North Carolina Power . . . Empowering Communities

Your Guide to North Carolina Power

In North Carolina, energy works for us in a number of ways—to power our cars on a drive along the Blue Ridge Parkway; to cool us down on a hot, humid, summer afternoon; and to light our way during an evening walk.

We enjoy these comforts because we have learned how to change energy from one form into one that performs works for us.

Energy Basics

Scientists tell us energy sources that help us perform work are divided into two groups—nonrenewable and renewable.

- **Nonrenewable energy** is energy we use but cannot recreate.
- **Renewable energy** is energy we use and can readily reuse.

Nonrenewable Energy

Fossil and ***nuclear*** power are nonrenewable energy sources because their supplies are limited. Fossil energy, for example, was formed millions of years ago from the remains of ancient plants and animals. We can't make more petroleum in a short time.

Renewable Energy

Renewable energy sources include

- Biomass,
- Biogas,
- Geothermal energy,
- Hydropower,
- Solar energy, and
- Wind energy.

These energy sources are renewable because they are replenished in a very short time. For example, day after day, the sun shines, wind blows, and rivers flow. Mainly, we use renewable energy sources to make electricity, a secondary source of energy.

The Silent Energy—Electricity

Electricity is a secondary energy source. As a secondary energy source, electricity is an energy carrier used to store, move, and deliver energy in easily usable form. We have to use another energy source to make electricity.

Energy in North Carolina

In North Carolina, much of our energy comes from nonrenewable sources—in particular ***fossil*** and ***nuclear***—while a small fraction comes from **renewables**. More and more, North Carolinians are learning the impact that each of these power sources is having and has had on the North Carolina economy and environment.

Fossil

From the Wright Brother's first flights to the stars of NASCAR's pedal-to-the-metal races, fossil fuel has served a dominant role in helping power North Carolinians' achievements, entertainment, and our very lives. Despite all it has done for us, the impact fossil fuels are having on North Carolina's economy and environment are giving policy makers and residents reason to pause.

Economic

Pro

Fossil fuels are a proven energy source that is plentiful and has a low cost. Petroleum, a form of fossil fuel, provides the source material for us to make numerous products like plastics and medicine.

Con

North Carolina's complete dependence on other states and countries for fossil fuel is incredible if not alarming. Almost 5.6 billion gallons of petroleum-based liquid fuels are consumed by North Carolinians each year. None is produced in North Carolina.

Neither is coal nor natural gas, when:

- Coal-fired power plants make up three-fifths of the State's electricity generation, and
- About one-fourth of North Carolina households use natural gas as the main source for heating their homes.[1]

The **net effect is no revenue** for North Carolina and overdependence on other states and countries for fuel.

Environmental

Pro

No measurable benefit.

Con

Petroleum and, to a lesser extent, natural gas, emit gasses that are harmful to the environment and human health. For example, petroleum emits:

- Carbon dioxide, a greenhouse gas and a source of global warming;
- Sulfur dioxide, which causes acid rain, is harmful to plants and animals, and worsens or causes respiratory illnesses and heart disease, particularly in children and the elderly; and
- Nitrogen oxides, which contribute to ground-level ozone and irritate and damage the lungs.

Nuclear

Nuclear power has had a public relations problem. Much of the picketing of power plants went the way of the '70s and '80s, but still many wonder about the safety of a power source with such lingering toxicity.

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[1] Source: US Energy Information Administration 2010

Economic

Pro

Current statistics suggest nuclear power in North Carolina is a worthy, viable power source. The three power plants in North Carolina—Brunswick in Wilmington, McGuire in Charlotte, and Shearon Harris in Raleigh:

- Provide one-third of the State's electricity generation,
- Rank North Carolina 6th in nuclear generation in the nation, and
- Operate at a low cost.

Con

- Nuclear power plants require a high cost to build; and
- De-commissioning a power plant is expensive and is often not factored into the cost of building one.

Environmental

Pro

During operation, nuclear power plants do not emit carbon dioxide.

Con

- Radioactive wastes can remain radioactive and dangerous to human health for thousands of years, and
- Toxic emissions are generated from fossil fuels burned to build reactors from vast amounts of concrete and metal.

Renewables

As renewables become more prevalent, some believe they will usher in a new era of productivity and safety. Already, research and data are showing signs of its promise.

Economic[2]

Pro

- Avoid nearly $500 million in costs for new coal, natural gas, and nuclear power;
- Realize more than $2.5 billion in new renewable energy investments by 2018 and $350 million in energy efficiency investments by 2021;
- Eliminate the need for at least 1,800 megawatts of coal and nuclear power plants; and
- Employ more than 4,000 North Carolinians at good wages.

Con

- High cost to build,
- Large land requirements,
- Not reliable or capable of producing energy 24/7, and
- Not capable of being "dispatched" by utilities to serve demand when needed.

Environmental Impact:

	Air Quality	Greenhouse Gases	Water Usage	Land Usage	Fuel Extraction	Water Disposal
Wind	None	None	None	Low to	None	None

[2] "A Citizen's Guide: The North Carolina Renewable Energy and Energy Efficiency Portfolio Standard," North Carolina Sustainable Energy Association.

				Med		
Hydro	None	None	Med	Med to High	None	None
Solar	None	None	None	None to Med	None	None
Biomass (wood)	Med	None (neutral)	Low to Med	Low to Med	Low	Low (fertilizer)
Biomass (poultry litter)	Med	None (neutral)	Low to Med	Low to Med	Low	Low (fertilizer)
Landfill Gas	Med	None (net positive)	None	None	None	None
Anaerobic Digester	Med	None (net positive)	None	Low	None	None (positive net)
Energy Efficiency	None	None	None	None	None	None