# The Wall Street and Trillion Dollar Electricity Market

## *Financial Fiction or Future Fact?*

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Energy is far and away the fastest growing segment of the business of the New York Mercantile Exchange. In fact, the New York Mercantile Exchange is the largest energy trading forum in the world. Twenty years ago we launched heating oil futures, which were the world's first successful energy futures contracts. Since then, we have added more than 20 other energy futures and options contracts on commodities ranging from crude oil and natural gas to propane and electricity.

In the course of designing and launching all these futures contracts, we have also served as a kind of midwife to the various segments of the energy industry as they have gone through the throes of deregulation. Our heating oil contract was begun in 1978 after President Jimmy Carter lifted controls on heating oil and the industry first began to face price risk. Our crude oil contract was launched after oil prices were finally decontrolled, and our natural gas contract followed the deregulation of that industry.

In each of these cases, the availability of a liquid, well functioning futures market was instrumental in helping market participants to discover prices, and in providing risk management for industries learning, mostly for the first time, how to deal with the challenges of competitive pricing. We really had a ringside seat for watching the emergence of these industries from the protective cocoon of regulation.

## THE ELECTRIC POWER INDUSTRY

Right now, the segment of the energy industry that we're seeing through the sometimes bumpy and difficult transition to free markets is electric power.

This is an exciting time for the electric power industry. Big changes are sweeping in. One of the most tightly regulated industries in America is now facing competition and risks of a sort that, not too many years ago, were unimaginable. The old rule book is being tossed in the trash. The new rule book has far fewer pages.

We learned from the referendum last year on stranded costs in California, the path to a competitive, deregulated power industry is neither smooth nor straight. California's voters defeated the initiative and thus endorsed the approach the state has taken to dealing with stranded costs. But the fact that such a somewhat technical issue could even get on the ballot gives you some idea of the pocketbook appeal that power deregulation exerts.

Unfortunately, there is no national political consensus on deregulation, or Congress would have enacted legislation by now. Since the Congress has not acted, this has become a political and policy issue driven by individual state legislatures. Sometimes, in the debate over the issue, people lose sight of the original rationale: that a deregulated industry offering competitive pricing will sharply reduce the cost of electricity.

From our perspective at the Exchange, pricing is the critical element in how fast and how well the power industry will make the transition to a deregulated environment. Pricing is the incentive for the industry and its customers to move from regulated commerce to a free market. It is the force that is reshaping the entire structure and dynamic of the industry.

Back in 1992, when FERC, the Federal Regulatory Energy Commission, ordered access to the nation's transmission grid be opened to third parties, it transformed what had been a narrow toll road into a freeway. Everyone could get on. And once everyone could get on, the buying and selling of electric power became more fluid. The U.S. wholesale power market, roughly estimated at $45 billion in sales per year, is now largely deregulated.

As soon as this happened, we began to see the emergence of an active spot market for electric power. It became a commodity. Company

X, for example, could announce that it had a certain number of megawatt hours of power for sale and delivery at a certain time, and Company Y could say, "Good, we'll take it, because we can't generate power that cheaply at that time of day."

## UTILITY RESTRUCTURING

Another result of this revolution is the restructuring of utilities and their roles. While the actual transmission and distribution of electricity remains regulated, utilities themselves are busy merging with or acquiring others, selling off their generating plants or setting up new business units to handle everything from the production of power to the buying and selling of both physical power and power futures.

Indeed, a number of utilities have also concluded that they know as much as anyone about the buying and selling of power—and there are now some 75 trading companies operating as subsidiaries of utilities themselves. But this number pales in comparison to the 400 or so independent power-trading companies now approved by FERC. In short, there are not dozens but hundreds of companies now buying and selling power.

As you know, of course, the U.S. power market is not monolithic. There are strong regional variations reflecting the availability of generating resources, the capacity of power grids, and seasonal power use. In the Pacific Northwest, hydroelectricity is a major component of the power mix. In the Southeast, power generating plants make heavy use of coal because that resource is available close by in Appalachia. Regional markets also have regional use patterns. In addition, power generated in one section of the country cannot necessarily be "wheeled" across numerous transmission grids to other areas.

Wholesale markets within the various regions have, of course, long existed. But, until 1992, utilities tended to trade or swap power among themselves, usually to balance load requirements, and these swaps and trades were typically priced only slightly above cost. There was no incentive to charge what would have been market rates because, as regulated utilities, the companies were already guaranteed a set return.

Today these markets are starkly different. Not only are there hundreds of the new market participants buying and selling power—often to new power purchasing pools made up of smaller users—but there are also intra-day and day ahead spot markets as well as longer-term cash markets. Much of the cash trading centers on the day-ahead market when power companies, analyzing their customers' use patterns and watching weather forecasts, must make decisions about how to meet their base load for the next day. The typical transaction involves 50 megawatt blocks of power.

But companies need to do their long-range power planning well in advance of one month ahead. They generally try to establish a market position for supply some months in advance, occasionally going out as far as 18 months. They then fine-tune that baseload power contract as needed by buying or selling power in the monthly and next-day market, and by hedging in the future market.

How much power is now bought and sold? Last year's total U.S. power sales of 1.21 billion megawatt hours were nearly 500% higher than in 1996. So far this year, based on filings with FERC, these markets already trade about $70 billion worth of power annually. What we're seeing here is the extent to which the American electric power industry is adjusting to the commoditization of power in an environment where managers are confronted by price risk, operational risk, regulatory risk, and market risk.

## THE JUNE '98 "SPIKE"

Again, not all these adjustments are easy, as we know from the series of incidents in June '98 that led to astronomical increases in wholesale intra-day power prices in the Midwest. Scorching hot weather moved into the Midwest just as several utility power plants were shut down for scheduled maintenance, and several others had to be taken off-line for emergency work.

The result of strong power demand and reduced supply was a huge leap in intra-day and next-day wholesale electricity prices. On June 25, power that had been selling for between $50 and $100 per megawatt hour rocketed to rates as high as $7,000 per hour. Before cooler weather arrived, entire factories has been shut down because they had interruptible power contracts, several power marketing companies had defaulted on their contracts, and several U.S. congressmen were calling for hearings to find out what went wrong.

A subsequent investigation by FERC found that one particular power trading company had uncovered short positions which it could not cover in time, in part because supply was tight as a result of the number of generating plants having been temporarily taken out of service. The trading company's failure to deliver on its contracts set in motion a chain of events that resulted in the price spikes. FERC also cited constraints in the nation's power transmission system that led to reduced power supplies in the region.

First, "the spike" helped spur the power industry to begin installing new generating capacity, especially the new gas turbine generators that can be fired up quickly to meet marginal demand. According to the *Wall Street Journal*, Siemens and Westinghouse, the two largest makers of power turbines, now have orders between them for 175 new gas turbines. This is important in rebuilding the power industry's reserve margin, which has been steadily declining since 1985.

Second, it prompted a number of companies to think seriously about how well prepared they are to do business in the world of power trading where, unless they have a strong hedging program in place, an incident like this can lead to multi-million-dollar law suits and potentially huge losses. A number of companies have now decided to get out of the power-trading business totally.

Third, it has forced the companies remaining in the power trading business to examine their own controls, their capital adequacy, and the credit ratings of their counterparties.

Finally, it has led to far greater interest in, and respect for, the risk management potential of the electricity and natural gas futures contracts offered by the New York Mercantile Exchange.

## ELECTRICITY TRADING IS AN ACTIVE BUSINESS

In a little more than two years, the trading of electricity futures and options in this country has gone from an idea on paper—a theoretical concept—to an active business that now sees an average of more than 10,000 contracts traded each week on the Exchange. In addition to giving commercial users the ability to hedge risk, liquid futures and options markets provide the entire power industry with a reference point for long-term planning as well as for gauging prices and conducting cash market transactions.

We were not alone in recognizing the potential of these instruments. Other exchanges have recently introduced similar contracts. At this point, however, our futures contracts are clearly the most well established and widely traded.

These contracts may be what the financial world calls a derivative, because they are based on activity in the underlying cash market, but that does not mean they are simply a paper exercise. They can be held for delivery. If you purchase an electricity futures contract, you can actually take delivery of the power that contract promises you. You could, if you chose, actually receive 736 megawatts of firm power deliverable to your transmission system within on-peak hours during the month called for in the contract.

The odds are probably against your doing that. Fewer than 1% of our futures contracts are ever held for delivery. Instead, they are sold, repurchased or rolled over into other contracts for other months. More than likely, you would clear your position in the futures market and deal with your suppliers or customers in the cash market. But the fact that you can truly take delivery is what makes our Exchange prices an accurate reflection of the going price of power.

There's another big difference between our products and the derivatives you hear about on the news. As a regulated exchange, we have a system of safeguards in place to eliminate counterparty credit risk. These include market-to-market cash margins, position limits, and a clearinghouse with a $70 million guarantee fund backed by some of the most respected named in the financial services and banking industries.

Since electricity futures provide for delivery of power, and since power cannot be shuttled all around the country, we have designed our contracts to reflect the most active market center for each region. The first two contracts we launched are based on West Coast power markets, since they were initially the fastest growing. One is tied to delivery of power at the California-Oregon state border, and the other at the Palo Verde Switchyard in Arizona. Our other two futures contracts are tied to the Cinergy transmission system in Indiana, Ohio, and Northern Kentucky, and to the Entergy transmission system in Louisiana, Arkansas, and parts of Mississippi and Texas.

The contracts are for monthly on-peak blocks of power, and represent one of the most actively traded physical cash market instruments for electricity. The western contracts call for a slightly larger block of power because western delivery tends to be based on a week with six on-peak days rather than the five-day week more common in eastern markets.

We do not, by the way, design futures contracts in a vacuum. The New York Mercantile Exchange is far removed from the ivory tower. In order to be useful, our contracts have to serve the real needs of real companies to manage their cash flow and keep a hand on their exposure., To find out what those needs are, we go directly to the power industry itself through a set of advisory committees.

## RISK MANAGEMENT

Some of you no doubt wonder what's the point of buying futures if you're not going to take delivery and use the commodity. The point is that they help you to manage risk. Let me give an example:

Let's say you're the manager of a major power production company. The month is January. At your production planning meeting later this month, you see that, based on the expected price of natural gas to fire your generators in February, you will need to charge $28 per megawatt hour for power that month in order to meet your profit margin. So you sell a February electric power contract based on a price of $28 per megawatt hour.

By the end of January, however, it's obvious that power will probably only fetch about $25 per megawatt hour. Are you in trouble? No. There are two things you can do.

First, you buy back the futures contract you sold. Since the price of power is lower than what the contract calls for, the contract isn't worth as much. Thus you pocket a tidy $3 per megawatt hour profit, because you repurchase it for less than you sold it.

Secondly, you sell your power in the cash market for $25 per megawatt hour. Yes, that's substantially less than what you budgeted. But you can offset that with the profit you made on your futures contract.

In short, you managed your price risk. You met your profit margin goal by protecting yourself in the futures market. If you had not used the futures market, the sale of power at $25 per megawatt hour would have left you below your projected profit margin.

If power prices had gone higher than $28 per hour, you might have lost some money on the futures contract. But you would be earning a higher profit than you expected in the cash market. That would offset any loss on the futures, and again you would come in at your budgeted level.

This is, of course, just one example. Different market participants will have different needs and pursue different futures strategies. Just as our power producer sold a futures contract to lock in his sales price, a large buyer may purchase a futures contract to lock in his purchase price. Power marketers have risks on both sides. The consumer rate may be lower than the company expected, while the generating company's rate may be higher. To hedge that risk, the marketer will use the futures market, buying and selling contracts as necessary.

## THE FUTURES MARKET WILL GROW

The bigger question is whether the futures market will play a larger role as competitive power pricing is made available to more and more consumers.

My answer is yes—and here's why. Although residential customers may never directly hedge in the futures market, they will look for the supplier who offers them the most competitive price—a price you cannot offer if your competition is hedging and you are not. You may well see the development of indirect hedging through suppliers who offer retail customers price cap programs in much the same way that certain heating oil distributors, who use options, are able to guarantee their customers that prices will not exceed a certain level.

In the meantime, we anticipate seeing the power industry make more use of natural gas futures as well. The larger the installed base of gas turbine generators, the more need there is to hedge production costs. When you need to meet peak demand, perhaps for air conditioning on a hot July evening, it's often easiest to fire up efficient, gas-fueled power plants to cover the marginal part of your load. At this point, however, the cost of gas can become a critical factor in the price of electricity delivered into a transmission system.

We likewise anticipate strong use of our coal futures contract, which we hope to introduce some time next year. Coal accounts for more than half of all the power generated in the U.S. market, and the old ways of doing business in the coal industry are changing. The trend in the coal cash market now is toward shorter-term, more price-sensitive contracts.

## THE "SPARK SPREAD"

Still another sound way to employ futures contracts is to cope with the so-called "spark spread"—the difference between the price of power and the price of the commodity required to generate that power. If power prices are low but coal prices are rising and coal is your primary energy source, the use of both electricity and coal futures to control that price spread could have a considerable impact on the bottom line. The same logic applies to power prices and natural gas. There could easily be a point where the price difference between electricity and gas as a marginal fuel begins to make gas increasingly less attractive. But that differential can be managed through futures and options.

The New York Mercantile Exchange in working with industries as they go through the sometimes long and difficult transition from a regulated environment to a free market. Our experience with the heating oil business, with the crude oil industry, and with natural gas, is that the more experienced companies become at risk management, the more they tend to trade futures.

In active futures markets, such as crude oil and natural gas, activity tends to run many times higher than the underlying cash market deliveries, reflecting the many adjustments that participants make to adapt to new conditions and longer-term price shifts, as well as the liquidity of additional market participants. This liquidity makes it easy to get in and out of the market, something generally lacking with other risk management alternatives. At the New York Mercantile Exchange, the rules are clear, the pricing is public, the participants are there, and counterparty credit risk does not exist.

**Someday, no doubt, trading in the electrical power market will reach a level near one trillion dollars. And when that happens, the electricity industry will see the same type of liquid markets as other energy industries now enjoy. Those of us who have been around the energy industry may not know exactly when this will happen, but we've seen enough handwriting on the wall to assure you that, yes, fully competitive, liquid markets are coming.**

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## ABOUT THE AUTHOR

**Neal L. Wolkoff** is the executive vice president of the New York Mercantile Exchange. He joined the Exchange in 1981 as an attorney,

and has held several officer level positions prior to being designated the executive vice president in June 1993. He has also been an honors program trial attorney with the Commodity Futures Trading Commission, Division of Enforcement.

Mr. Wolkoff received his B.A. from Columbia College in 1977 and his law degree from Boston University School of Law in 1980. He is a member of the Bar of the State of New York. Mr. Wolkoff is married, and the father of three children.

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