



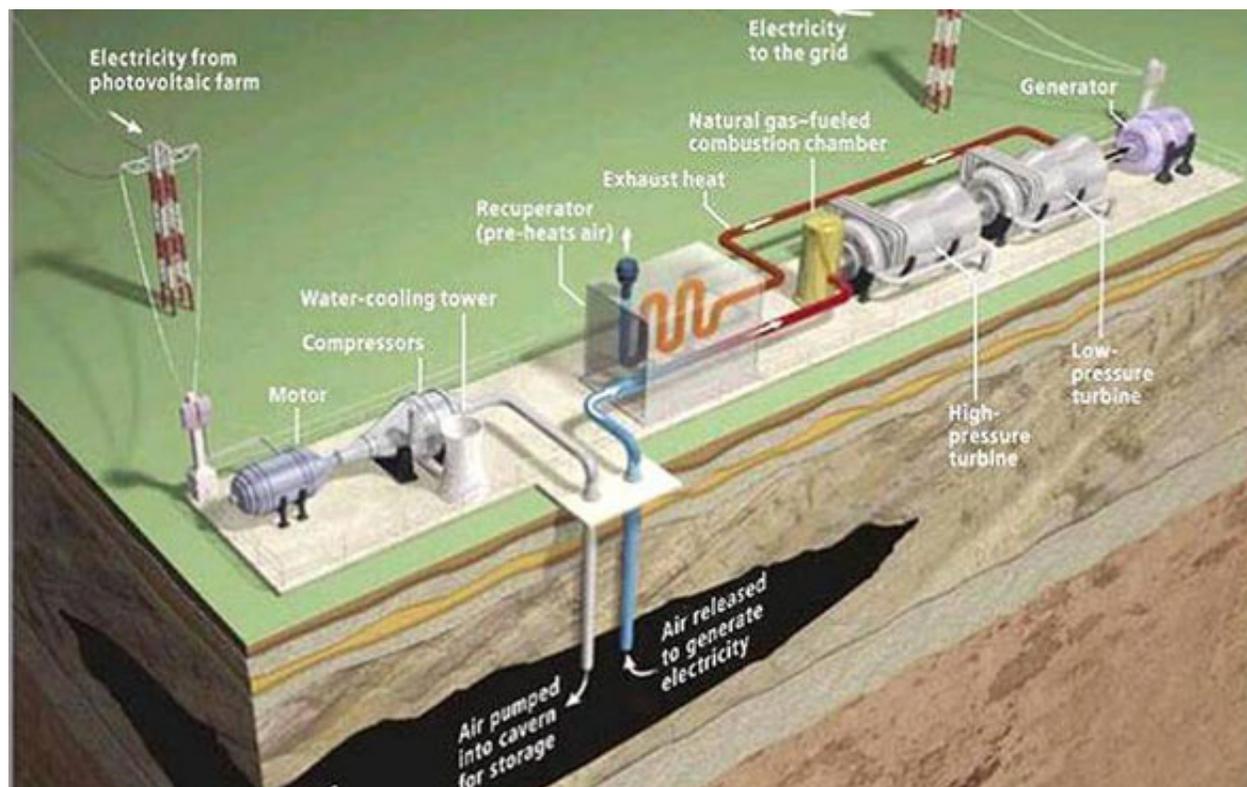
Showdown: It's Wind Energy v. Shale Gas for Cavern Storage



Monday, 28 March 2011

Written by Peter Mantius

0



This graphic lays out the basic components of a compressed air energy storage power plant, although it shows power originating from a solar source rather than a wind farm. Photo: Energyeconomyonline.com

WATKINS GLEN, N.Y. -- Federal and state agencies are convinced that salt caverns three miles north of this Finger Lakes village can be used to spur the rapid development of wind energy projects throughout upstate New York.

A proposed \$125 million, 150-megawatt power plant at the site would use compressed air to store energy that commercial wind farms produce at night and dispatch it back to the state's electric grid during peak daytime hours.

The low profile plan by New York State Electric and Gas (NYSEG) has already received a \$29.6 million grant from the U.S. Department of Energy and \$1 million from the New York State Energy Research and Development Authority (NYSERDA).

In its application for the DOE grant, NYSEG said the location of the salt caverns, only 1.5 miles from a major electric utility line, is "ideal to support integration of wind into the New York grid."

But the plant's 2014 target completion date isn't assured, in part because the caverns are also prized by a company that traffics in hydrocarbon, rather than renewable, energy.

The site is owned by Inergy, a Kansas City-based natural gas pipeline and energy storage company that stores natural gas in several of the caverns and is seeking regulatory permission to store liquified petroleum gas in others. It also mines salt there.

NYSEG's rights to the site are secured from Inergy by a cavern lease and a letter of intent, according to the DOE grant application. In addition, Inergy has committed to accept the brine from the NYSEG cavern and to provide fresh water for cooling the plant's equipment, the application said.

But the exact terms of those agreements aren't public. Neither company would provide copies of the lease or the letter of intent.

In an October 2009 study, NYSERDA acknowledged that compressed air energy storage (CAES) faced significant hurdles, including competition for salt caverns. "It may be difficult for CAES to compete against current LPG and natural gas storage uses for the current cavern space in the state," the study said.

On the other hand, independent analysts predict very strong demand over the next decade for compressed air plants that can store megawatt-scale amounts of renewable energy produced during off-peak hours.

Pike Research of Washington, D.C., recently estimated that the CAES market would grow 15-fold between 2010 and 2020, as renewables are integrated into the grid.

While salt cavern storage may not grow as quickly as certain smaller, cutting-edge systems that require less lead time and regulatory work, their large size will continue to make them attractive, said Aninna Dehamna, a Pike analyst. "By default, CAES is going to have a pretty big role to play," she said.

And Robert Nolan, an analyst for NanoMarkets, wrote in November that the wind industry is apt to turn to high performance batteries to store much of the energy it generates during off-peak hours. But Nolan said he also expects pumped hydroelectric and compressed air storage to grow substantially.

In fact, NYSERDA bills the proposed Watkins Glen plant as a "demonstration" project for CAES that could spur similar plants throughout the region, possibly in caverns near Silver Springs, Himrod or Lansing. And if the Watkins Glen plant starts up as planned in 2014, NYSEG has tentative plans to expand it from 150 to 360 megawatts.

NYSERDA notes that New York State has adopted an ambitious goal of obtaining 30 percent of its electricity from renewable sources by 2015. The renewable category includes wind, solar, hydroelectric, biomass, landfill biogas and other sources.



The Maple Ridge Wind Farm 75 miles northeast of Syracuse, N.Y., shown in this aerial photo, has billed itself as the largest wind project east of the Mississippi River. Iberdrola, the Spanish parent of NYSEG, is a joint venture partner in Maple Ridge and a backer of the proposed CAES power plant in Watkins Glen. Credit: PennEnergy

Hydroelectric has long dominated the renewables group, but wind generation has been surging in recent years.

The Maple Ridge Wind Farm, the state's largest at 321 megawatts, went on line in 2006 in Martinsburg, 75 northeast of Syracuse. It claims to be the largest wind farm east of the Mississippi River, capable of powering 160,000 homes. The 195-turbine project is a joint venture between a Houston energy company and Iberdrola, the Spanish energy giant that owns NYSEG.

Another facility, the High Sheldon Wind Farm located about 30 miles east of Buffalo, began operating 75 1.5 megawatt wind turbines in 2009. More than a dozen other wind farms are in the permitting stage or under construction in New York.

As wind power grows and larger amounts of energy are produced during off-peak hours, the need for energy storage becomes critical.

"Once a utility achieves a large penetration of wind in a geographical area (e.g., greater than about 10 to 15 percent), wind is not viable as a dispatchable resource unless it has a 'shock absorber' plant to help store energy for periods when wind is not available," NYSEG said in its DOE grant application.

The Watkins Glen plant would operate as such a 'shock absorber.'

It would be built just south of Gabriel's Junction, where Route 14 and Route 14a split three miles north of Watkins Glen on the west side of Seneca Lake.

NYSEG would build a 115-kilovolt transmission line to tie the plant to an existing power line that connects to a 230-kilovolt transmission system linked to major wind farms and to the grid's 345-kilovolt lines to New York City.

The plant would draw power from the grid during off-peak hours to compress air in a salt cavern. That compressed air would supply about 16 hours of power through equipment powered by natural gas supplies available at the site. A 65 megawatt combustion turbine could continue to supply power even when the cavern pressure is depleted.

The plant would also be capable of a cold start -- a valuable feature in the event of a blackout or terrorist incident that knocks out major portions of the electric grid. As one of only a handful of generating plants with "black start" capacity, the plant would be a national security asset.

NYSEG is quick to note that it is still weighing the engineering and economic viability of the plan.

The utility industry has not jumped on the CAES bandwagon since the first plant was launched in Huntorf, West Germany in 1978. The first CAES plant in the United States came on line 13 years later in McIntosh, Ala. Several are now on the drawing board.

Dresser-Rand, a major contractor at the Alabama plant, has had a hand in planning the proposed Watkins Glen plant, but the final design isn't complete.

NYSEG will finish its evaluation later this year, according to Clayton Ellis, the company's manager of corporate communications.

Ellis said that if the evaluation is positive, the company would immediately seek state and federal approvals to begin construction.

James Rettberg, a NYSEG program manager who produced a power point summary of the project, said the question of the project's economic viability remains open. But he added, "I don't think there are any show-stoppers."

Even so, the planners still face big decisions on which salt cavern to use and how to prepare it for compressed air.

If the cavern has been used to store natural gas, its casings will need to be customized for the new use. That would require complete purging of all existing natural gas from the space, a task that "could be expensive and potentially hazardous because of explosion risks," NYSERDA said in its Oct. 2009 study.

And the disposal of brine from the CAES cavern could also present challenges for Inergy, which already needs to deal with brine associated with its LPG and natural gas storage activities. In fact, Inergy's plans to build a new 13-acre brine pond is one of the most controversial aspects of its LPG storage plan.

Also clouding the picture is NYSEG's pending plan to sell its natural gas storage facility at Watkins Glen to Inergy for \$65 million. That deal would include 1.45 billion cubic feet of cavern space and two natural gas pipelines.

Two weeks ago, the state Public Service Commission hired an independent consultant to conduct a management audit of Iberdrola and its New York affiliates, NYSEG and Rochester Gas & Electric Corp. The audit will focus on the companies' construction programs and operational efficiency. The PSC noted that "issues related to corporate governance, distant ownership and affiliate transactions add more complexity than is typically seen in management audits in New York."

Meanwhile, a spokesperson for Inergy declined to comment on how that company planned to coordinate four separate industrial activities -- compressed air storage, natural gas storage, LPG storage and salt mining -- at its Watkins Glen site.

"Inergy plans a public outreach in the near future," Debbie Hagen, an Inergy public relations official, said in a recent email. "You are welcome to attend that session -- the time has not yet been announced -- and you will be able to ask these questions at that time."

Earlier this month, Inergy submitted a voluminous draft environmental impact statement to the New York State Department of Environmental Conservation in connection with its bid for permission to store LPG in the Watkins Glen caverns.

The draft mentioned the possible CAES project only briefly, noting that NYSEG had launched a comprehensive



This 110-megawatt compressed air energy storage plant in McIntosh, Ala., shown in this aerial photo, is powered by equipment from Dresser-Rand, which has had a hand in planning the proposed 150-megawatt CAES plant in Watkins Glen, N.Y. Photo: Powergenworldwide.com

feasibility study.

The draft went on to say that “no proposals have been made at this time. Once a proposal is made, the NYSEG proposal would have to take into account the caverns that are already in use in the area...”

It was not possible to determine from Inergy's draft environmental impact statement whether the company planned to work to facilitate the new power plant, take a neutral stance on it, or seek ways impede its progress.

But a NYSERDA official expressed confidence in the plant's future.

“We're big supporters of energy storage,” said Dayle Zatlin, an assistant director of communications for the authority. “It's a way to increase our renewable energy resources. We do think this project is going to happen.”

Further Reading:

[DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT \(DSEIS\)](#)

[Advanced CAES Demonstration 150MW Plant Using an Existing Salt Cavern](#)

Like

Be the first of your friends to like this.

Like this? Let your friends know!

Latest articles from Peter Mantius

[Showdown: It's Wind Energy v. Shale Gas for Cavern Storage](#) posted on Monday, 28 March 2011

WATKINS GLEN, N.Y. -- Federal and state agencies are convinced that salt caverns three miles...

[New York Wine and Tourism Industry Prepares To Battle Hydrofracking](#) posted on Thursday, 24 February 2011

A fault line is opening in upstate New York between the established wine and tourism...

[New York State to Require Environmental Impact Statement for Large Scale LPG Storage in NY Watershed](#)

posted on Monday, 07 February 2011

WATKINS GLEN, N.Y. -- Public alarm over plans to store liquefied petroleum gas in salt...

[back to top](#)

[Next >AREVA in America: The French Connection](#)

Showing 0 comments

Sort by [Subscribe by email](#) [Subscribe by RSS](#)

Add New Comment

Optional: Login below.

Type your comment here.

Reactions



cww_cpa 6 hours ago

From [Twitter](#)

Turbines vs Fracking in the Finger Lakes <http://fb.me/wiuHijlw>

Trackback URL

blog comments powered by [DISQUS](#)