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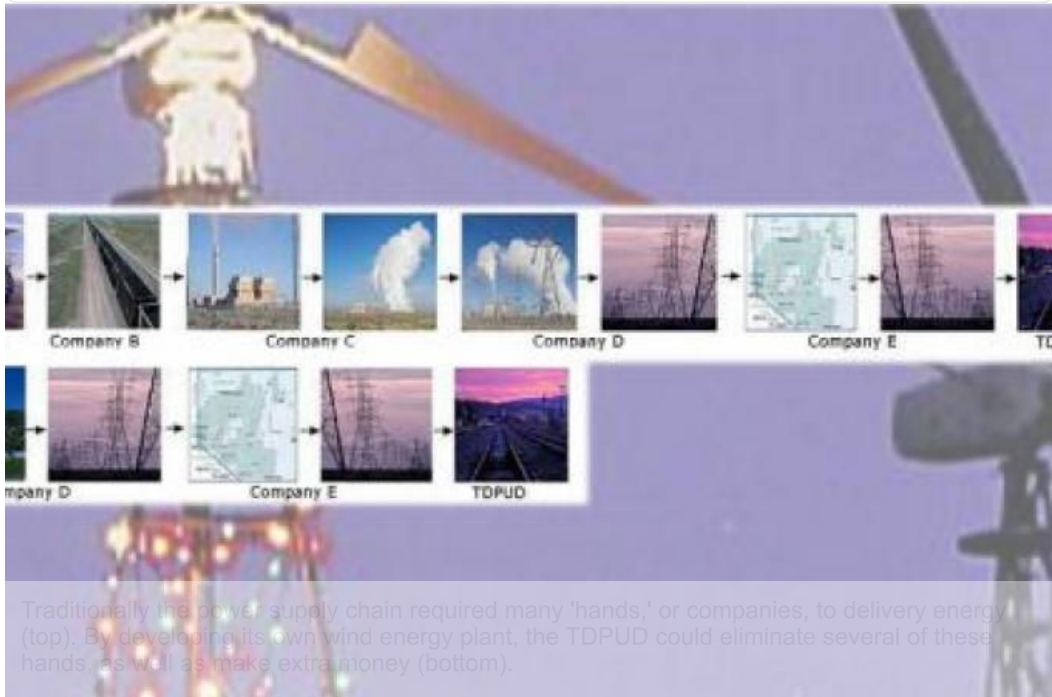
News

Bigfoot Dreams of Electric Sheep

Wind Energy is a Real Possibility for Truckee

Tuesday, July 17, 2007

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Traditionally the power supply chain required many 'hands,' or companies, to delivery energy (top). By developing its own wind energy plant, the TDPUD could eliminate several of these hands, as well as make extra money (bottom).

The Truckee Donner Public Utility District (TDPUD) has eliminated the recently created Power Supply Committee citing a lack of need. According to a June 12 letter from TDPUD Board President Tim Taylor, the Board has 'approved a power supply program that will meet the TDPUD's energy demands from January 2008 through the end of 2011.' The decision to accept this program comes only six months prior to the termination of the district's current supply contract.

Never mind the politics or past grievances; this community will need to work together in order to secure the best power supply contract beginning in 2012. The TDPUD should start considering our options for post-2012 now in order to secure the best power purchase arrangements.

The Goal

TDPUD ratepayers have expressed a desire for power that is affordable, reliable, renewable and clean. Many will say that satisfying all of these goals is impossible, but these goals could be met if the TDPUD owned the very power plant from which it drew its power.

Companies that deal with esoteric technologies such as automobiles, fuels, and utility-scale energy, do not benefit from people having knowledge regarding these technologies. The Utah Associated Municipal Power Systems (UAMPS), for example, nearly convinced the TDPUD that a 50-year coal contract was the only choice. But when 'the UAMPS offer' was rejected by the TDPUD, UAMPS brought to us other renewable options, as if they had always existed.

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If the TDPUD truly wants to accomplish the desired goals, and to be energy independent, then we must have knowledge of the power supply chain. We then might see that there exist alternatives that could prove profitable for the TDPUD. UAMPS is in the business of selling fossil fuel-based power, so it is in no interest of theirs to show us the alternatives. That would be like going into a Ford dealership and expect to be given an unbiased opinion on a Nissan.

In order for the public to understand the possibility of actual plant ownership, we need to understand some fundamentals of the power supply chain. Moreover, we should discuss the cleanest, least expensive, and fastest growing energy resource in the world for the past decade: wind energy.

The Power Supply Chain

There are sixty-three alpine streams that feed Lake Tahoe. It would be impossible to take a cup of water from the middle of the Lake and guess from which stream that water originated. The energy grid works in a similar fashion. Our electricity is generated from multiple sources – coal, natural gas, wind, geothermal, hydro-electric dams – then pooled on the grid, while the origin of these electrons can not be traced back to a specific source. The power pool is dissimilar to Lake Tahoe because the grid does not store energy like Lake Tahoe stores water. Energy is continuously generated, uploaded, and consumed almost simultaneously. Energy that is generated but not consumed is wasted. It is an inherently inefficient system.

The power supply chain is a dynamic system that requires a constant balance of several variables. Fluctuations in fuel prices, available transmission capacity, and measuring real-time market demand represent only some of these crucial variables. The solutions lie in eliminating as many of these variables as possible.

Consider the following coal power scenario. Suppose Company A is responsible for coal extraction, Company B provides rail service to transport that coal to the power plant, and the plant is owned by Company C. Company C relies on yet another company, say Company D, to sell that energy to a pool. This pool is then managed by Company E, which allocates energy to a utility, like the TDPUD.

The TDPUD draws its power from a pool managed by Sierra Pacific Power (SPP, or in this case Company E). In 1997, the TDPUD entered into a 30-year contract with SPP for this service. It is therefore SPP's responsibility to allocate energy to the TDPUD according to a schedule determined by seasonal trends in the demand side of the market.

The idea of the TDPUD owning its own wind farm completely eliminates Companies A, B, C, and D. The TDPUD could sell energy to SPP, which would manage the allocation of the electrons that we add and subtract from the energy pool. SPP will, of course, assess a fee for this service, and this service cost could be recovered by cutting away unnecessary fat (A, B, C and D) from the power supply chain.

Dispatchable vs. Non-dispatchable

There are basically two types of energy generation – dispatchable or non-dispatchable. A dispatchable power plant is one that may be 'throttled' up or down depending on demand. Dispatchable power, which requires thermal energy (usually powered by fossil fuels), is convenient and manipulable, and therefore attractive to power authorities. Non-dispatchable generation comes from sources like wind, solar, or geothermal and can not be throttled up or down depending on load demand.

Until recently, the cost of thermal energy production has remained quite low. Dispatchable energy once offered a cheap and easy way for power authorities to balance generation and load demand. But increased fuel price volatility has lead providers like Xcel Energy to build more non-dispatchable power plants and throttle up dispatchable generation according to the amount of power produced by a variety of non-dispatchable sources. In other words, it makes much more sense to take from the wind and sun, and burn fuels only when necessary. The wind and sun are free, whereas fossil fuel extraction, delivery, and final burn each has an increasing cost.

Xcel Energy has chosen to invest in proven technologies that advance non-dispatchable generation. Xcel Energy is now the number one provider of wind energy in the United States. Xcel currently operates 17,335 miles of transmission in 10 states, from Wisconsin to Texas to Colorado, otherwise known as the 'Saudi Arabia of Wind Energy.'

Now Xcel is developing wind farms instead of purchasing power from existing wind projects. In other words, one of the biggest domestic, investor-owned utilities has made the decision to take

ownership. As one of the biggest utilities in the nation, Xcel made this decision based upon profitability.

The Bottom Line

On July 22, 1993, Spirit Lake Community Schools in Spirit Lake, Iowa, began drawing power from a relatively small wind turbine placed right in the middle of the elementary school's playground. The turbine consumed no more land area than the school's existing merry-go-round. Within seven years, this turbine produced enough energy to sustain the entire 53,000 square-foot elementary school (equivalent to 264 Spirit Lake homes annually). They saved \$124,900 in energy expenses, and they even produced enough excess energy to sell to the local utility (at a whole-sale rate) for nearly \$25,000.

What could be more inspiring?

The program was so successful that the school bought another turbine three-times as powerful as the 1993 turbine model.

Interestingly enough, the first domestic wind turbine manufacturing facility is one of the world's most successful. It is owned by Clipper Wind, based in Cedar Rapids, Iowa, the heart of the 'Saudi Arabia of Wind Energy.'

The TDPUD should follow suit and take advantage of proven technologies to grow the local economy and gain energy independence. The district can develop its own wind farm capable of delivering up to 70 percent of the district's base-load demand. Such a facility would provide clean, reliable, and inexpensive energy to ratepayers and generate revenue for the district. According to a model specific to the TDPUD load demand, compliments of the American Wind Energy Association (AWEA,) the district could generate \$6 million in revenue annually by selling wind energy to the grid at a wholesale price of \$40/MW.

Wind Energy

Wind power has been the fastest growing energy resource in the world for the past decade. The domestic wind industry began in California with the first two Department of Energy projects developed between 1980 and 1982, with one sited east of the San Francisco Bay and the other west of Palm Springs. Under current industry standards, both are failures, especially Altamont Pass, east of San Francisco. Sited in a heavily populated raptor colony, the archaic 25kW machines have short 10 meter blades that whip furiously in heavy winds. These turbines are mounted on latticed towers that beckon raptors to perch on them for spotting prey. Diving raptors become caught up in a series of high-low pressure systems, causing many bird deaths. West of Palm Springs, the same turbines do not kill birds, but the turbines seem to produce more noise. The unique acoustic effects in that region amplify inefficient whipping blades. There is another notorious bird killing wind farm in Spain and another poorly-sited farm in the middle of a through-way for migratory bats in West Virginia.

The whipping effect of these blades and a resulting vortex attracts bats for the same reason that bamboo fly-fisherman tell tales of knocking bats out of the sky with surprising regularity. Either way, whipping blades will never harm as many birds or bats as windows, cats, cars, or bamboo fly rods.

The domestic wind experiment began in California, in 1980. The Germans recently announced a prototype wind turbine 200 times as powerful as those implemented in California in the '80s. Bird-killing wind turbines are a thing of the past. The technology and site considerations have evolved.

For example, Clipper Wind has developed a 2.5 MW turbine capable of producing enough energy for some 2,500 American homes. Truckee could be a part of this, producing energy domestically, with less waste, and with less dependency on foreign sources.

A few years back, the California Energy Commission (CEC) subcontracted Disgen Inc. to perform a wind site identification study in five states: Washington, Oregon, Idaho, Nevada, and California. The CEC study took into account some major variables that must be considered in any wind feasibility study: wind potential, transmission, interconnection availability, and access to county approved roads. In late 2005, Disgen presented a report to the CEC identifying 2,000 MW of wind potential available to the California energy market. Among these is the Fredonyer Peak site, located some three miles east of Eagle Lake in Lassen County, just north of Susanville. According to the report Fredonyer Peak is a 'developable' site for utility-scale wind energy.

The state governments of Nevada and Idaho have conducted their own studies. Together they have identified 13 profitable wind sites, with at least five sites capable of delivering energy to the SPP grid. The TDPUD could develop these sites.

The Rosebud Sioux did it; Storm Lake did it; the Germans have mastered it; and they all want more. This could be very profitable for the district. The TDPUD is currently considering a very attractive broadband internet project that will require a capital investment of some \$23.6 million. The project would pay for itself in 15 years. The previously mentioned AWEA project model, applied to the TDPUD, would require approximately \$26 million and satisfy 70 percent of the district's energy needs for at least the next 30 years. This project could pay for itself in less than three years.

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Reader comments so far...

Why isn't the TDPUD

Lance Smith (not verified)

Why isn't the TDPUD interested in this? Is their GM too busy doing damage control because he didn't think to do investigate water resources when golf courses were being approved? Seriously, if this is even remotely possible, why hasn't the TDPUD brought this up? Have they contacted the author of this piece - "Woody" if that is his real name?

Mon, 08/06/2007 - 12:00am

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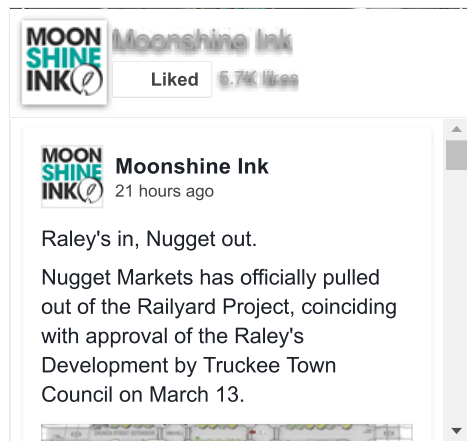
"Very, very interesting. I

Jeane P Ryan (not verified)

"Very, very interesting. I learned a lot about wind power and feel better informed to speak about alternative energy sources. I hope that you've sent this on to our State and Federal Congressmen and women."

Tue, 09/04/2007 - 12:00am

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Latest Tweets @moonshineink

- In preparation for tonight's Democratic debate, we spoke with each candidate, asking them two questions: What solut... <https://t.co/jj0VwUP72WV> — 1 month 3 weeks ago
- Raley's grocery store development permit approved by the Town of Truckee Planning Commission this week. Info: <https://t.co/rHQMPwk7sZ> — 1 month 3 weeks ago
- Placer County voted Jan. 10 to support a grant application to help fund the 56-unit

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