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## Companies poised to profit from state wind-power push

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Determining which way the **wind** blows has rarely been as important to a politician as it is to Gov. David Paterson. Paterson's ambitious goal of increasing renewable energy to 25 percent of New York's **power** by 2013 will hinge on **wind** turbines. Since most of New York's renewable energy comes from hydroelectric **power** plants with little capacity to grow, and the pace of growth in solar energy has gone at less than light speed, with only 15 megawatts of installed capacity to date, the **wind** industry will likely account for most of the desired growth in so-called clean energy.

Local companies like AWS Truewind and MSE **Power** Systems, both founded in Albany, are poised to profit from New York's promotion of **wind** energy. Other companies like GE Energy in Schenectady and Horizon **Wind** Energy in Albany have grown their local presence in response to increased demand for **wind** energy.

In 2007, 424 MWs of installed **wind** turbines contributed 873 gigawatts, or 0.58 percent, of the total electricity generated in New York state, according to the New York Independent System Operator.

Patrick Doyle, the development director for Horizon **Wind** Energy's Northeast headquarters in Albany, said the number of installed megawatts from **wind** turbines will need to increase to about 3,300 MWs by 2013 to meet Paterson's goals.

Horizon **Wind** Energy, a subsidiary of Portuguese utility Energias de Portugal, S.A., manages about 1,500 MWs worth of **wind** farms throughout the United States, including most of the installed MWs in New York. Horizon opened its Northeast headquarters in Albany in January with 11 employees, including Doyle. The company is working on 1,000 MWs of new **wind** projects under development in Western New York and the North Country.

"We wanted to focus in New York and focus initially on the Tug Hill Plateau, then central New York and western New York, then later in

Maine, and Albany happens to be in the geographic center of that area," Doyle said.

Industry insiders estimate each new megawatt of **wind** energy built today will cost between \$2 million and \$2.5 million, requiring between \$5.8 billion and \$7.2 billion in investment over the next five years to meet Paterson's goals.

#### Adding incentives

Bruce Bailey, president, chief executive officer and principal owner of AWS Truewind, said his company provides consulting work for **wind** developers, financial companies and utilities looking to determine how much **wind** energy will likely be available at a given site. He said state subsidies and federal tax credits are crucial to financing **wind** energy projects.

"The spot-market prices for **wind** energy, when you're selling into the grid, are wholesale rates of maybe 5 or 6 cents per kilowatt-hour. That isn't sufficient to pay off projects entirely, so having these other incentives is really required for projects to be financed, built and maintained for their lifetime," he said.

The New York State Energy Research and Development Authority conducts periodic "auctions" for renewable energy incentives, which can include a state subsidy of 1.5 cents per kilowatt hour of production over a 10-year period. The money from the program is taken from the Renewable Portfolio Standard charge on electricity bills in New York state. The federal government also has a 2 cent per kilowatt hour tax credit for **wind** energy.

"It typically takes 10 years for a project to pay for itself," Bailey said. "In order for investors to want to do this they need some risk sharing and they need some assurance there is a market for clean energy."

**Wind** farm business models must account for the intermittent nature of the weather. Although New York has 424 MWs of installed generation capacity, those **wind** turbines will likely produce only 23.5 percent of those megawatts at any given time, according to NYISO.

This "capacity factor" for **wind** generation and the unstable nature of fuel prices make it difficult to compare the cost of electricity generation. Assuming a capacity factor of 25 percent, it could cost up to \$10 million to produce one full megawatt of **wind** generating capacity as reliable as cheaper "dirty" megawatts.

The 635 MW FirstLight **Power** Resources cogeneration plant under construction in Rensselaer, which will either generate electricity from natural gas or oil depending on commodity prices, is expected to cost

\$800 million, or about \$1.2 million per megawatt.

Bailey said many investors now realize that a **wind** farm's up-front costs are mitigated by the fact that the price of its "fuel" -- **wind** -- will always be zero.

"There's no supply or cost volatility for the next 20 years. The **wind** will always be there at no cost; you can't say that about [natural] gas," he said.

### Forecasting the **wind**

In April, NYISO inked a deal to provide **wind** forecasting services from AWS Truewind. The new forecasting technology incorporates many factors into predicting **wind** availability, including an area's history of **wind** production under given circumstances. The partnership may enable Rensselaer-based NYISO to better use **wind** energy to lower the costs of other fuel commodities.

NYISO is the not-for-profit cooperation that manages the operation of New York's electricity grid as well as the hour-ahead "real time" electricity market and the day-ahead electricity market, which accounts for the sale of about 55 percent of all electricity in New York state. The forecasting equipment from AWS is expected to enable NYISO to order less reserve **power** from natural gas and other types of **power** plants to compensate for the uncertainty of **wind**.

Better forecasting of available energy should also enable a **wind** farm to pick and choose between selling its electricity on the volatile real-time hour-ahead market and the more stable prices offered in the day-ahead market.

MSE **Power** Systems President and CEO Mark Scher said better forecasting of **wind** may also increase the capacity factor of **wind** turbines.

"What you can do is you can optimize better utilization of the capacity factor through better **wind** forecasting, and that is something that is really going very strong in the industry right now. There are several companies with really amazing software and algorithms improving forecasting technology," Scher said.

Scher's company is mainly devoted to contract engineering services with a focus on designing and sometimes building transmission connections for **power** generators. He said his firm has always had a special focus on the complex engineering needed for **wind** energy generators, but traditionally its customers have been one-third traditional **power** generators, one-third utility companies like National Grid and one-third **wind** farms. He said recently the spike in interest

for **wind** projects and the down economy has shifted MSE's customer base to about 70 percent **wind** farms.

"We've grown with the **wind**," Scher said.

MSE has increased its work force from about 40 two years ago to 92 now in large part because of its estimated 30 percent nationwide market share for engineering and building **wind** farm transmission lines, Scher said.

Many in development

And more **wind** farms are probably coming. According to NYSERDA, more than 7,000 MWs of **wind** energy projects in New York are sitting at various stages of development.

Horizon **Wind** Energy continues to see growth in the sector throughout New York.

"There's another about 200 MWs being [tested now]," Doyle said. "We would say it takes about three to five years [to get a **wind** project online]. There are many projects that are in the last stages now that were started in 2002. In the next two years you might see 1,000 MWs in New York."

In January, Horizon signed a deal with General Electric to buy 201 1.5 MW **wind** turbines to be shipped in 2010. Under a separate two-year agreement, GE agreed to provide operations support, parts and maintenance for those units.

Although GE Energy does not manufacture **wind** turbines in Schenectady, it does design and research them at GE Global Research headquartered in Niskayuna. In November, GE announced it will invest \$39 million to expand its renewable energy headquarters located within its Erie Boulevard campus. The conglomerate has also stated it plans to hire 500 new engineers and 150 white-collar workers to staff its new **Wind** Product Management and Customer Support Center in Schenectady.

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