

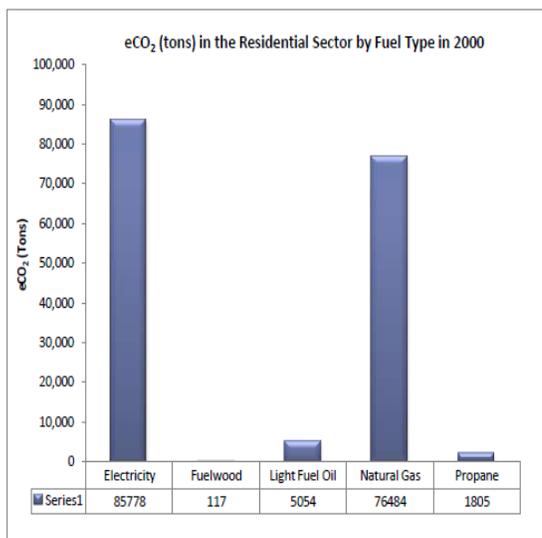
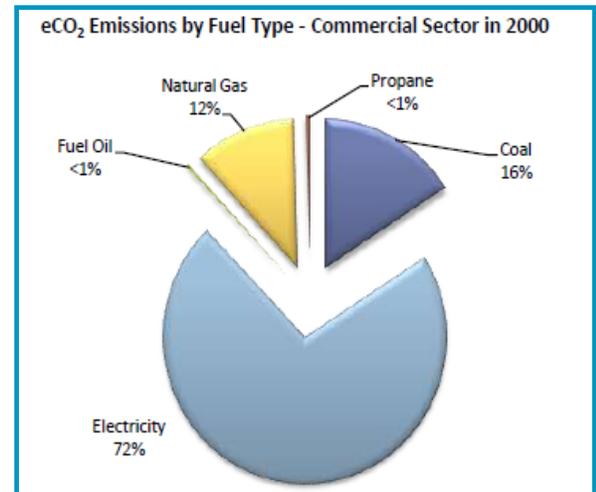
# Energy Sourcing

Carbon, Our Energy Future & You: A Community Workshop

## Background

Electricity generated in Virginia in 2008 came 44 percent from coal, 38 percent from nuclear, 13 percent from natural gas, 3 percent from renewables, and 2 percent from petroleum. Virginia's utilities imported 34 percent of the state's electricity consumption from generation facilities outside of Virginia.

In Charlottesville-Albemarle, the commercial sector uses more energy than the residential sector, accounting for nearly 30% of the total (note: this figure includes the University of Virginia). In the commercial sector, our community has seen a sharp rise in the use of electricity. This rise generally fits with national trends for energy demand and, according to the EIA, is related to rising electricity use as the US moves increasingly to a service economy.



The impact of energy used in residential buildings also has a dramatic effect on the greenhouse gas emissions from our community. In the Charlottesville-Albemarle community, nearly 25% of our emissions come from the residential sector. These figures reflect the overall greenhouse gas emissions from energy use within our homes, and the sources of that energy, mostly electricity and natural gas. The primary source of electricity supplied to our homes is obtained through the burning of fossil fuels at power stations here in Virginia.

Renewable energy and energy efficiency technologies are key to creating a clean energy future for not only the nation, but the world.

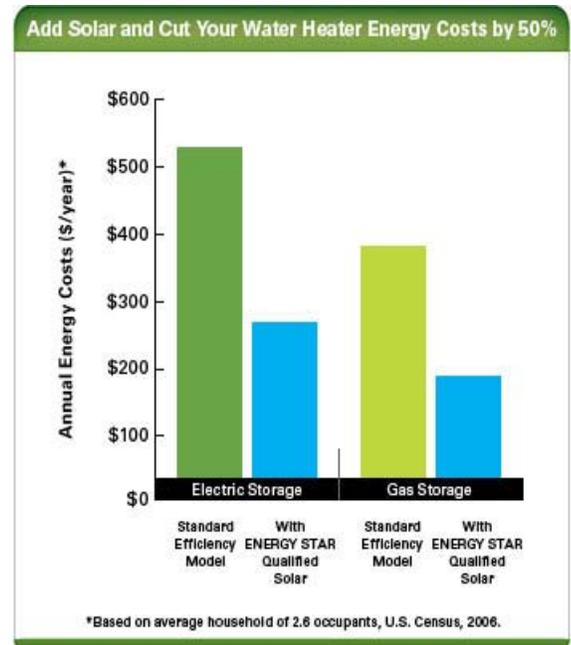
## Facts

**Geothermal heat pumps** can reduce energy consumption—and corresponding emissions—up to 44% compared to air-source heat pumps and up to 72% compared to electric resistance heating with standard air-conditioning equipment. Ever been inside a cave in the summer? The air underground is a constant, cooler temperature than the air outside. During the winter, that same constant cave temperature is warmer than the air outside. Geothermal heat pumps are similar to ordinary heat pumps, but instead of using heat

found in outside air, they rely on the stable, even heat of the earth to provide heating, air conditioning and, in most cases, hot water.

Sunlight, or **solar energy**, can be used directly for heating and lighting homes and other buildings, for generating electricity, and for hot water heating, solar cooling, and a variety of commercial and industrial uses.

- **Solar photovoltaic technology** (aka “solar panels”) is becoming increasingly more common, more effective, and more affordable.
- A **solar water heating system** (solar thermal) can cut annual hot water costs in half and is generally designed for use with an electric or gas back-up water heater. The average life expectancy of solar water heating systems is 20 years, much longer than standard gas or electric storage water heaters.



Virginia's **net-metering law** applies to residential generating systems up to 10 kilowatts (kW) in capacity and non-residential systems up to 500 kW in capacity. Net metered energy is measured by a meter capable of gauging power flow in both directions, so a business or homeowner can essentially run the meter backwards and sell electricity to the utility company!

## Mitigation Strategies

- Promote Adoption of Cleaner Energy Sources for Electrical Energy
- Promote Adoption of Cleaner Sources of Energy for Heating and Cooling
- Promote Adoption of Hybrid, Electric and Biodiesel Vehicles and Fuels

## Tips and More Information

Renewable energy products (solar panels, solar thermal, geothermal, and wind) eligible for tax credits through 2016: <http://www.energysavers.gov/financial/70010.html>

With the National Renewable Energy Laboratory's online tool "In My Backyard (IMBY)" you can estimate the electricity you can produce with a solar photovoltaic (PV) array or wind turbine at your home or business: <http://www.nrel.gov/eis/imby/>

Learn more about renewable energy including alternative vehicle fuels such as biodiesel, at NREL's page: <http://www.nrel.gov/learning/>

EPA Energy Savers provides background info on solar, geothermal, and other renewable technologies for homes and small businesses: [http://www.energysavers.gov/your\\_home/electricity](http://www.energysavers.gov/your_home/electricity)

Energy Star for Congregations: [http://www.energystar.gov/index.cfm?c=small\\_business.sb\\_congregations](http://www.energystar.gov/index.cfm?c=small_business.sb_congregations)

The Virginia Energy Plan 2010: <http://www.dmme.virginia.gov/DE/VAEnergyPlan/2010-VEP/VEP-2010.pdf>