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ENERGY FOCUS

Alaska Wind Offers Residential Power Opportunities

By Adam Wasch

Alaska's energy resources amount to more than the oil and gas that have so much transformed the state during the past 40 years. One largely untapped resource is wind power. Large-scale operations, such as a growing wind farm in Kotzebue and plans for a 1.5 megawatt wind farm on Fire Island near Anchorage underscore the potential of wind energy in Alaska. But what about residential wind power?

Wind power can help make your home more energy independent, cut your fuel bills, and reduce air pollution. Best of all, wind power keeps giving and giving, with no emissions and minimal maintenance. So, yes, investing in wind power can make financial sense if your home is ideally located where there's wind. But the costs can be high initially. A medium-sized system sufficient to meet most of an average home's needs will run between \$10,000 and \$20,000 professionally installed.

Though wind generation is generally considered environmentally friendly, you should check local codes, covenants, and other possible restrictions before investing any money. Especially if you have a smaller lot, it's a good idea to take your neighbors into consideration. An acre or more of space is advisable to ensure the equipment is far from other structures. Although not nearly as tall as cell phone towers, small wind generators tend to attract attention and produce at least some sound. Modern generators are quieter than older models, however, and are usually not much louder than other normal outdoor sounds.

It's difficult to generalize about how well a particular wind generator will work for a given location due to variables in size, design, and the wind speed for your specific location. But, in Fairbanks, wind generators are not practical within the city limits. The wind in the Fairbanks region tends to blow near the surrounding hills or in the large flats out in the borough.

Wind resource maps are available to indicate whether your house is located in a suitable area, but it is important to measure the specific wind characteristics of a site using an anemometer and record averages over a several month period to justify your investment. Typically, monthly wind speeds should average 8 miles-per-hour (mph) to 14 mph for a unit to make economic sense.

A basic wind generation setup consists of three components – the rotor-driven turbine, a tower or other mounting apparatus, an inverter to transform direct current to alternating current or a battery bank if you're not connecting the generator to the electric grid. Depending on the equipment and wind,

residential turbines can generate between 100 watts and 100 kilowatts. Towers are usually 80 feet or taller and wield rotors 8 feet or more in diameter. As a rule of thumb, higher towers result in more power. These towers can attach to foundations or be supported by guy wires, which is a relatively inexpensive method that can work well in Fairbanks's shifty ground.

Wind-generated power can also be sent to your local electricity provider's power grid. In much of Fairbanks, this is accomplished through the Golden Valley Electricity Association's Sustainable Natural Alternative Power (SNAP) program, which helps offset the cost of installing the equipment and supports local alternative energy production. The federal government helps, too, by offering a tax credit of up to 30 percent toward the cost of your small wind generation system.

Wind generators can be installed professionally, providing you with the benefit of expertise and service support, or you can order kits to install yourself. The electronic and structural components do not require a PhD in physics to understand, but they are somewhat complicated and require adherence to safety and common sense. In some cases, a licensed electrician might be necessary.

There are many resources online to help you investigate wind power, but here are two to get you started. Locally, check out the Alaska Energy Authority's webpage on wind power at <http://www.akenergyauthority.org/programwind.html>. The American Wind Energy Association has a wind energy "toolkit" with national resources: <http://www.awea.org/smallwind/toolbox/>.

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For questions or comments please contact CCHRC at (907) 457-3454