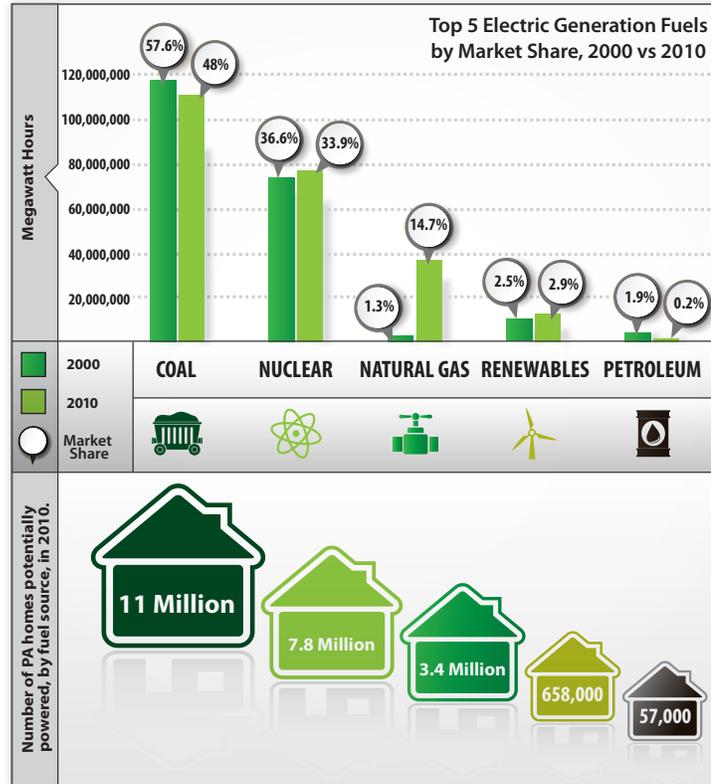
*A look at Pennsylvania's economic vital signs*

## A Diverse Mix of Power

Pennsylvania generates electricity from a broad range of fuel sources. Coal, nuclear, natural gas and renewables (including hydroelectric) possess the greatest market shares (in order from greatest to least). The proportions of electricity generated from these sources have changed over the years. According to the U.S. Energy Information Administration, coal was responsible for 57.6% of the electricity generated in Pennsylvania in 2000. Nuclear and natural gas accounted for 36.6% and 1.3%, respectively.

By 2010, natural gas and renewables captured larger shares of the market. Natural gas accounted for 14.7% of electricity generation in the state (a more than 1,000% increase) and renewables (including hydroelectricity) were responsible for 2.9% (a 16% increase). Meanwhile, coal's market share dropped nearly 17% and nuclear dropped more than 7% over the decade, although the net generation of each dropped only about 5% over the period.

The graph at right depicts these market shifts and illustrates how many homes each generation source could power as of 2010.



## PA: #1 for Electricity Exports

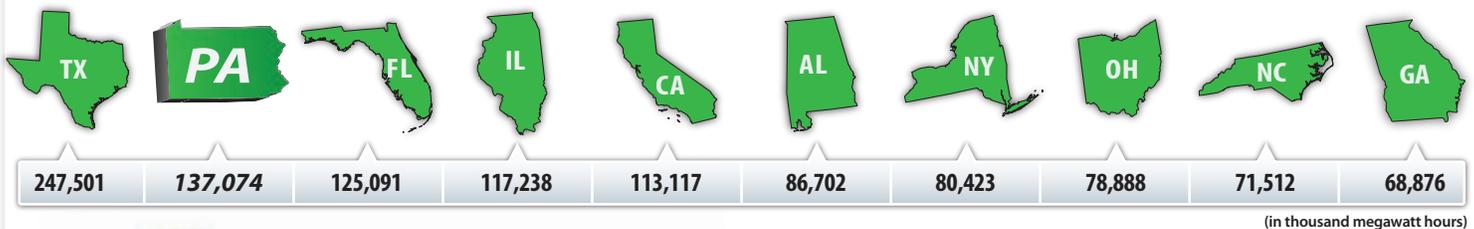
Pennsylvania's large and diverse generation fleet has made it the largest net exporter of electricity of any state. In 2011, Pennsylvania exported approximately 35% of its nearly 228 million megawatt hours of generation. Below, see how Pennsylvania compares to the other top nine electricity exporters.

STATE	EXPORTS (MWH)
PA	78,878,901
AL	67,343,841
TX	59,411,808
IL	56,614,161
WV	47,760,871
AZ	33,181,712
WY	30,220,709
SC	22,484,021
WA	21,537,684
ND	21,342,884

Source: U.S. Energy Information Administration

## Year-to-Date Net Generation by State through July 2013

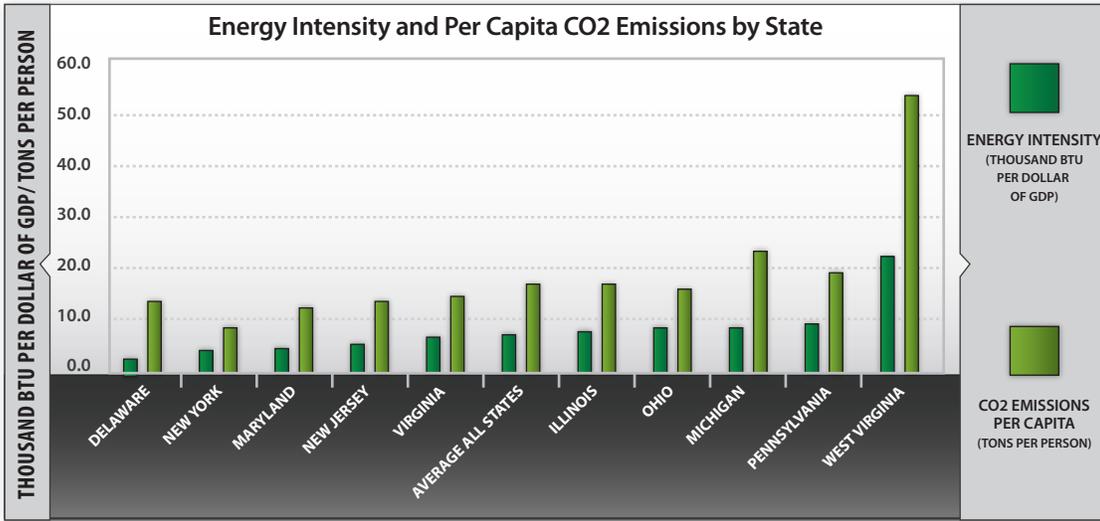
Source: U.S. Energy Information Administration



## PA: Nation's 2nd Largest Generator

Pennsylvania ranked behind only Texas in terms of year-to-date net electricity generation through July 2013, producing over 137 million megawatt hours – enough to power about 23.5 million Pennsylvania homes for the first seven months of the year. Nationally, the top 10 states for year-to-date net generation accounted for nearly 48% of all electricity generated through July of this year, with Pennsylvania accounting for 6% of the nation's total.

## Energy Efficiency



Source: U.S. Energy Information Administration

Energy intensity is a measure of energy consumption per dollar of gross domestic product. It can be affected by increases in energy efficiency or economic changes, such as a recession or change in the size or composition of certain large industries. Typically states with higher energy intensity rates have higher per capita emissions of carbon dioxide, an air pollutant and the largest contributor to global climate change. Pennsylvania ranked 30th in energy intensity and had the 21st highest CO2 emissions per capita in 2010, at 23.3 metric tons per person. See how Pennsylvania's energy intensity and per capita CO2 emissions compared to other states in the Great Lakes and Mid-Atlantic regions in 2010.

### Keystone HELP: Reducing Pennsylvania Homeowners' Energy Costs

In 2006, the Pennsylvania Treasury and AFC First Financial Corp. of Allentown launched the Keystone Home Energy Loan Program statewide to make unsecured loans to Pennsylvania homeowners for residential energy efficiency improvements. With additional help from the Department of Environmental Protection and the Pennsylvania Housing Finance Agency, Keystone HELP has made over \$108 million in loans to nearly 13,000 Pennsylvanians. As a result, participants in the program have lowered their annual electricity consumption by 26 million kilowatt hours, which has saved consumers nearly \$4 million, and reduced CO2 emissions by 36.5 million pounds.

### Act 129: Reducing Energy Consumption and CO2 Pollution

Pennsylvania's energy efficiency law (Act 129 of 2008) required electric companies to help consumers reduce overall demand 1% by May 31, 2011 and 3% by May 31, 2013. The later date was also the deadline to reduce peak electricity demand – or those times when electricity is most needed and expensive – by 4.5%.

Now, four years after it went into effect, the improvements implemented as part of the law have reduced electricity consumption by about 4.8 million megawatt hours, which has prevented 3.8 million tons of CO2 emissions.



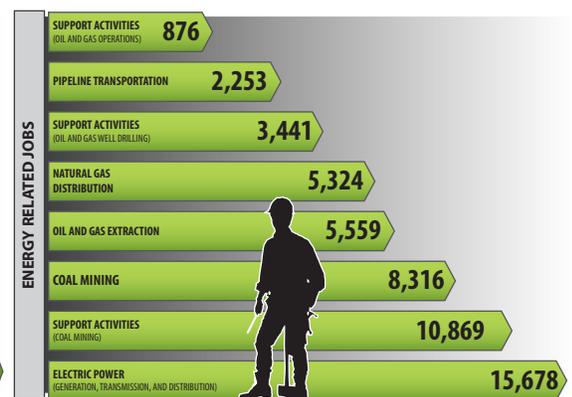
Source: PA Public Utility Commission

## Energy Jobs in PA

Pennsylvania's energy industry employs large numbers of people directly and through supporting industries. At right is a sample of energy-related jobs for those categories with industry specific codes, as well as calculations for the number of jobs in "green" energy fields.



Source: Pa Treasury using data from the Pa Department of Labor and Industry



Source: Pa Department of Labor and Industry, 4Q2012

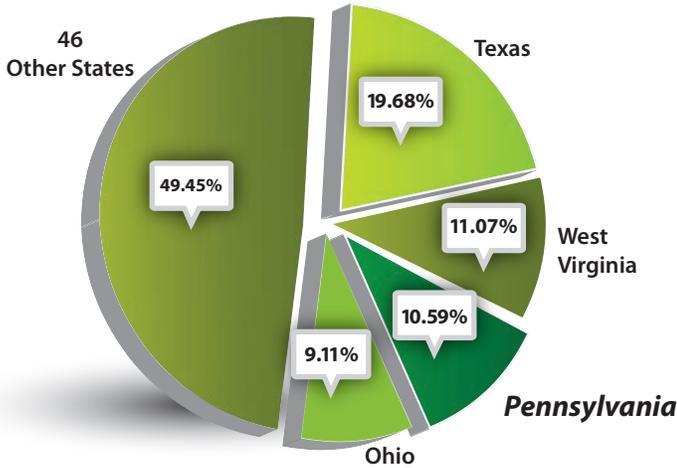
## PA's Natural Gas Industry

Pennsylvania's shale formations have quickly made Pennsylvania one of the leading states for natural gas production in the United States. In 2008, as the number of unconventional wells (such as those drilled horizontally deep into the Marcellus Shale) began to increase, Pennsylvania ranked 14th nationally in natural gas production, due mostly to its long history of drilling conventional shallow wells. As of 2011, though, the state had climbed the rankings to produce the 6th greatest amount of natural gas of any state. In fact, Pennsylvania accounted for more than 10.5% of all natural gas wells in the U.S. and 6% of all natural gas produced domestically in 2011.

Natural Gas Wells by State

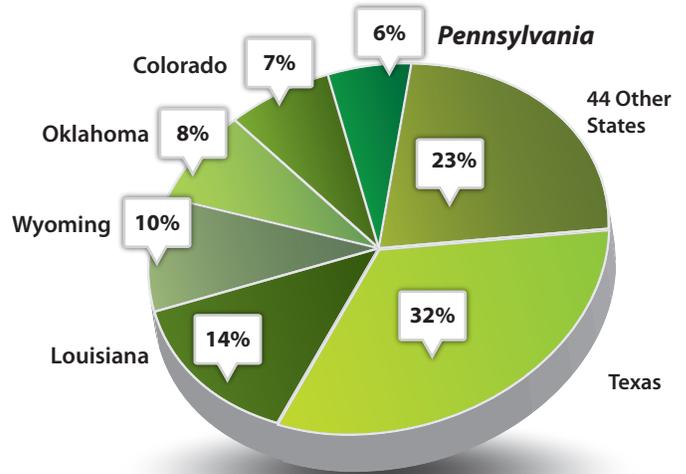
Total U.S. Count: 514,637

Source: U.S. Energy Information Administration



Domestic Natural Gas Production by Top 6 States (2011)

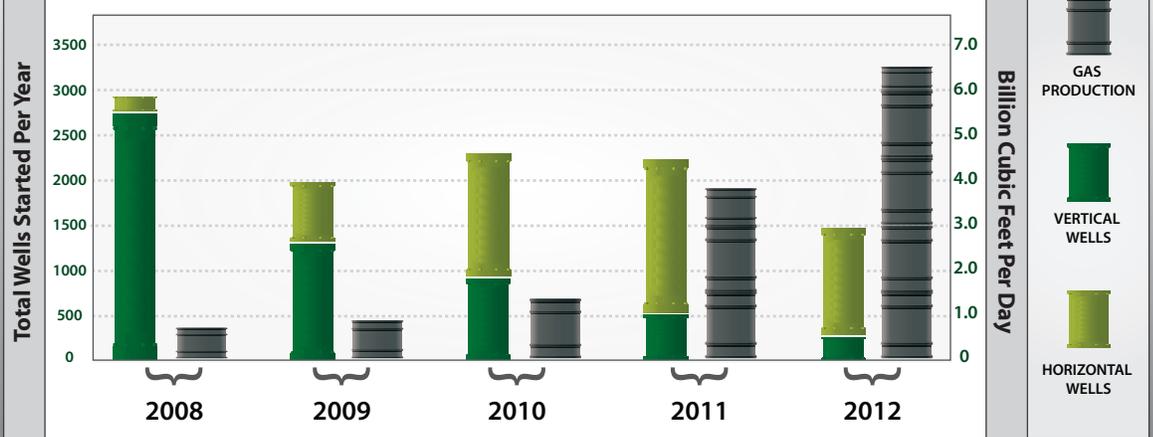
Source: U.S. Energy Information Administration



### More Horizontal Wells, More Natural Gas Production ...

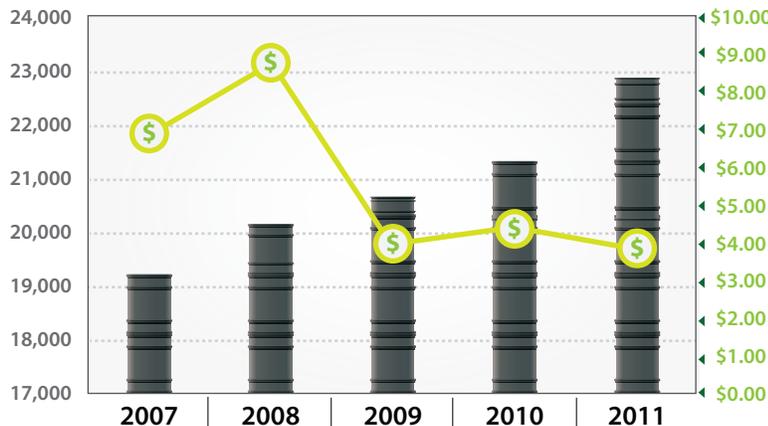
As greater gas reserves have been identified in Pennsylvania's shale formations, the ratio of new horizontal wells to conventional wells has increased each year, causing a steep increase in the production curve.

Annual Natural Gas Wells Started and Annual Production in PA



Source: U.S. Energy Information Administration

U.S. ANNUAL DRY GAS PRODUCTION (IN BILLION CUBIC FEET)



HENRY HUB PRICE (PER THOUSAND CUBIC FEET)

TOTAL U.S. DRY GAS PRODUCTION

PRICE PER THOUSAND CUBIC FEET (HENRY HUB)

### ...Contributing to Lower Prices

As in Pennsylvania, a number of other states with energy-rich shale formations have increased natural gas production significantly, helping to increase production nationally by nearly 19% since 2007. This increase in supply contributed to natural gas prices that were 43% lower in 2011 than in 2007 (as shown in the chart to the left). Lower prices, in turn, have led to a slowdown in new well starts, as indicated in the above chart.

Source: U.S. Energy Information Administration

Pennsylvania has a long history as a national energy leader due largely to our abundant natural resources. Today, we remain one of the largest energy producing states in the U.S., but the mix of resources has changed thanks to market forces, technology, and government policies.

In this edition of *The McCord Report*, we take a broad perspective to highlight our diverse energy economy and illustrate recent developments in Pennsylvania's energy industries.

Our power-producing potential can be a strategic competitive advantage for the Commonwealth, but we must be smart about it. To do so, we should continue to push for a diversified energy mix, improve efficiencies, and account for short- and long-term externalities.

As always, we welcome your feedback and suggestions for future issues. Please do email us at [McCordReport@patreasury.gov](mailto:McCordReport@patreasury.gov).

Sincerely,

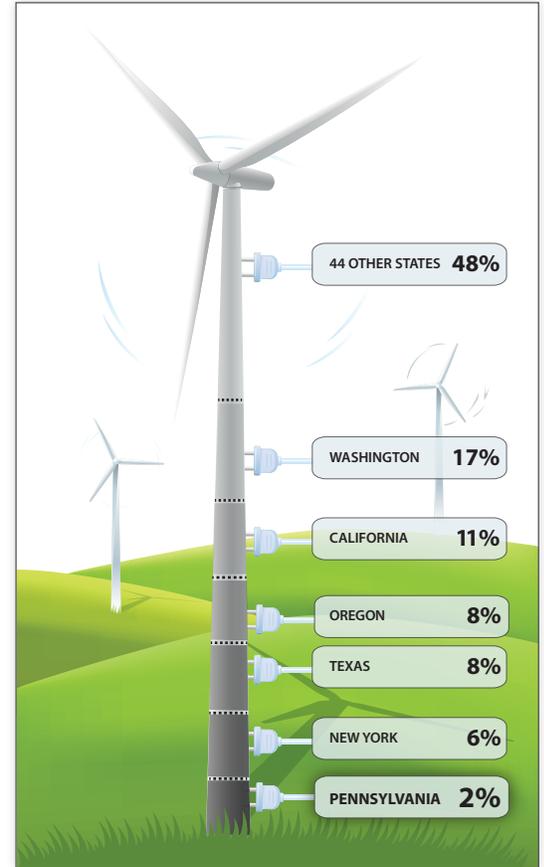


Rob McCord  
Pennsylvania State Treasurer



## Renewable Energy Production by State

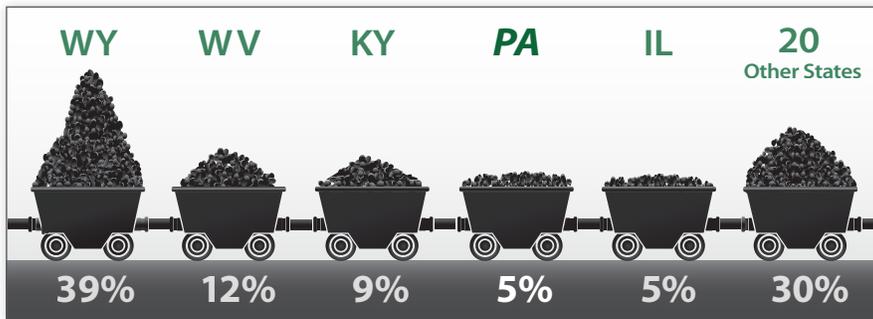
Pennsylvania produced more than 4 million megawatt hours of electricity from renewable sources in the year-to-date ending May 2013, ranking it 15th nationally, with one-third of the generation coming from hydroelectricity. Compared to the same period a year earlier, total renewable energy production increased over 22%.



Source: U.S. Energy Information Administration

## Coal Production by State

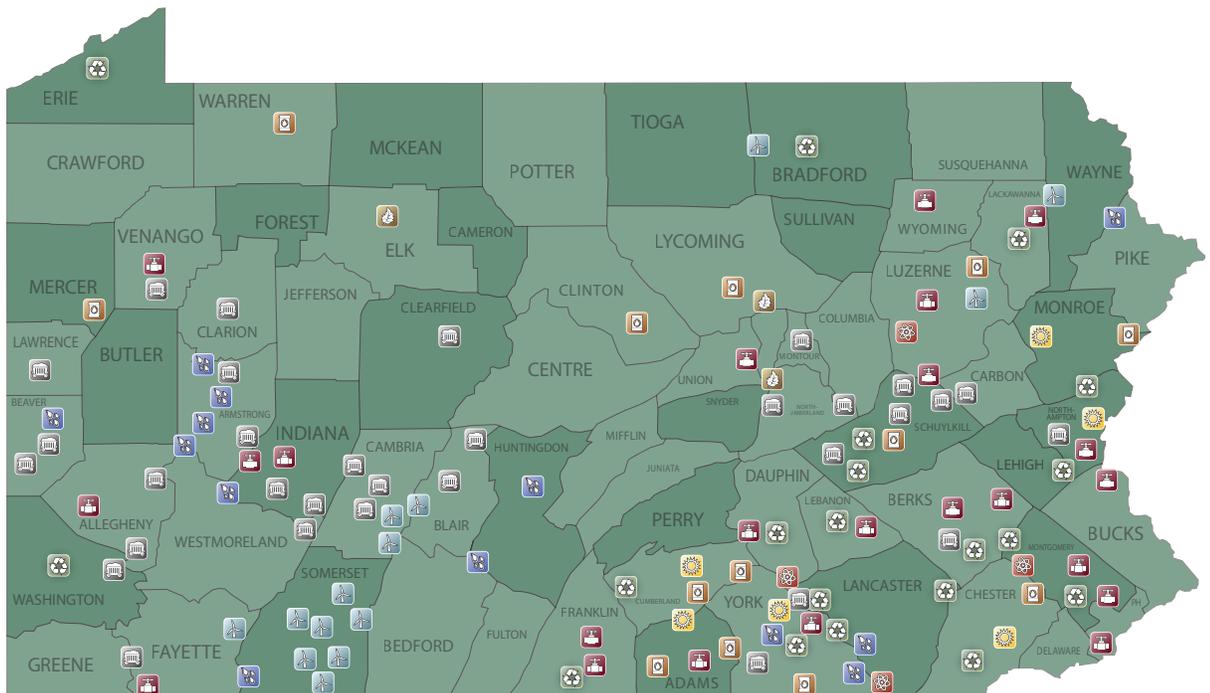
Pennsylvania ranked 4th nationally in coal production for the 52-week period ended September 28, 2013. During the period, nearly 56 million short tons of bituminous and anthracite coal were mined in the state, which represents a 0.2% increase from the same period between 2011 and 2012. Combined, Pennsylvania and the four other leading states were responsible for 70% of all domestic coal production during the period.



Source: U.S. Energy Information Administration

## Electricity Generation Sites

Pennsylvania generates electricity from a number of different fuel sources at sites throughout the state. The map to the right shows where electricity is produced within the state and the fuel used to produce it.



Source: U.S. Energy Information Administration