

Energy Cost Risk Management: Solar Photovoltaic as a Hedge Against Electricity Price Inflation



February 8, 2012

“New AEP rates stun small business”

Columbus Dispatch, January 25, 2012

“Competitively Priced Electricity Costs More, Studies Show”

New York Times, November 6, 2007

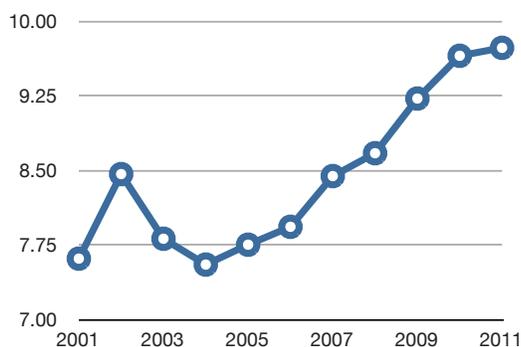
“Shocking electricity prices follow deregulation”

USA Today, August 10, 2007

According to the U.S. Energy Information Administration, electricity prices for commercial electricity (paid by most mid-size businesses, schools, and local government entities) have risen over the past several years (See Figure 1). In recent weeks, those price increases have been felt even more acutely by businesses in the central Ohio area as a new rate structure recently approved for AEP Ohio took effect and took many consumers by surprise.

However, rising electricity prices are nothing new. While the recent price increases seem dramatic, they are not inconsistent with historical trends that show electricity prices have risen steadily over the years.

**Figure 1: Commercial Electricity Prices in Ohio
(2001 - 2011)**



Source: U.S. Energy Information Administration, State Electricity Profiles, Ohio. <http://www.eia.gov/electricity/state/ohio/>

The rise in prices in Ohio over the past decade is correlated with the beginning of electricity market restructuring. This is consistent with studies that show increased electricity prices in deregulated states compared to regulated states.¹ Likewise, a March 2011 study by the American Public Power Association found “between 1997 and 2007, increases in retail electric prices were significantly greater in states with deregulated electric markets than in regulated states.”²

Over the next several years there will be continued disruption as the state further deregulates. Meanwhile, the Public Utility Commission of Ohio (PUCO) has recently ordered AEP Ohio to spin-off all generation assets. In the short run, this type of restructuring usually results in downward pressure on prices as companies compete for customers. This downward pressure on prices is likely to continue for a couple years. In the long run however, prices tend to rise as demand for competitive generation services rises.

Another factor to consider in understanding future electricity price increases is the effect of the price of natural gas on electric prices. Natural gas tends to be the technology of choice that utilities use to meet peak demand, and as such, the marginal costs of natural gas have a dramatic impact on electric generation costs. Over the past several years, a combination of anticipated natural

1. Showalter, Marilyn, *Electricity Price Trends: Deregulated vs. Regulated States* (Power in the Public Interest, February 12, 2008). <http://www.ppinet.org/PDFs/NA%20Rpt%20Elec%20Prices%20OCT07data%202-12-08C.pdf>

2. American Public Power Association, *Retail Electric Rates in Deregulated and Regulated States: A Ten Year Comparison*. (March 2011) <http://www.publicpower.org/files/PDFs/10year.pdf>

gas reserves in the WV/OH area and the recession have exerted considerable downward pressure on natural gas prices and thus on incremental electric generation costs. However, the new natural gas reserves are currently priced into the market and the economy will hopefully be turning around soon.

Finally, electric price increases could be driven upward by legislative or regulatory action in either general Clean Air Act standards (such as the Mercury standards issued by EPA in December) and/or climate change. Any efforts to address global climate change could have a disproportionate impact on our region, since we have benefited economically from grandfathered pre-Clean Air Act coal plants throughout the Ohio River watershed.

So where does this all lead? The most reliable way to predict future electricity prices is to look at publicly traded electricity futures. Electricity futures are a robust and important market to contract for delivery of electricity as much as three years into the future. As such, it is instructive to look at where the “smart money” thinks electricity prices are headed.

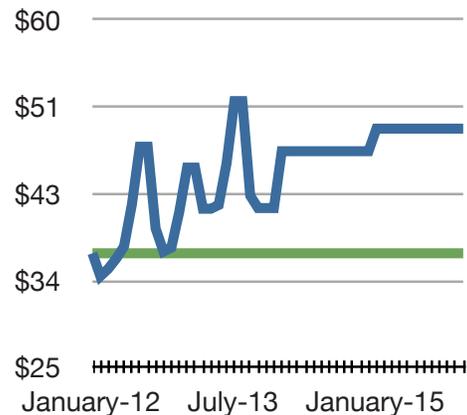
Figure 2 shows electricity futures prices for delivery at the PJM Western Hub (which serves central Ohio) through December 2015. The chart shows that professional energy traders expect prices for electric generation prices in December 2015 to be 34% higher than electricity prices on February 6, 2012.

Role of Solar Energy

Solar energy provides an exceptionally strong hedge against future electricity price increases. Because the “fuel” for solar photovoltaic systems is free and there are virtually no moving parts to a system, there are no fuel, operations & maintenance, or inflation risks borne by the consumer.

Depending on the ownership model (direct ownership vs. third party ownership) and the financing, it is possible to completely fix electricity costs for the life of the system (30 years or more). When a electricity user owns the solar system outright, the solar system works as a perfect hedge against inflation. However, most third party ownership include some cost inflator. Depending on the specific power purchase agreement, the future solar electricity could be pegged to a discount below

Figure 2:
Three Year Electricity Futures Prices
(\$/MWh on Feb. 6, 2012)



Source: PJM Western Hub 50 MW Peak Calendar-Month Real-Time LMP Swap Futures, February 6, 2012. www.cmegroup.com

retail electric prices or it could be fixed a rate below historical electricity price inflation rates. Either way, electricity costs can be controlled in a fashion that provides protection against runaway rates and a greater degree of predictability to budgeting.

Conclusion

In conclusion, electric consumers in Ohio have enjoyed extremely low rates for a number of years, thanks to the availability of coal, the ability of utilities to avoid installing expensive pollution control equipment for many years and the introduction of competition. However, a number of potential factors could result in faster than average electricity cost inflation.

For additional information about hedging against utility rate increases with solar energy, please contact Will Kenworthy at (614) 321-3335.

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