

## Photovoltaics provide alternate source of energy

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Electricity in the United States is predominantly generated in power plants through the burning of fossil fuels. Here in North Carolina, nearly 60 percent of that fuel is coal.

The byproducts of burning coal have contributed to diminishing air quality in our region. While I am not suggesting we abandon the way in which we generate power in our state, I am dedicating this article to educating readers about photovoltaic power and its potential for helping us have cleaner air and a more sustainable environment.

According to [sustainablesources.com](#), “The word ‘photovoltaic’ combines two terms — ‘photo’ means light and ‘voltaic’ means voltage.” A typical photovoltaic (PV) system is composed of an array of solar panels that absorb and convert sunlight into electricity and an inverter that changes the raw direct current (DC) to alternating current (AC). AC is the electricity we use in our homes. Some systems may have a bank of batteries for storage purposes. PV systems have no moving parts (except on an atomic level) and once set up properly, should have very little need for service maintenance or repair.

Unless you are planning on having your PV system “off grid” (i.e., not using the local utility provider), you have two choices for the electricity you will generate: “net metering” and “buy all, sell all.” Net metering uses one electric meter spinning in reverse when electricity is being generated and spinning forward when electricity is being used. A homeowner’s bill would reflect the sum of the electricity used, minus the electricity generated by the PV system. In the “buy all, sell all,” option there are two meters; one registers the electricity produced by the PV system that is sold back to the utility company, while the other registers the electricity being used in the home. In this case the owners never actually use their own electricity. They sell 100 percent of their electricity to the utility company and purchase 100 percent of the electricity they use. This scenario is very common in North Carolina because N.C. GreenPower offers financial incentives.

According to [ncgreenpower.org](#), N.C. GreenPower is “an independent, nonprofit organization established to improve North Carolina’s environment through voluntary contributions toward renewable energy and the mitigation of greenhouse gases.” Goals include supplementing the state’s existing power supply with more green energy, such as electricity generated from renewable energy sources like the sun, wind and organic matter.

The program accepts financial contributions to help pay for the costs of producing green energy. A contribution of \$4 a month adds one block of 100 kilowatt-hours of green energy to North Carolina’s power supply; that amount can mitigate 500 pounds of carbon dioxide or carbon dioxide equivalent (greenhouse gas emissions). So in the case of “buy all, sell all,” Duke Energy pays customers their going rate per kilowatt generated and N.C. GreenPower sweetens the pot with additional compensation. This seems to make this option more lucrative in most cases.

While the price of installing a PV system is significant, there are state and federal tax incentives that can bring down the net cost. North Carolina offers a 35 percent tax credit and the federal government offers a 30 percent tax credit. A home photovoltaic system that may run in the \$20,000-\$30,000 range will appear much more affordable once the tax credits are factored in.

Our North Carolina Piedmont has many talented solar contractors who are very capable of explaining and installing PV systems. A site visit by a contractor can inform you if your location is optimal. With the strain on our natural resources and the need for a cleaner environment, a solar photovoltaic system for your home may help us all breathe a little bit easier.