

Charting a New Path for Pennsylvania's Electricity Generation



Pennsylvania's energy future is at a crossroads

One path leads to increased dependency on fossil fuels—threatening our economy and fueling global warming. The other leads to a new, smarter energy future for Pennsylvania. Investing in clean energy alternatives—like solar and wind power—can create and protect jobs in Pennsylvania, save families and businesses money, and make America more energy independent. Clean energy is also the most effective solution to the threat of global warming. We can start making progress right away using proven technology, and then draw on American innovation to take us the rest of the way with new technologies.

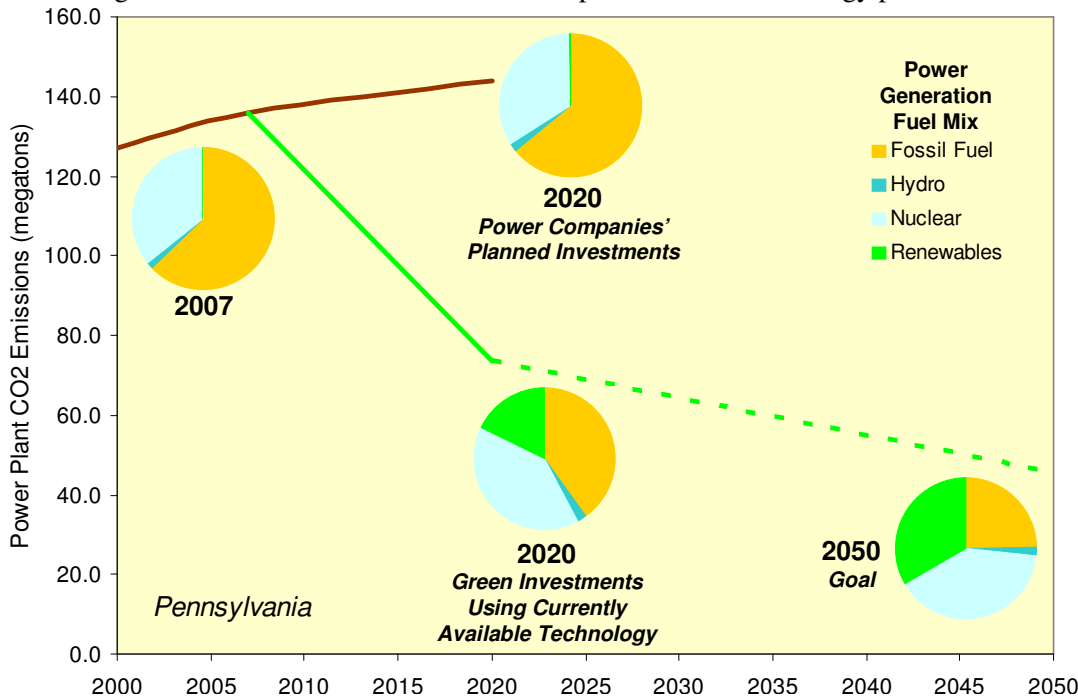
How does Pennsylvania generate electricity today?

In 2007, electric power generated in Pennsylvania primarily came from coal (53.2 percent), gas (5.0 percent), and nuclear (35.7 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. Pennsylvania power companies plan to increase the energy generation from coal by 4.4 percent. Only about 0.1 percent of electricity generated in Pennsylvania is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

Pennsylvania has a choice to invest in a cleaner energy future

Pennsylvania can achieve a new energy future by making better investments as utilities replace increasingly aged infrastructure and expand capacity. An important first step is for Pennsylvania to generate at least 20 percent of electricity from renewable sources by 2020, a goal readily achievable with today's technology. Continuing to convert 15 percent of the state's energy portfolio to renewable energy sources each decade could yield an energy profile of at least 65 percent renewables by 2050.

Pennsylvania can also benefit from improved energy efficiency. Technologies are available that could reduce demand nationally by 20 to 30 percent over the next decade. Innovations in energy efficiency should allow us to keep demand constant after 2020, even as the population grows.



About the chart: 2000, 2007 and 2020 Power Companies' Planned Investments from CARMA 1.0 (www.CARMA.org). The 2020 Green Investments projection assumes that, using currently available technology, Pennsylvania makes (1) improvements in efficiency to reduce overall demand by 25 percent and (2) shifts away from fossil fuels so that 20 percent of power generation is from renewable energy sources. The 2050 Goal assumes (1) hydro and nuclear are unchanged, (2) continued efficiency improvements keep total demand flat, and (3) renewable energy replaces at least 65 percent of power generation formerly done through fossil fuel burning. Note that the projection of future CO₂ emissions from fossil fuels assumes no investment in carbon capture and storage.

Making a Difference in Pennsylvania

Green power is on the rise in Pennsylvania and even local sports teams are doing their part. The Philadelphia Phillies are now the number one green baseball team in the Major Leagues. In 2008, the team committed to purchasing 20 million kilowatt hours of renewable energy, enough to run the ball club for a full year. The Phillies buy their wind power from Windstreet Energy, which operates nationwide. In the future, the green power could come from Phillies' own backyard. Pennsylvania already has a number of wind farms, including the second largest wind farm east of the Mississippi River. Waymart Wind Energy Center, located in Wayne County, produces 64.5 megawatts a year, enough energy to power 22,000 homes. Waymart represents a fraction of what is possible—Pennsylvania has the wind potential to produce 30 percent of its energy needs through new wind farms in the state.



Sources:

<http://www.windstreet.com/renewable.aspx>

<http://www.ens-newswire.com/ens/may2008/2008-05-05-091.asp>

<http://www.pawindenergynow.org/pa/farms.html>

Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, Pennsylvania can reduce its future carbon dioxide (CO₂) emissions from electricity generation by 49 percent compared to the business-as-usual path that utilities are following now.

Given that 42 percent of Pennsylvania's CO₂ emissions come from electricity generation, diversifying and updating our power sources is critical for cutting the state's total global warming pollution.

Increasing Pennsylvania's energy and economic security

Investing in renewable energy sources will reduce Pennsylvania's dependence on fossil fuels and at the same time create new green collar jobs. A new energy future in Pennsylvania could include:

Expanded solar power. Pennsylvania has enough solar resources to produce 4,000 to 4,500 Whr per square

meter using photovoltaic systems and 3,000 to 4,000 Whr per square meter using concentrating solar power systems. This means that devoting just 1 square mile in Pennsylvania to solar power can provide enough electricity for about 1,000 households each year.

Expanded wind power. Pennsylvania is currently ranked 16th for wind power, with 294 MW of existing electricity generation capacity and 272 MW under construction. The American Wind Energy Association ranks Pennsylvania 22nd in terms of its future wind potential, with 5,120 MW of potential capacity.

Biomass power. Pennsylvania has 7.4 million dry tons of biomass available each year that could be used to generate about 1,500 MW of electricity.

New jobs. Committing to a 30 percent growth in solar energy use in the United States will bring 1,752 jobs and \$1,412 million investment to Pennsylvania.

A stronger economy. Pennsylvania could realize as many as 7,622 jobs manufacturing wind turbines and \$2.54 billion investment in the wind industry alone if 50,000 MW of new wind energy is created on a national level.

References and Additional Reading:

American Council for an Energy-Efficiency Economy, www.aceee.org.

American Wind Energy Association, www.awea.org.

Bioenergy Feedstock Information Network, bioenergy.ornl.gov.

CARMA (Carbon Monitoring for Action), www.CARMA.org.

Database of State Incentives for Renewables and Efficiency, www.dsireusa.org.

Department of Energy, Energy Efficiency and Renewable Energy, apps1.eere.energy.gov/states/alternatives/electricity.cfm.

Energy Information Administration, State Energy Data System, www.eia.doe.gov/emeu/states/_seds_updates.html.

Environmental Protection Agency, Energy CO₂ emissions by state, www.epa.gov/climatechange/emissions/state_energyco2inv.html.

Geothermal Energy Association, www.geo-energy.org.

McKinsey Global Institute, 2007: *Wasted Energy: How the U.S. Can Reach its Energy Productivity Potential*.

Political Economy Research Institute, www.peri.umass.edu.

Renewable Energy Policy Project, www.repp.org.

For more information, visit www.nwf.org/globalwarming.