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

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

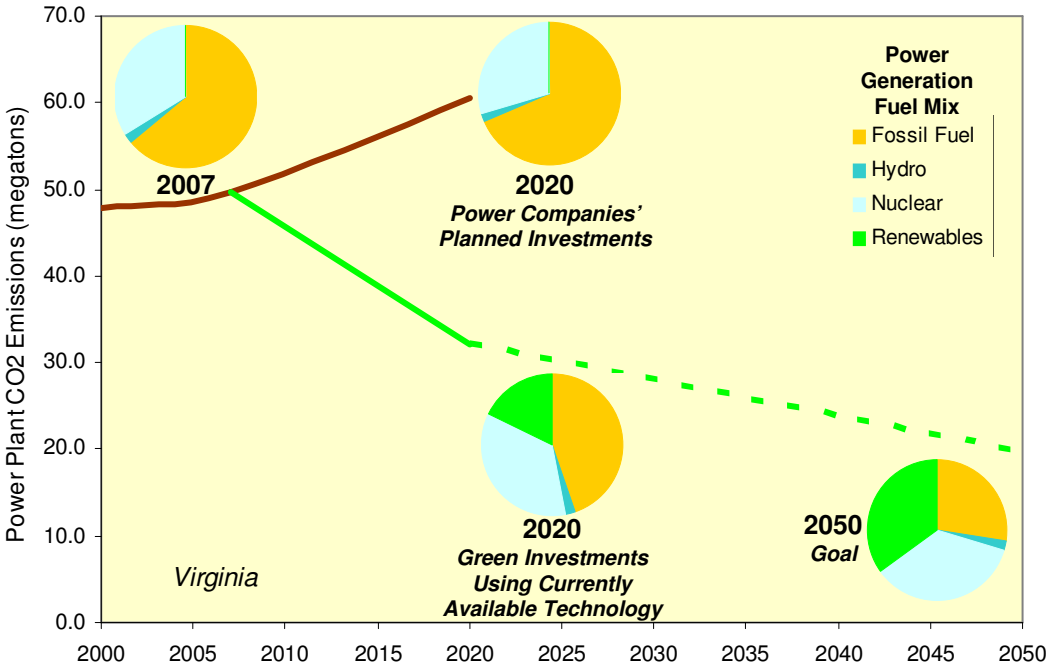
How does Virginia generate electricity today?

In 2007, electric power generated in Virginia primarily came from coal (39.6 percent), oil (8.5 percent), gas (10.0 percent), and nuclear (33.8 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. Virginia power companies plan to increase the energy generation from coal by 23.8 percent, oil by 0.0 percent, and gas by 31.5 percent. Less than 0.1 percent of electricity generated in Virginia is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

Virginia has a choice to invest in a cleaner energy future

Virginia 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 Virginia 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.

Virginia 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, Virginia 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 CO_2 emissions from fossil fuels assumes no investment in carbon capture and storage.

Making a Difference in Virginia

Virginia's Division of Energy is actively supporting renewable energy through its solar, wind, alternative fuels, and other efforts. The Division gives out annual grants to manufactures that sell solar panels to be used in Virginia and offers solar manufacturing incentives. Also, the Division is currently working with the Science Museum of Virginia on public education about solar power and other types of renewable energy. The Science Museum is home to the Virginia Tech Solar House, an award-winning design that utilizes solar power and energy efficiency. Virginia also allows individual producers of electricity to sell back power to the grid through a program called net metering. With rising energy costs and better incentives, solar has a bright future in Virginia.

Sources:
http://www.dmme.virginia.gov/DE/Alternative_Fuels/alternativefuels.shtml
http://www.smv.org/nowshowing/exhibitions/newenergy.asp

Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, Virginia can reduce its future carbon dioxide (CO_2) emissions from electricity generation by 47 percent compared to the business-as-usual path that utilities are following now.

Given that 32 percent of Virginia's CO_2 emissions come from electricity generation, diversifying and updating our power sources is critical for cutting the state's total global warming pollution.

Increasing Virginia's energy and economic security

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

Expanded solar power. Virginia has enough solar resources to produce 4,500 to 5,000 Whr per square meter using photovoltaic systems and 3,500 to 4,500 Whr per square meter using concentrating solar power systems. This means that devoting just 1 square mile in Virginia to solar power can provide enough electricity for about 1,100 households each year.

Expanded wind power. Virginia is currently ranked 40th for wind power. The American Wind Energy Association ranks Virginia 28th in terms of its future wind potential, with 1,380 MW of potential capacity.

Biomass power. Virginia has 8.7 million dry tons of biomass available each year that could be used to generate about 1,700 MW of electricity.

New jobs. Committing to a 30 percent growth in solar energy use in the United States will bring 649 jobs and $526 million investment to Virginia.

A stronger economy. Virginia could realize as many as 3,386 jobs manufacturing wind turbines and $1.13 billion investment in the wind industry alone if 50,000 MW of new wind energy is created on a national level.

Consumer savings. Reducing electricity demand in Virginia by 27 percent below what is projected for 2025 could result in 9,820 jobs and a cumulative net savings of $15 billion.

How does Virginia use electricity?

Virginia's energy is used to power:

- homes (40 percent),
- businesses (42 percent), and
- industry (18 percent).

Per capita residential electricity use is 5,616 kilowatt hours per year, 24 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.
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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.