

UPDRAFT

TAX CREDITS AND BETTER TECHNOLOGY ARE POWERING THE WIND GENERATION INDUSTRY'S REVIVAL

BY ALLAN T. MARKS

The wind energy industry, becalmed for the last two decades, is now enjoying a resurgence. The volume and value of wind energy project financings have climbed to new highs in recent years. Most of those deals have escaped the media's attention, but last December came one that made news: the announcement of plans for what will be the largest wind farm in the U.S., with a customer already signed up to purchase its power for 20 years.

Wind farm specialists are financing that project, in Southern California's Tehachapi Mountains. But a quieter driving force in the renewed strength of the wind power industry is private equity money. Deals as large as \$500 million have been done, and larger ones should follow.

The wind energy industry got off to what seemed a promising start in the 1980s when a boomlet developed as a result of two converging factors: sharp increases in the price of carbon-based fuels and increasing concern about the harmful effects of such fuels on the environment.

A number of wind power installations were developed during that surge, but the boomlet was short-lived. Many early turbines used to generate power were unreliable, with blades cracking or gear boxes locking up. Operating costs were high, and availability of power was low.

Not only that, the capital cost of turbines was high relative to their generating capacity; each could produce less than one megawatt of power. So on a cents-per-kilowatt basis, wind couldn't compete with natural gas or coal, espe-

cially with the variability of wind resources.

But beginning around 2000, three developments would lead to the boom for wind energy.

First, advances in technology enabled manufacturers to make more reliable, higher-capacity turbines, greatly reducing the per-kilowatt cost of wind energy while also cutting operating costs. Today's turbines can generate a kilowatt hour of electricity for just 5 or 6 cents, down from as much as 15 or 16 cents in the '80s.

There also occurred a consolidation in turbine manufacturing. A field of mostly undercapitalized participants shrank to a small but well-financed group of turbine makers. Several are located in Europe, which has for years been ahead of the U.S. in wind energy. The largest in this country is GE Wind, a **General Electric Co.** subsidiary. This industry consolidation has led to greater investment in R&D and, consequently, to tremendous improvements in the efficiency and reliability of modern wind turbine generators.

The second development that sparked the industry's revival was a reversal in the economic relationship of wind to competing sources of energy, particularly thermal energy. In recent years the cost of those fuels climbed to the point where they sometimes exceeded the all-in cost (i.e., capital costs, fixed operating and maintenance costs and variable costs) of wind power.

Finally, the Production Tax Credit Congress made available in 1992 for two years (and renewed or extended

six times since) also helped revive the industry. The PTC permits energy producers to reduce their federal tax bills by 1.8 cents for every kilowatt hour of electricity generated. To qualify for the PTC, a company must meet minimum requirements for size. Private investors had ample resources to fund large companies, and in doing so created a number of innovative financing structures.

Many projects have been financed by monetizing tax credits to provide capital to cover construction costs, freeing future cash flow to cover operating costs and to service additional debt on a project. The availability of these cash streams has not only increased debt capacity for wind projects, it has also enabled debt issuers to receive better credit ratings.

And that, in turn, makes it possible for many investors to finance projects at lower interest rates or longer terms.

Plants fired by oil, coal and natural gas will be needed well into the future. But as carbon-based fuels become increasingly expensive and encounter ever stronger opposition from legislators and environmentalists, investors will likely allocate more and more of their assets to wind power.

Clean energy is becoming more economically rewarding and politically favored. Investors who employ the most innovative and imaginative financing techniques will reap the greatest benefits. ■

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