



**Renewable Energy.
Energy Efficiency
and You!**

EnergyUnited.
YOUR LOCAL CONNECTION

A Touchstone Energy® Cooperative





There is no magic fix to our current energy picture. Instead, there are pieces of the puzzle — renewable energy, energy efficiency, your energy provider, the government and you — that together will form the solution to America’s changing energy needs. Renewable energy resources are naturally replenished in a relatively short period of time. They include **hydropower, biomass, geothermal energy, wind energy, and solar energy.**

Americans used renewable energy sources to meet about 7% of our total energy needs in 2007, according to the Energy Information Administration (EIA). The EIA projects that renewable-generated electricity will account for 12.5% of total U.S. electricity generation in 2030. This growth (from 7% in 2007 to 12.5% in 2030) is fueled by the rapid expansion of non-hydro renewable generation technologies that qualify to meet State mandates for renewable energy production.

The North Carolina law mandates that electric cooperatives such as EnergyUnited must meet a 10% Renewable Portfolio Standard (RPS) by 2018. The REPS can come in the form of renewable energy generation or through energy efficiency measures.



RENEWABLE ENERGY AVAILABLE IN North Carolina

Not all of the renewable energy sources are viable options in North Carolina. However, North Carolina's natural resources and industries lend it best to providing **solar** and **wind** as energy sources for the residential consumer.

Solar

North Carolina has good solar resources. Solar energy can be converted to thermal (or heat) energy and used to heat water for use in homes, buildings, or swimming pools; and to heat



spaces such as greenhouses, homes, and other buildings. Residential customers can harness the sun's energy through photovoltaic systems, solar water heaters, and solar attic ventilation systems. Solar home installation can cost anywhere from \$5,000 to \$25,000, depending on the size of the system. Tax credits and incentives are available — visit the DSIRE website (maintained by the N.C. Solar Center) at www.dsireusa.org to search for credits and incentives.

Wind

North Carolina has excellent wind resources along the coast and the higher ridge crests in western part of the state. In addition, small wind turbines may have applications in some areas. Small turbines used to power a single home or business may have a capacity of less than 100 kilowatts. Some large commercial sized turbines may have a capacity of 5 million watts, or 5 megawatts. Larger turbines are often grouped together into wind farms that provide power to the electrical grid. A good beginning resource for residential customers is the American Wind Energy Association (www.awea.org). According to the AWEA, a small turbine can cost anywhere from \$6,000 to \$22,000 installed, depending upon size, application and service agreements with the manufacturer.

OTHER TYPES

In addition to solar and wind, North Carolina also has natural resources of biomass, geothermal and hydropower. These remaining three sources are best suited for commercial applications, though.

Biomass

North Carolina has good biomass potential. Biomass — organic material made from plants and animals — can be wood, crops, manure, and some garbage. When burned, the chemical energy in biomass is released as



heat. Biomass can also be converted to other usable forms of energy like methane gas from landfills. Biomass is generally a useful energy source at the utility level. For the residential consumer, you can

gather materials in a mulch pile or compost heap for use in your garden, for example. Using biomass at your home to generate electricity, however, would not be practical.

Geothermal energy

Geothermal energy, heat from within the earth, can be used to heat buildings or generate electricity. While large-scale production is not available in North Carolina, residential customers can still harness this energy source through geothermal heat pumps. Contact local HVAC dealers for more information.

Hydropower

Of the renewable energy sources that generate electricity, hydropower is the most often used, according to the EIA. It accounted for 7 percent of total U.S. electricity generation and 73 percent of generation from renewable sources in 2005. Because the source of hydropower is water, hydroelectric power plants must be located on a water source. While you may have a creek or stream in your back yard, harnessing energy from a source such as this would probably not generate enough energy to justify the costs involved.

ENERGY EFFICIENCY

Energy efficiency differs from energy conservation. **Energy efficiency** is doing the same amount of work, or more, with less energy. **Energy conservation** is simply using less energy. Energy efficiency can be accomplished a number of ways. In your home, easy steps you can take include:



Replacing lighting with either CFLs (compact fluorescent lamps) or LEDs, both of which use less energy to operate and last much longer than traditional incandescent bulbs.



Checking your home for air leaks and sealing any leaks you do find.



When it is time to purchase new appliances, purchase ones with the highest Energy Star rating you can find that fits in your budget. The higher the Energy Star rating, the more energy efficient the appliance is and the more savings you will see throughout the life of the appliance.



For a complete view of your home's current energy efficiency, complete the free online home energy evaluation at www.energyunited.com, where you will also find many more energy efficient tips. Once you complete the detailed questionnaire, you will receive a list of recommendations to improve your home's energy efficiency, as well as the estimated savings you will see for each recommendation.

WHAT IS ENERGYUNITED DOING?

EnergyUnited has had renewable energy as part of its energy portfolio for a while now. In addition, we recently added more renewable energy in the form of methane gas from a local landfill. We are currently searching for additional landfill opportunities. Also, a solar project is scheduled to begin in the near future.



WHAT DO WE NEED THE GOVERNMENT TO DO?

Climate change and energy legislation is currently being debated on the legislative floors across the country, and plenty more legislation will be introduced in the months and years to come. It is essential that consumers' concerns be included in the discussion. The majority of the legislation, if passed, will unfortunately not solve our future electricity shortages, and will in fact push prices up out of reach for most consumers. The best way to make sure your interests are heard is to speak — directly to your elected officials. EnergyUnited and other co-ops around the country have made it easy for you to contact your elected officials by creating a website — www.ourenenergy.coop — where you can email your representatives about this crucial issue.



Our Energy, Our Future
A Dialogue With America

FAQs

How much U.S. energy consumption comes from renewable sources?

In 2007, renewable sources of energy accounted for about 7 percent of total U.S. energy consumption and 9.4 percent of electricity generation, according to the EIA.

Why Don't We Use More Renewable Energy?

For one thing, renewable energy plants such as large-scale wind or solar farms are generally more expensive to build and to operate than coal and natural gas plants. Also, the best renewable resources are often available in remote areas, so building transmission lines to the source is expensive.

Are there any tax credits designed to increase the use of renewable energy?

Yes. The Renewable Electricity Production Tax Credit, a federal incentive, has encouraged a quadrupling of wind energy capacity over the past few years. Recent legislation has extended these credits until 2009. Possible further extension of the credit would increase the projected growth in renewable generation.

Has North Carolina passed any legislation recently to encourage electricity providers to increase renewable energy generation?

Yes, North Carolina recently passed a law outlining Renewable Portfolio Standards (RPS), which requires electricity providers to generate or acquire a percentage of generation from renewable sources. However, many RPS programs have "escape clauses" if renewable generation exceeds a cost threshold. Some states have delayed compliance and others lack enforcement procedures. As a result, states may not always meet their RPS goals.

I already have solar panels/windmill at my home and sometimes they produce more energy than I use! Any way I can sell my "extra energy" to my electricity provider?

Yes! Many electricity providers, including EnergyUnited, have what is called Net Metering. By connecting your renewable energy source to your electric provider's grid, the utility can track the energy you use. At times, you will need to use electricity directly from your electric provider. At other times, you will have surplus electricity from your renewable energy sources. During the times of surplus energy, your excess will be added to the electricity grid to power additional homes and you will receive a form of a credit on your bill for those kilowatt hours.

I want to install renewable energy equipment at my home. Are there financial incentives available to help offset the purchase of equipment?

Yes. North Carolina offers very attractive financial incentives for individuals and organizations interested in purchasing and installing renewable energy technologies. There are also federal incentives available, as well as a number of lenders offering energy efficient mortgages that can assist in offsetting the initial costs of equipment. For a complete listing of financial incentives available, please visit the DSIRE website (maintained by the N.C. Solar Center) at www.dsireusa.org.

Installing solar panels or a wind turbine is not practical for me. Are there any other ways I as a consumer can help?

Yes, you can purchase blocks of green energy through NC GreenPower. With every block of green energy you pledge to purchase monthly (at \$4 a block), 100 kWh of renewable energy will be added to EnergyUnited's power grid. Visit www.ncgreenpower.com for more information or to sign up.

Also, don't forget to email your representatives through www.ourenergy.coop to make sure your voice is heard.

Contact:

For more information on installing renewable-energy sources in your home, including PV and Thermal solar, or Wind applications; net metering; tax credits; or other EnergyUnited questions:

visit energyunited.com or call 800.522.3793

To contact your elected officials and voice your opinion on current U.S. energy issues:

visit ourenergy.coop

For home energy efficiency tips and applications:

energyunited.com

To purchase blocks of renewable energy through EnergyUnited's partner, NCGreenPower, visit their website at www.ncgreenpower.com

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