

Charting a New Path for Kentucky's Electricity Generation and Use



Kentucky'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 Kentucky. Investing in clean energy alternatives—like solar and wind power—can create and protect jobs in Kentucky, 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.

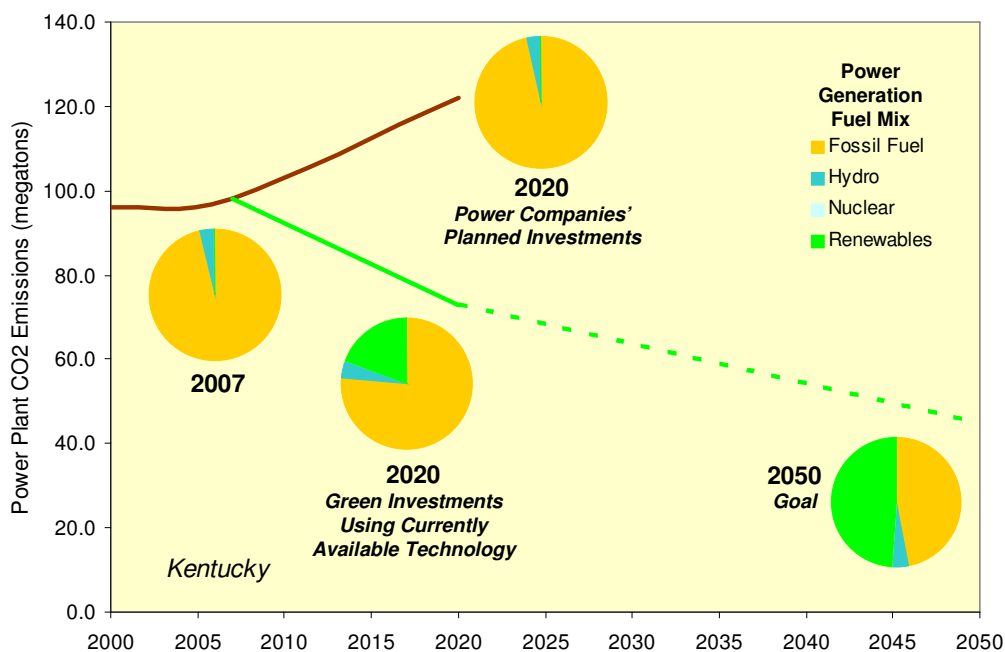
How does Kentucky generate electricity today?

In 2007, electric power generated in Kentucky primarily came from coal (88.7 percent), gas (6.9 percent), and hydro (3.6 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. Kentucky power companies plan to increase the energy generation from coal by 18.5 percent, gas by 25.5 percent. Less than 0.1 percent of electricity generated in Kentucky is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

Kentucky has a choice to invest in a cleaner energy future

Kentucky 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 Kentucky 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.

Kentucky 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, Kentucky 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 Kentucky

Rising energy prices impact everyone, including the military. To reduce energy consumption at the Fort Knox army base in Knoxville, officials were ordered to reduce energy use at the base by 35 percent by the year 2010. With the help of a local energy co-op, Fort Knox was able to meet their goal much ahead of schedule. They have replaced the heating and cooling equipment with efficient infrared heaters and geothermal heating, which utilizes heat from the earth. They also implemented a series of small changes, including better insulation, a more efficient automated heating and cooling system, and motion detectors to turn off unused lights. This project not only reduced the energy use of the 23,000 people that work at the base, but it also improved their quality of life and helped secure jobs in the state. The base was not considered for closing in 2005 in part because of its new equipment and high efficiency facilities.



Sources:

<http://www.usda.gov/rus/electric/success/ky-success.htm>

Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, Kentucky can reduce its future carbon dioxide (CO₂) emissions from electricity generation by 40 percent compared to the business-as-usual path that utilities are following now.

Given that 58 percent of Kentucky'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 Kentucky's energy and economic security

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

Expanded solar power. Kentucky has enough solar resources to produce 4,000 to 5,000 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 Kentucky to solar power can provide enough electricity for about 1,100 households each year.

Expanded wind power. Kentucky is currently ranked 49th for wind power, with MW of existing electricity generation capacity. The American Wind Energy Association ranks Kentucky 43rd in terms of its future wind potential, with 34 MW of potential capacity.

Biomass power. Kentucky has 10.8 million dry tons of biomass available each year that could be used to generate about 2,200 MW of electricity.

How does Kentucky use electricity?

Kentucky's energy is used to power:

- homes (29 percent),
- businesses (21 percent), and
- industry (49 percent).

Per capita residential electricity use is 6,172 kilowatt hours per year, 36 percent greater than the national average.

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.