

RIDE THE WIND

by **Tony Malmberg**

The business of ranching and farming sits on the foundation of “renewable” and “sustainable.” Agriculture profits depend on the functional and sustainable ecosystem processes of renewal. So it’s not much of a stretch for agriculture to start “ranching renewable energy.”

As fossil fuels literally “dry-up” we are finding interest and even urgency in renewable energy. Renewable energy means that we cannot use more of a limited source than we can re-grow, as is the case with firewood. But neither can we use any more of an unlimited source of energy than we can capture, as with the sun. Other sources are dependent on where we live, as with wind power. Finally, economics and quality of life decisions will drive our choices and government policy as these opportunities blossom.

Renewable sources of biomass energy have been used since civilization first harnessed fire. Those living near forests used wood, while plains peoples burned buffalo chips. Biomass sources are dependent on balancing use with re-growth. Many an early settlements used up the forest around them. We can burn fiber waste sources, like timber slash, straw, and corn cobs, directly or convert them to a liquid fuel source. Development of bio-fuels can reduce our fossil fuel demands while generating income for agriculture and the timber industry.

Outside the realm of agriculture, our western coastline has the potential to generate one and a half million KW of energy from wave action. The ocean also offers the tides as a source of energy. However, a 16 feet difference must exist between the high and low tides to generate energy with current technology. There are only 40 sites in the world that meet this parameter but the Pacific NW and Atlantic NE both qualify.

If you live inland the wind can generate energy. Old Holland used windmills to pump water out, while ranches and farms used the same technology to pump ground water in—to tanks that is, for livestock and domestic use. If you live in a windy area a wind turbine can reduce your electric bills significantly. You may even have the potential to “farm the wind” by putting in several wind turbines called a “wind plant.”

For example, the Department of Energy's Wind Program and the National Renewable Energy Laboratory (NREL) published a new wind resource map showing wind speed estimates at 50 meters above the ground. The state of Nevada has good-to-excellent wind resource near Las Vegas and Ely and on the higher ridge crests throughout the state. (See Figure 1)

WESTERN UNITED STATES WIND RESOURCES

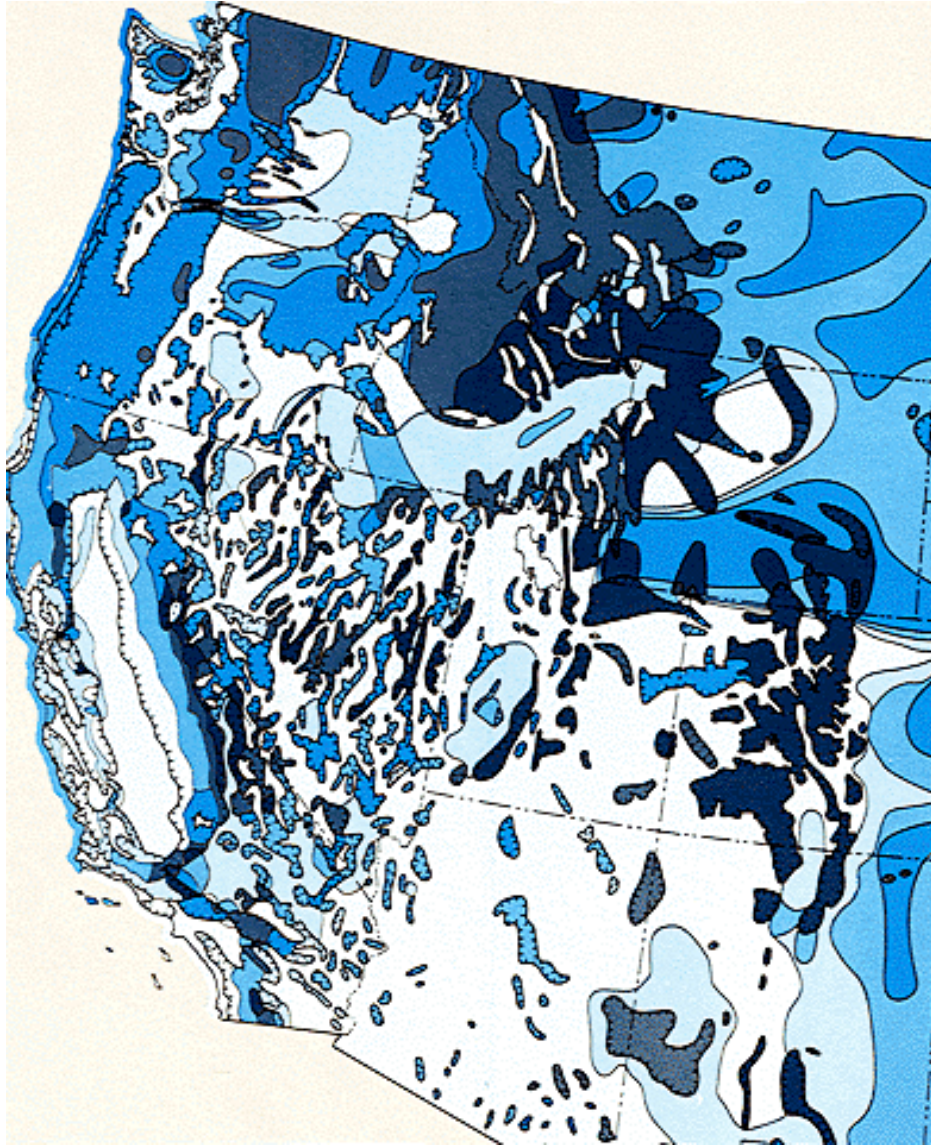


FIGURE 1

You can get a quick sense of the wind energy potential in your area. Level 3 (the middle shade of blue) is the minimum needed for utility-scale production, with level 4 being adequate in most all instances.



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Maybe you don't live on a windy ridge but no one has a corner on the sun. Ranchers and farmers have been harvesting solar energy through plant photosynthesis since the beginning of their time. Now, we're getting a different flare to the idea of harvesting sunlight energy but the same principles apply.

In the sun we have an unlimited source of free and never ending energy but a limited time to capture and use that energy. In ranching, that melts down to three factors; time, area, and volume. In other words we need cool and hot season plants to harvest the sun for a longer time period. We need broad leaves and dense volume of photosynthetic plants to capture as many of the sun's rays as possible. With new technologies, capturing the sun's rays for heating and electric energy is not a matter of smoke and mirrors.

One of the technologies actually uses mirrors to concentrate the sun's heat and run steam turbines. Another technology, photovoltaics, converts sunlight energy into electricity. Pre-planning allows anyone to utilize passive solar and daylighting mechanisms to light and heat buildings. Many old timers remember the 55 gallon barrel behind the bunkhouse that provided a hot shower to the men at the end of a hot summer day. Today we use the same principle called "flat plates" to heat water with solar energy.

Solar energy provides a great option in Las Vegas, Nevada, with 210 sunny days per year. But if you live in Astoria, Oregon, where clouds block the sun for all but 50 days of the year, you can turn to the heat under your feet.

We are standing just a few feet from geothermal energy. It's this energy that keeps our potatoes in the root cellar from freezing in the winter. Depending on your latitude, the earth maintains a temperature from 45 to 75 degrees. Heat pumps have heated buildings for more than 60 years and recent technology advancement has made this source of sustainable energy one of the most efficient around. In northern California steam produced 2 miles below the surface runs turbines producing electricity.

Cowboy folklore hero, Pecos Bill, rode a cyclone. Today, ranchers can literally "ride the wind" and generate income from wind turbines in a wind plant. For centuries, ranchers and farmers have grown grass and crops with solar energy. Today, you can literally grow heat and electricity with sunlight energy. Generations have used the earth's warmth to store food during winter. Today, you can harness the core of our earth's geothermal energy to heat buildings. Opportunities in renewable energy allow us to farm renewable energy underground, at the soil surface, and literally lasso the sky.