

Wind power goes back a long way in Tehachapi

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Wind is the second largest industry in Tehachapi and thanks to repowering and new development, it will continue to flourish. According to the Kern

County assessor's office, by the year 2030 the wind industry will have assessments equal to that of the oil industry in Kern County. —Courtesy of

Terra-Gen Power | Image 2 of 3

Tehachapi is considered the birthplace of wind energy in North America and as we celebrate 30 years since the first turbines were installed, the industry is enjoying a new breath of life. Re-powering and new development will flourish thanks to the first-of-its-kind transmission line and a 20-year contract with Southern California Edison (SCE). It represents the largest wind energy contract ever signed by a United States utility.

The first turbines erected in Tehachapi during the early 1980s were 45-60 feet tall and produced 25-60 kilowatts. Today, they stand 400-500 feet and produce 1-3.0 megawatts. Multiple generations of wind turbine technology are still up and running for a total installed capacity of about 785 megawatts. Some of the first companies include Zond, Oak Creek Energy, WindLand, Windridge, SeaWest, Difko, FloWind, Cannon, CalWind Resources, Mogul Energy, and AB Energy to name a few. Many of these original companies were sold or have changed their name.

“More capacity and less impact are the key changes since wind was introduced here,” said Linda Parker, executive director of the Kern Wind Energy Association. “Yesterday's technology is not today's technology. We have fewer turbines that produce more energy, creating fewer access roads and intrusions to the land.”

Steve Cummings, the former president and founder of Oak Creek, installed some of the first wind turbines in Tehachapi. He described some of the hurdles his generation faced.

“At that time, there wasn't a lot of product availability, so you had to take what you could get. We not only had to import turbines from other countries, but we had to bring the technicians over, too,” Cummings said.

Tehachapi leaders were quick to realize that proper planning would help preclude conflict, and today we all benefit from the on-going public dialogue that started back in the 1980s.

“The county (Kern) was fairly easy to deal with back then,” said Jim Watkins, wind energy consultant. “Since this was unprecedented, there weren't any guidelines. They established an ad-hoc committee that consisted of people from the industry and environmentalists, which proved to be very helpful. Since this was all agricultural land, we had to create new guidelines and zoning and we didn't have a model to follow—we had to create the model.”

Federal and state tax credits played a major role in spurring the wind energy industry into fruition.

“When the tax credits expired, this was a major set-back,” recalled Cummings. “No one had contracts with Edison, we had to hammer these out. I remember our first dealings well. A question would come up and we didn't have an answer. There were long moments of silence in those meetings when no one knew what to say.”

Pioneers like Cummings paved the way, but tense negotiations between wind developers and utilities continue today. Fortunately, this is one challenge that wind industry leaders in Tehachapi have successfully met. After overcoming numerous regulatory hurdles, SCE officially began the construction of its Tehachapi Renewable Transmission Project (TRTP). The first phase of the TRTP cost \$1.8 billion and will ultimately result in delivering 4,500 MW of clean energy into the Los Angeles metropolitan area.

The TRTP has proven to be a catalyst for multiple projects including Coram Ridge (Coram

Energy Group & Brookfield Renewable Power), Windstar (Western Wind Energy), and Alta I-V (Terra-Gen Power).

The Windstar project, whose general contractor is RMT, will bring the first Gamesa turbines to the area. The new wind farms are expected to eventually comprise 1,750 to 2,000 turbines-not only does this triple the size of any existing U.S. wind project, but it is also expected to outperform the world's current largest wind farm, located in Texas.

The approval of the TRTP is a notable exception to difficulties with long-distance transmission in America.

“Prior to that system coming, we weren't growing and we weren't going to. We couldn't take one more watt,” says Parker. “The construction of the transmission line is a major accomplishment that many people have worked tirelessly on. It gives the wind industry options and the ability to contract with other electric utility companies.”

Parker said the transmission line has definitely strengthened the industry here.

“According to the Kern County assessor's office, by the year 2030 the wind industry will have assessments equal to that of the oil industry in Kern County. This is a big deal. We never imagined when we started that we would rival the oil industry,” Parker said.

Numerous entities, companies and individuals played a major role in the conception, planning, development, and approval process for the project, which has involved a number of precedent-setting decisions, both regulatory and in the courts. Hal Romanowitz, President and COO, Oak Creek Energy Systems, was one of these key players.

“TRTP progressed from our local development and planning efforts into the state-wide planning process. It took five studies to get the right focus onto a solution that was good for the entire state, not just a limited group. The TRTP that is being constructed is very good for serving a substantial range of clean energy projects and to enhance the overall grid reliability as well,” Romanowitz said.

Tehachapi has been responsible for impacting the wind energy industry on a national and global level. Founder of Zond, a Tehachapi-based turbine manufacturer that was acquired by Enron and ultimately GE, Jim Dehlsen went on to establish Clipper Wind power, which has become a major turbine manufacturer. Tehachapi has spurred other businesses including World Wind Services, whose CEO is a second-generation wind entrepreneur and is one of the few female-owned businesses in the industry, as well as the highly acclaimed wind technician training facility, Airstreams Renewables.

What does the future hold for this wind-rich region? Ed Duggan, executive vice president, Oak Creek Energy Systems, broke it down.

“Oak Creek is an example of a wind project that is re-powering and producing more energy as a result. This re-powering of smaller turbines with bigger, more efficient turbines has been going

on for over 10 years and it will continue until most of the early (1980's) generation of turbines have been replaced. The potential upside of newer, bigger, turbines is too great to ignore. As far as new development goes, we'll see a lot more on the Mojave side of the Tehachapi Pass and a little more on the Tehachapi side, but much of the new capacity will also be in the nearby Antelope Valley area," said Duggan.

"This region will grow to about 4,500-5,000 megawatts of total capacity in the next 5-10 years. After that, we'll continue to expand at a slower rate and by the year 2040, we should be somewhere around 10,000 megawatts of total capacity."

Christina Rombouts is the former editor of the Tehachapi News and a freelance writer for the design, development and renewable industries.

Fast facts about Tehachapi

- The Tehachapi Pass is about 3,800 feet in elevation.
- Average wind speeds approach nearly 9 meters per second (about 20 miles per hour). This places Tehachapi Pass in wind power class 6 (these classes range from class 1, the lowest, to class 7, the highest).
- Wind speeds are higher in April through October than in the winter months.
- The mean-average annual wind speeds and frequency distributions are well documented due to the long history of wind energy generation in the area, which is considered to be an "excellent" wind resource, according to the American Wind Energy Association (AWEA).
- Capacity factors in Tehachapi Pass are in excess of 40 percent using modern wind turbines, compared to an estimated average 36 percent capacity factor for all 2007 U.S. installations, according to the AWEA.

Tehachapi wind companies

A number of wind farms call Tehachapi home-including Terra-Gen Power, enXco, NextEra, Cal Wind Resources, Coram, Oak Creek Energy Systems, GE Energy, AES, Mogul Energy and Windland