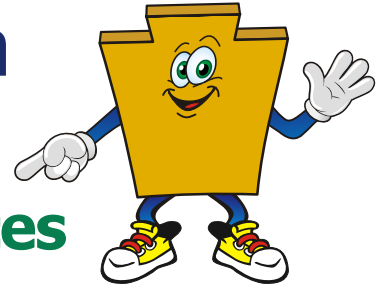




pennsylvania

DEP at Home

PA Energy Resources



Natural Gas

Recent advancements in natural gas drilling have allowed recovery of natural gas from the Marcellus Shale Formation, a layer of dense sedimentary rock deep in the earth. Between 2009 and 2011, Pennsylvania's natural gas production more than quadrupled. Once natural gas is extracted, it is compressed and delivered to the consumer, typically to fuel heat and hot water systems, and for electricity generation.

Coal

Pennsylvania has been a leader in producing coal for the last century. Coal is extracted from underground and surface mines and is burned for industrial processes and to produce electricity. Pennsylvania was ranked fourth largest coal-producing state 2011.

Nuclear Power

Nuclear power plants split uranium to create steam, which turns a turbine-generator to create electricity. The first commercial nuclear power plant in the US began operating in 1957 in Shippingport, PA. In 2011, Pennsylvania ranked second in the nation in electricity generation from nuclear power with five plants statewide.

Wind Power

Moving air spins the blades on a wind turbine that turns a generator to produce energy. There are approximately 26 wind farms in Pennsylvania, with more than 600 turbines totaling over 1300 megawatts of capacity. These wind farms can generate enough electricity to power approximately 350,000 Pennsylvania homes.

Solar Energy

Solar power for the home comes in two forms, solar photovoltaic, which convert the sun's energy into electric energy, and solar thermal, which uses the sun's energy to heat water. There is approximately 160 megawatts of solar photovoltaic capacity installed in Pennsylvania. Much of this capacity has been installed at over 5500 homes and 750 small businesses. Over 800 solar hot water systems have also been installed.

Hydro-Power

Hydro-electricity is generated by water passing through a turbine, typically in a dam, to power a generator, which produces electricity. Pennsylvania has 17 large hydroelectric power plants and two pumped storage facilities. All together, these have a capacity of over 2000 megawatts.

Landfill Gas

Decomposing waste emits methane gas. Landfills can capture this gas to generate electricity, power their operations, or refine and sell in the consumer market. Currently, this form of energy powers 90,000 homes in Pennsylvania. However, there is potential to add another 87 megawatts of electric generation capacity due to the amount of landfills in Pennsylvania.

Biodigesters

Decomposing manure and waste food products, if kept in a low-oxygen environment, generate methane. More than 30 farms and food processors in Pennsylvania generate electricity and/or hot water by using this method. Combined, these total nearly five megawatts of power, or enough for approximately 30,000 homes. More importantly, they help farmers save money by turning a waste problem into an energy resource.

Geothermal Energy

The earth's natural heat can be used in some parts of the country to generate electricity. In Pennsylvania, where the resource is not sufficient for that, geothermal energy is used to heat and cool buildings using the ground as the energy source in ground source heat pump systems. An anti-freeze fluid is run through underground pipes, and exchanges heat with the ground. The relatively constant heat of the ground provides heat in the winter and cooling in the summer.

Renewable Energy Standards

Pennsylvania's Alternative Energy Portfolio Standards require eight percent of electricity sold by 2021 to come from renewable sources, including at least 0.5 percent solar photovoltaic power. In 2011, renewable sources made up 3.3 percent of Pennsylvania's electricity generation.

Electric Choice

In Pennsylvania, residents can choose which company supplies their electricity - shopping for the "generation" portion of the electric bill. The utility will always deliver the electricity, respond to emergencies and provide a bill with the new supplier's charges. Saving just half a cent per kilowatt hour (kWh) could translate into material savings, for example, if 1000 kWh is used per month, the resident would save \$60 per year. To learn more and compare rates, log onto www.PAPowerSwitch.com – the PUC's one-stop shop for electric shopping.

Fun Facts

- Pennsylvania produced over 1 trillion cubic feet of natural gas in 2011.
- There are 26 wind farms in Pennsylvania that produce over 3 million kilowatt-hours of electricity, with zero emissions.
- Enough solar radiation strikes the earth every day to meet earth's energy needs for an entire year.
- Some parts of Pennsylvania are suitable for "micro-hydro" power systems that don't use a dam, but instead, place a small generator directly in a stream.
- Waste-to-energy projects displace the equivalent of approximately six million metric tons of carbon dioxide per year.
- Pennsylvania is the only state producing anthracite coal, which has a higher heat value than other kinds of coal.
- Agricultural biodigesters help to reduce odors associated with farming, which improves relations with increasingly close neighbors in rapidly developing areas of Pennsylvania.
- The U.S. Environmental Protection Agency has concluded that Ground Source Heat Pump Systems are the most energy efficient and environmentally clean of all the heating and cooling options.