

Making the Renewable Connection

by Deb Moore

Renewables in Mainstream America

Renewable energy sources are slowly working their way into conventional American communities. From Seattle to New York, individuals, companies – and sometimes city planners – have taken steps towards incorporating solar and wind power into their daily lives. Wind power is now the fastest growing source of new electricity generation in the world, including fossil fuels. Yet, until fossil fuel is no longer the cheapest, most easily accessible energy source available, renewables are likely to continue to play only a minor role in powering mainstream America.

So how can the cost and accessibility of renewables become comparable to that of gasoline and coal or nuclear-powered electricity? One way to do that is to increase the cost of purchasing fossil fuels so that it incorporates the *true* costs associated with using polluting, nonsustainable fuels. Another way is to make renewables more easily accessible and affordable.

As seen with any new technology, there is an initial period when the technology is extremely expensive and not very advanced. When personal computers were first made available in the 1970's, they were expensive, limited in ability, difficult to use and lacked a support system of knowledgeable technicians. Today computers are abundantly available, capable of a myriad of tasks, easy to use and well supported. This change occurred because a small number of individuals were willing to pay the price, and thus get the technology moving. As more people became involved, prices began to drop and the technology began to improve.

Your neighbor may not care where the energy he uses comes from, or may not be willing to put the money or effort into switching to alternative sources. However, there are many people who will. Once the cost and accessibility of renewables begins to change, your neighbor just might begin to give some consideration to the alternatives.

So what can you do? Push the envelope – be one of those committed enough pay that little bit extra or put in the extra effort. If your community's power company provides an option for paying a slightly higher rate for electricity from multiple sources, including renewables, go for this option. If not, encourage your power company to invest in renewables and to make this option available, which is commonly known as "green pricing". Also, encourage your local, state and federal government to provide incentives for renewable energies. Contact your representatives and tell them you believe it's worth spending more to have renewables as an energy option in your state.

Renewables in Alaska Bush Communities

One place where renewable energy sources seem to be making headway is in the bush communities of Alaska. Some of these remote communities – where fuel transportation is difficult and costly – see renewables as the cheaper, more easily accessible alternative.

Going Solar: Lime and Arctic Villages

Lime Village is a small Athabascan village approximately 150 miles west of Anchorage. This extremely remote village has no barge service, no store or post office, and no running water. Diesel must be flown in – in 240-gallon increments – and costs more than \$4 per gallon.

With the help of Alaska Energy Authority (AEA) and BP, Lime Village has installed an experimental solar/diesel hybrid system at a central power plant. The 200 amp-hour battery bank can be charged by either solar panels or diesel generators. The diesel engine turns on and off automatically and can be off for 5-12 hours each day. On good days almost half of the village's energy is provided by solar power.

Overall, the current system is expected to reduce diesel use by 20%. However, the performance data will be studied to determine the best mix of power sources for the system – possibly leading to a greater reliance on solar power.

Arctic Village is a small but well-known Gwich'in village approximately 200-250 miles north of Fairbanks. As in Lime Village, fuel is expensive and hard to transport. To offset these problems, Arctic Village decided to develop a variety of renewable energy sources – beginning with solar.

Arctic Village opted for a grid-tied system where the solar power feeds directly into the existing electrical lines rather than into batteries. The community decided they did not want to add more toxic chemicals from batteries into their solid waste stream. Their initial goal was to provide enough energy to power the washeteria – on top of which the solar panels were installed. Any additional energy would then be available to the rest of the village. The current solar system is rated at 1.2kiloWatts, which would meet the needs of a typical residential house when the sun is shining.

An important component of Arctic Villages' project is to decrease the overall energy use of the village through community and youth education about energy conservation. In addition, by involving youth and other community members in the installation of the solar panels, the village has created a sense of community ownership and pride.

Between reducing their overall energy use and increasing the amount and types of alternative energy used in the community - they also intend to explore the possibility of tapping into wind energy from the nearby mountains, hydro from the rivers, and using solar trackers to improve performance of solar panels - Arctic Village eventually hopes to become completely independent of diesel.

Riding the Wind: St. Paul Village

Not all of Alaska receives unlimited supplies of sunshine during the summer. Some communities, such as St. Paul Village on St. Paul Island in the Bering Sea average only seven days of sun each year. However, St. Paul Island, along with many other areas of the state, has an abundance of another renewable resource –wind. In fact, St. Paul Island has a “class 7 wind load” with a documented average annual wind resource in excess of 18 mph.

Tanadgusix (TDX) Power, a native owned power company, has developed a wind/diesel hybrid project just outside of St. Paul Village. The project couples a 225-kW Vestas wind turbine with two diesel generators providing for the total electric needs of a company-owned commercial airport and hotel. Although the wind blows almost continuously, the turbine cannot operate at wind speeds below 10 mph or above 65 mph, so the system relies on the diesel generators approximately half the time.

Rather than batteries, the hybrid system captures excess electricity in the form of heat for use in a hot water heating system. This in turn is used to heat both the airport and hotel and significantly reduces the use of diesel heating fuel.

TDX hopes that the success of the pilot project will eventually convince the people of St. Paul Village that wind energy technology is a viable, economical means of powering the village and the entire island.