

# Solar Energy

## Less Pollution, Healthier Community

By Walter Benda

The harmful effects of coal and gas-based energy generation on our health is hard to deny. According to the Political Economy Research Institute, American Electric Power (AEP), which generates energy for much of Southwest Virginia, is ranked number 35 on their "Toxic 100" top corporate air polluters in the U.S. Major pollutants include sulfuric and hydrochloric acid, as well as chromium, manganese and nickel compounds, all of which can cause serious respiratory damage and other illnesses. The Sierra Club reports that AEP is America's biggest emitter of mercury, with the largest source of this being coal-burning power plants. Another environmental group, the Environmental Defense Fund, notes that widespread prevalence of mercury in the environment, and exposure to it through the consumption of fish and shellfish can lead to impaired neurological development, particularly in fetuses, infants and children. According to the group, extremely high mercury levels can permanently damage an adult's brain and kidneys, or even lead to circulatory failure.

While coal accounts for 67% of AEP's energy generation for all 11 states it operates in, 89% of the power sold by AEP in Virginia is derived from coal. Another key source for AEP's energy generation is natural gas, accounting for 24% of its overall energy generation for all 11 states combined. This too may have harmful health effects. Research findings published by the British medical journal, *The Lancet*, linked the use of natural gas appliances to asthma and other respiratory health problems.

Solar energy, which is virtually pollution-free once installed, offers a clean alternative to coal and natural gas. Increasingly, members of our region's health care community are beginning to adopt solar energy to meet at least part of

their energy needs, and in turn helping to contribute to a less polluted environment and a healthier community.

William Baker, M.D., a nephrologist in the New River Valley, is a local pioneer in embracing solar energy and many other "green" technologies in his home. When he and his wife designed and built their house in Montgomery County, they dedicated themselves to installing solar panels, using recycled building products, installing an energy efficient tankless hot water heating system and many other environmentally friendly technologies. Their 18 solar panels have produced about 18,000 kilowatt hours from June of 2004 to September of 2009, supplying about 30% of their total energy needs during that period.

Another local pioneer in implementing solar energy is Wall Residences, a company with administrative offices at Franklin Pike in Floyd, VA. Wall Residences provides "high quality community services to persons who have a primary diagnosis of mental retardation (intellectual disability) or a long-term mental illness." Their office building has the largest array of photovoltaic (PV) panels in the region, a 15-kilowatt system consisting of 82 solar panels connected to three power inverters. According to the installer David Zachow, "After a year of operation, we have determined the Wall PV System produces 23% of the electricity needed to operate the facility." Its maintenance-free battery bank, connected to a portion of the PV array, provides emergency power in the event of a power outage. Zachow notes that solar panels, such as those used in this project, are extremely reliable and have long life spans, with most PV manufacturers guaranteeing the power output of their products for 25 years.

Now is an excellent time to consider



**Dr. William Baker's 18-solar-panel array for his home in Montgomery County has produced about 18,000 kilowatt hours since 2004.**



**The administrative offices of Wall Residences in Floyd, VA, have a 15-kilowatt system consisting of 82 solar panels, the largest photovoltaic array in the region.**

installing a PV system. At the federal level, there is the Residential Renewable Energy Tax Credit Program, which allows taxpayers to claim a credit of 30% of qualified expenditures for a system that serves a dwelling unit located in the United States and used as a residence by the taxpayer. The state of Virginia is also in the process of finalizing details for up to \$15 million over three years funded by The American Recovery and Reinvestment Act (ARRA) that will become available for rebates on solar water heating, solar PV installations (up to 10 kW for residential) and small wind systems. Virginia also has a net-metering law that applies to residential generating systems up to 10 kilowatts in capacity and nonresidential systems up to 500 kilowatts in capacity.

Details for all of these programs can be found at <http://www.dsireusa.org>. ■