



Wind Power Means a Cleaner Environment for Pennsylvania

Pennsylvania is now home to numerous wind energy facilities totaling 10.6 megawatts. More than two dozen wind turbines provide zero-emission power to meet the electric needs of nearly 2,800 homes, reducing acid rain, smog, global warming and mercury emissions, and Pennsylvania's dependence on coal.

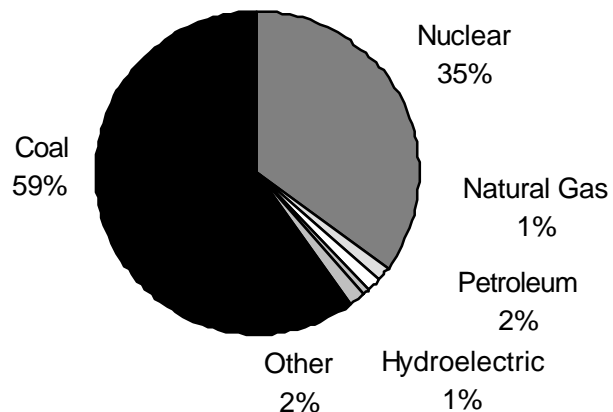
The Problem

Pennsylvania currently gets nearly 60 percent of its electricity from coal, one of the most polluting sources of energy known. Coal mining causes a host of environmental problems in all stages of its life cycle, from strip mining and shipping to combustion and waste disposal.

Major pollutants and environmental impacts include:

Carbon dioxide – CO₂ is the main greenhouse gas responsible for climate change. Over the last 150 years, burning fossil fuels has raised the carbon content of the earth's atmosphere by 25 percent, while the global average surface temperature rose by 0.5-1.1 degrees F. The Intergovernmental Panel on Climate Change concluded that this increase "is unlikely to be entirely natural in origin" and that "the balance of evidence suggests that there is a discernible human influence on global climate."

Pennsylvania's Electricity Mix



Source: EIA, 1997

Pennsylvania ranks third in the U.S. for CO₂ emissions, behind Texas and California. Climate change can have wide-ranging effects on human health, habitats and species, as well as potentially huge economic disruptions. Coastal flooding, more extreme weather events, an increase in the frequency of droughts, a wider spread of tropical diseases, and increased extinction are a few of the effects on the natural world.

Pennsylvania Electricity Industry Emissions

Emission Type	1998 Tons
Sulfur Dioxide	1,096,000
Nitrogen Oxides	335,000
Carbon Dioxide	129,324,000

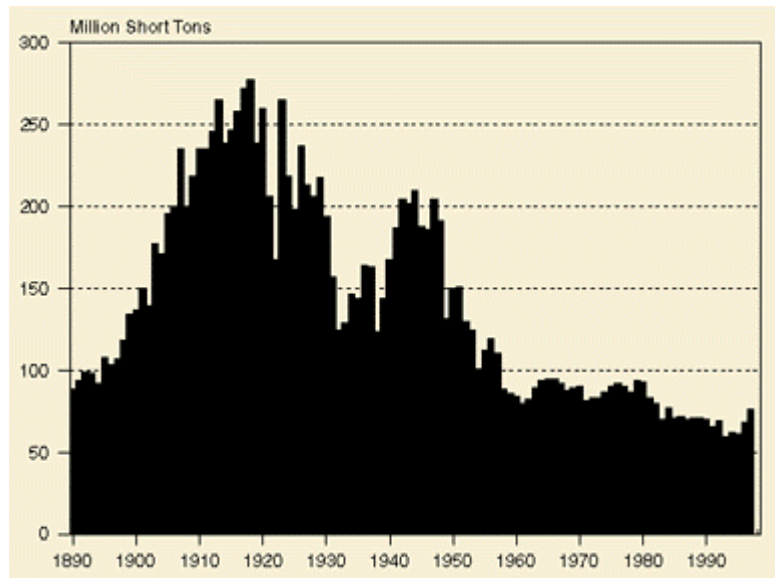
Source: EIA, 1998

Nitrogen oxides – NO_x emissions can irritate the lungs, cause bronchitis and pneumonia, and decrease resistance to respiratory infections. They also lead to the formation of smog (ozone), which has similar health effects. NO_x contributes to the formation of acid rain, while nitrogen deposition on lakes, rivers and forests can cause nitrification of ecosystems, damaging water and soil quality.

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Coal Production in Pennsylvania

Sulfur dioxide – SO₂ gases combine with water vapor in clouds to form sulfuric acid, which comes to earth as rain and snow. As the acids accumulate, lakes and rivers become too acidic for plant and animal life. Acid rain also directly damages forests, crops and buildings. In some areas, the higher acid content of water can leach naturally-occurring metals such as mercury from rocks, making them biologically available to fish and other animals.



Toxic metals – Coal is a major source of toxic metals that are released into the environment, such as mercury, lead and arsenic. Mercury from coal plants contaminates streams and lakes, accumulates in fish and fowl, and travels up the food chain to people, where it can cause birth defects and nervous system disorders. EPA is currently studying mercury and may regulate it in the future; there are no known “mercury removal” devices that can be attached to coal plants.

Particulates – Small particles from fossil fuels, including dust, soot, smoke, and other suspended matter, are respiratory irritants and may contribute to acid rain formation.

Thermal Pollution – Fossil fuel power plants produce huge amounts of waste heat – typically two-thirds of the heat energy in the fuel. They dump the heat into the atmosphere or to nearby bodies of water, where it can upset the aquatic ecosystem.

Water and land pollution – Acids leach out of slag heaps and when coal is washed to reduce sulfur content. These pollutants can contaminate ground water, rivers and streams. Coal-fired power plants also produce substantial amounts of solid waste which must be disposed of.

The Solution: Cleaner Air for Pennsylvania

Zero-emission wind energy avoids all of these effects. Pennsylvania’s 10.6 megawatts of wind power reduce acid rain emissions (sulfur dioxide) by 220 tons per year, smog emissions (nitrogen oxides) by 70 tons per year, and greenhouse gas emissions (CO₂) by 26,000 tons per year. These cuts in global warming emissions are equivalent to eliminating the pollution from 3,000 sport utility vehicles, or about 9,500 compact passenger cars.

More than 170 MW of new wind generation is planned to be installed in Pennsylvania in the next two years. If wind power supplied 10% of Pennsylvania’s electricity needs by 2010, greenhouse gas emissions would be reduced by nearly 15 million tons per year. This would more than put Pennsylvania’s electric sector in compliance with the Kyoto Treaty and build a lucrative market for carbon credit trading.

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