

10 Proposals to Improve Poudre Valley REA

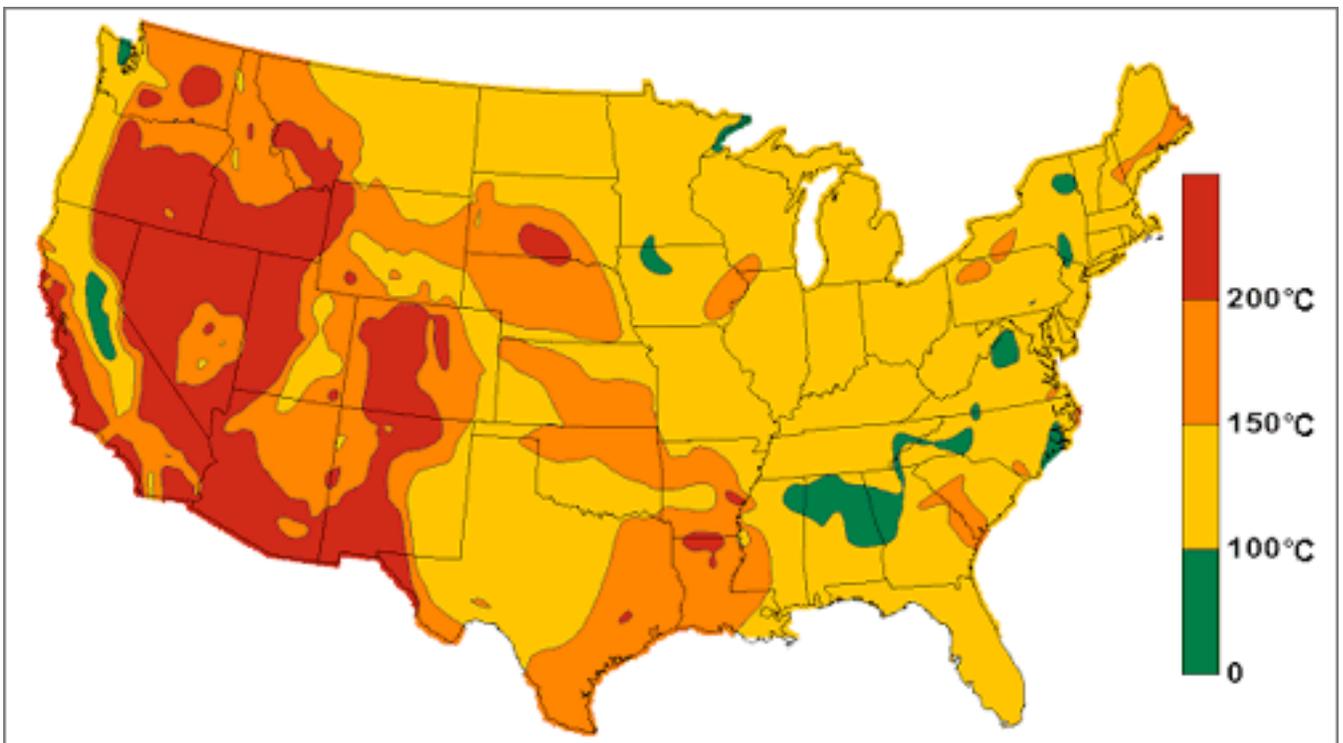
by

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2010 Candidate for Board of Directors

1. Aggressively investigate the possibilities of developing a geothermal base load power plant as well as promoting ground-source heat pumps to reduce demand for individual users.

Geothermal is considered a renewable resource because the heat emanating from the interior of the Earth is essentially limitless: estimated to be equivalent to 42 million megawatts (MW) of power, and expected to remain so for billions of years to come, it is a virtually inexhaustible supply of energy. Although areas with telltale signs like hot springs are more obvious and are often the first places geothermal resources are used to develop base load power generating stations, that has not happened in Colorado. A US Department of Energy map of geothermal potentials (see below) shows that we are smack dab in the heart of the highest potential areas for geothermal development, and yet, absolutely nothing has been done about developing that potential.



map source: <http://www1.eere.energy.gov/geothermal/geomap.html>

"...we are hoping that geothermal power can help the state [not Colorado!] become the first major world economy to back-out all of its coal. No other technology can do this as effectively as geothermal energy." -- Karl Gawell, Geothermal Energy Association

On the individual consumer level, the Delta-Montrose Electrical Association (DMEA), another Colorado REA, has long been promoting geexchange / ground source heat pumps (starting in 2007, long before there was any rule requiring any Colorado utility to have a Demand Side Management program).

Poudre Valley REA should investigate the feasibility of doing the same.

2. Switch PVREA's existing carbon-offsets program to the Colorado Carbon Fund [CCF]

It supports local (Colorado) clean energy and climate goals

[Colorado Carbon Fund committed \$230,000 to purchase offsets from a landfill gas-to-energy project in Larimer County]

Contributions are tax-deductible

It helps develop innovative new programs

The Climate Trust helps ensure credibility of offsets

3. Promote biomass co-firing for ranches/farms

Among the cheapest, easiest, and fastest way to provide new *renewable* base load power without having to build any new transmission lines!

Subsidize Anaerobic Digesters on ranches/farms to produce methane fuel for electric generation as a means of reducing demand, and as a means of supplementing centralized base load power with decentralized power sources. Local utilities in many states have begun promoting such projects in an effort to fulfill state standards requiring a portion of electricity be generated from renewable sources.

Anaerobic digesters convert the energy stored in organic materials present in manure into biogas. Biogas can be fed directly into a gas-fired combustion turbine --the type most often used for small-scale electricity production is the microturbine. In addition, waste heat from these engines can provide heating or hot water for use on premises.

Another major issue, and one of the benefits of this, is the pathogen reduction. We're looking at 99.6 to 99.9% reduction in the pathogens in the manure. Side benefits for farmers include eliminating odor and making the leftover, processed manure a more effective fertilizer.

As a fuel, biogas composed of 65% methane yields about 650 Btu per cubic foot. Often used when designing systems for the anaerobic digestion of manure, these energy estimates can predict the amount of power production per animal. General estimates predict one kilowatt of electricity production requires five to eight dairy cows. Cattle feed lots, restaurant food wastes, and multi-farm operations are also viable. Successful operations have been developed from Wyoming to New York.

See: <http://www.manuremanagement.cornell.edu/Docs/RCM%20Digesters,%20Inc..pdf>

4. Promote load-shifting and demand response to reduce peak demand.

Ranches/farms and businesses:

Investigate the possibilities of partnering with Ice Energy, a local company, to effect system-wide shifting of demand to off-peak hours. By leveraging the higher efficiencies associated with

generating and transmitting less expensive off-peak power, storing it at thousands of distributed locations, and dispatching it during times of peak demand, Ice Energy delivers a sustainable energy solution **equivalent to hundreds of megawatts of clean peaking power for utilities.**

“It costs both utilities and consumers a lot more to use electricity during the day or during peak times than it does at night when rates are cheaper. **Our system is designed to take advantage of those efficiencies and pass savings on to utilities and their customers.**” --Ice Energy

Residential users:

“Demand Response” has gained traction in utility circles: in essence, it involves paying users to make small sacrifices when there is an urgent need for extra power (the “peak”). The utility can then rely on cutting some demand on its system at crucial times — and, thereby, avoid the cost of building a new plant just to meet those peak needs.

Yes, rates have to go up a little for everyone to pay for the efficiency measures, but far less than the rates would go up to build new power plants and transmission. And everyone can take advantage of the efficiency programs to lower their total energy bill.

A demand reduction program at Idaho Power, pays individuals 15 cents for each square foot of insulation they put in their attics. This reduces demand (forever) by those buildings and reduces annual energy costs for those building’s owners. “That was a no-brainer.”

The utility also has a “demand response” program for air-conditioners. More than 32,000 Idaho Power households (out of nearly 407,000 total) have allowed the utility to control their air-conditioners at crucial times:

On a hot summer day, Idaho Power can in essence push a switch that causes devices installed on participating air-conditioning units, like Ms. Washburn’s, to cycle on and off for intervals as long as 15 minutes. Ms. Washburn says she has noticed no difference in temperature, even though a sweltering day is exactly when people want their air-conditioning most. Executives say the program lowers use during peak periods by about 1 percent. Participants are paid \$7 a month during the summer. Ms. Washburn says her electric bill has dropped by about 30 percent as a result of the attic insulation and the \$7 credit.

Poudre Valley REA should develop similar programs to reduce, or eliminate, the need for construction of new centralized power plants.

5. Promote distributed generation by increasing the amount of funds devoted to subsidizing PV installations at residences (current funds are sufficient to help only about 10 individuals per year in a membership of some 38,000), and investigate the possibilities of developing other renewable energy sources that are situated in our area. Other Colorado REAs have gone outside their primary power supplier to build clean energy sources for up to 10% of their needs: for example, DMEA is a leader in residential ground source heat pumps, a great program for reducing load; Highline Electric is looking at building several distributive wind projects at 10 to 30 MW and has built a 3.5MW heat recovery unit that provides them with about 3% of their needs; Holy Cross is looking at a small hydro project; United power has built a solar farm and is in the second stage of an addition to that facility.

A solar array reaches its maximum potential between noon and 4:00 p.m., supplying more than 75 percent of typical daytime cooling energy needs, **dramatically reducing the need**

for grid-supplied electricity when it is most expensive for the customer, and reducing demand for base load energy generating facilities for the utility.

A recent study for the Arizona Public Service Company highlighted the benefits of solar installations on the utility grid. The finding noted that solar installations produced a 7.91 to 14.11 cent savings per kwh. Most of the savings come from the drastically reduced cost of fuel, operations, and maintenance compared to coal-fired power plants with smaller, but still positive savings from transmission and distribution. The Arizona study also noted that although peak solar production occurs before peak demand on the electric grid, solar still helps reduce peak demand which is important because peak power is typically the most expensive power provided by a utility.

Those who repeat the mantra, “the sun doesn’t always shine...” as a way to discredit solar installations, don’t want you to understand that PVs provide power at precisely the time when it does the most good!

United Power, a Colorado rural electric cooperative, has launched the nation’s first cooperative solar farm. The farm, known as the Sol Partners Cooperative Solar Farm, was opened in May 2009. The program allows customers to lease one or more panels for 25 years and to receive the electricity generated by the panel in the form of a monthly credit on their electricity bill. Sol Partners provides a unique set of solutions to many customers who are unable to utilize solar generation --those who have homes with poor solar orientation, who rent or have other physical limitations on their sites, can invest through the solar farm. United Power covers the cost of maintenance and liability. Customers can purchase panels as they can afford to make the investment, slowly coming to own a network of panels and eventually offsetting all or most of their electric use. The Sol Partners program adds to the other renewable incentives already offered by United Power, such as rebates for home photovoltaic and solar hot water systems.

6. Encourage the state legislature to develop Feed-In Tariffs (FITs), a legislative device that has been used by others to promote the fastest, cheapest, and widest growth of renewable energy.

Described as, “harnessing the power of the free enterprise system to develop renewable energy sources,” FITs create jobs and wealth by using our abundant domestic renewable energy resources. Germany has used this device to become the largest provider of renewables in Europe, despite the fact that the best solar resources in Germany are not as good as the worst solar resources in America!

The fundamental principles of these policies provide that:

- Everyone who produces renewable energy is guaranteed that they can connect to the power grid and sell their energy to their utility company. There is no limit to the amount of renewable energy that can be sold to utility companies.
- Utility companies sign 15-20 year contracts with all their renewable energy producers. All contracts are transparent and open for inspection.
- The contracts include long-term agreed-upon prices that the utility companies will pay for the energy they buy. The prices are set high enough to be an incentive to new producers and for existing producers to expand their production capacities. Prices vary according to the source of the energy (i.e, sun, wind, hydro, bio-mass, etc.) and the size of the energy-producing installation.
- The municipal utility of Gainesville, FL, recently became the first utility provider in the U.S. to implement a FIT program, and they are very pleased with the positive results.

7. Promote the development of Power Purchasing Agreements (PPAs) to establish a mechanism for financing PV systems, Solar Hydronic systems, and Anaerobic Digester systems at no up-front cost to the home-owner, rancher, farmer or other business. The largest impediment to pulling off such projects is the ability to obtain financing quickly, the very problem that PPAs are designed to fix!

“...by turning to financing, consumers can overcome the inherent disadvantage renewables have when compared with existing energy sources: **the infrastructure for power from the grid has already been paid for and, in many cases, has been subsidized for decades.**”

--*Scientific American*, Dec. 2009

SunEdison is a PPA provider. Their customers pay nothing for their solar systems. That's right, zero. When SunEdison installs a solar array, the customer agrees, under a PPA, to buy the electricity it produces at a set price for at least 10 years. **One business customer said, "When we priced out owning the system ourselves, it didn't make sense. We wanted a way to establish price certainty in a volatile market. SunEdison gave us a long-term hedge against that price uncertainty. We're paying less for electricity and reducing our carbon impact. And 15 years down the road, when the price of electricity is higher, the savings will be even more attractive."**

Lighthouse Solar has joined SolarRun and SolarCity in offering Colorado homeowners in the Xcel Energy service territory a “no money down” deal to install a PV system. Poudre Valley REA has no such offerings.

8. Be pro-active in moving Tri-State Generation & Transmission (the main energy supplier to the REA) away from coal and into renewable sources of energy generation. Tri-State generates a quarter of Colorado's power, but less than 1 percent comes from renewables.

In May, 2009, the governor of Kansas approved a plan to build an 895 MW coal plant, one of three for which Tri-State has committed funds to help finance. With only 200 megawatts (MW) going to Kansas the lion's share of that dirty energy could be coming to Tri-State. But Tri-State has other options that should be aggressively pursued. Energy efficiency options are proven to be effective and Colorado has vast, clean energy resources across the state that can be used to meet our energy needs:

Colorado has some of the highest-quality wind energy resources in the US. We should move to promote development of this resource quickly before others buy up all the best sites.

Colorado is in an area with some of the highest-quality geothermal energy potential in the US. We should move to promote development of this resource.

Colorado is in an area with prodigious amounts of sunshine so it makes sense to promote solar systems --both water-heating and solar power-generating technologies. PV panels are suited to distributed power generation and utility Demand Side Management, while concentrating solar collectors are suited to utility-scale power generation, especially at existing base load plants to reduce demand spikes and extend the life of existing base load facilities. Armed with molten salt storage, they can also be developed as stand-alone base load power generators.

Government subsidies have long been used to encourage investment in domestic energy production. U.S. subsidies for oil, natural gas, coal, nuclear and hydropower totaled approximately \$500 billion from 1950 to 1977, or approximately \$18 billion per year (2004 dollars).

In the last century, this created an abundance of affordable domestic energy, powering strong economic growth, but also building an addiction to fossil fuels. Today's rising demands – and volatile prices – are creating a need for a more diverse energy supply.

For those who believe that renewables require inordinate government subsidies to be cost-effective:

- The Government Accountability Office (GAO) estimated federal incentives for electricity between Fiscal Year (FY) 2002 and FY 2007 and concluded that:

“Tax expenditures largely go to fossil fuels: about \$13.7 billion was provided to fossil fuels and \$2.8 billion to renewables.”

Imagine what renewable energy sources could do with an additional \$10.9 Billion in subsidies!

9. As the “smart grid” is built out, making it easier to accommodate ever-larger amounts of energy supplied by variable sources, promote wind generators on individual ranches/farms as a means of distributed generation for the grid, and a source of income for ranchers/farmers.

The variable nature of wind output is best addressed by utilities in the same way they address variability in current generation and demand (load), which is to maintain sufficient flexibility and resources to match generation and load. While wind energy introduces additional variability, most systems have available flexibility to accommodate the added variability.

Yet some continue to repeat the mantra, “the wind doesn’t always blow,” to question whether wind power (which generates electricity when the wind is blowing, not on demand) is up to the task. Based on a growing body of analytical and operational experience, the answer is a resounding “yes.” Numerous wind integration studies and experience in parts of the country with high penetrations of wind power, as well as in Europe, indicate that integrating larger amounts of wind power into electric system operations is possible with only modest adjustments in operating protocols.

State of the art wind forecasting techniques allow utilities and grid operators to anticipate and plan for increases or decreases in wind plant output. With wind forecasting, changes in wind energy output are factored into grid operations much like load demand – both of which change over a matter of hours (not a matter of seconds, such as when fossil or nuclear plants trip off-line). For more information on wind integration, go to: www.awea.org/utility/wind_integration.html .

Utilities have found that wind power typically reduces the need for generating electricity from natural gas-fired power plants, significantly reducing fuel expenditures and reducing operating costs for utilities and ultimately, lowering rates for their customers. These reduced fuel costs far exceed the incremental costs of adding wind power to their systems over time, including wind integration costs. Thus, increased wind power is actually saving utilities money, and is also helping to keep electric rates low at a time when other forces are causing rates to increase.

A document prepared by the Utility Wind Integration Group (UWIG) in coordination with the trade associations of all three utility sectors (investor-owned, public, and cooperative) resulting from their studies and experiences with utility wind integration, states:

“In many cases, **customer payments for electricity can be decreased when wind is added to the system, because the operating-cost increases are offset by savings from displacing fossil fuel generation.**”

10. Eliminate the use of *Country Life* magazine as a mouthpiece for the pro-coal industry that does not allow dissenting points of view to be published.

They tell us to support “clean coal” as the cheapest way to generate electricity, but the coal companies secretly manipulate the costs of coal by using an accounting “trick” to make it look better than it really is: all negatives associated with burning coal are simply dismissed as “externalities” and ignored. This “trick” of accounting harms all Americans!

What are “externalities?” Externalities from electricity generation include: air pollution, water use/water quality, land use, energy security, coal combustion and mining wastes, adverse health effects from coal burning; and, of course, greenhouse gases that result in global warming.

For just one of those problem areas: "Six out of every 10 Americans - 186.1 million people - live in areas where air pollution endangers lives, according to the 10th annual (2009) American Lung Association State of the Air report."

Go to <http://www.psr.org/resources/coals-assault-on-human-health.html> for a full accounting of the human health problems associated with fossil fuels.

Arizona has changed its integrated resource planning rules, finally building in a method for measuring "externalities," where things like health impacts, costs for future environmental compliance, accident clean-up, etc. are formally recognized and added to the “cheap” cost of coal that industry has long used as an integral part of its messaging. Including these “externalities” in permitting/planning/compliance regulations shows that **coal ain't as cheap as its supporters claim.**

The business case for promoting renewables is clear: companies (including utilities), communities and countries that cut their carbon emissions will make more money, cut their risks, enhance their brand and gain competitive advantage.

I want to represent your best interests on the PVREA Board of Directors. Please vote for me!

Get more information at www.PVpioneers.com

I would also appreciate any feed-back you care to provide:

Contact me at: jan-PVpioneers@skybeam.com