



Continuing Turmoil in the Power Industry: What It Means for the Major Players

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Five years ago this winter, California's wholesale power market imploded. Power prices soared. California residents endured weeks of rolling blackouts. Two California utilities were forced into bankruptcy even as their suppliers -- independent power companies -- reaped huge windfalls.

Five years later, the tables have turned. Formerly bankrupt California utilities are profitable while formerly robust power generators scramble to survive. Established power suppliers like Dynegy, Williams, El Paso Energy and Duke have sold assets at fire-sale prices and halted merchant energy trading. Two others, Mirant and NRG, went into bankruptcy, and PG&E's energy trading unit disappeared altogether. What happened?



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Some explain the industry's turmoil as a perfect storm of macro-economic and industry-specific events. Seduced by price spikes in California and the eastern U.S., power developers rushed to increase the number of new plants. But too many plants were built and many came online at the worst moment -- just as the U.S. economy entered its post-9/11 recession. Enron's collapse in late 2001 made a bad situation worse, given Enron's central role as an intermediary in thinly traded forward power markets, where most one-month to one-year power deals were conducted. Power companies that sold to Enron before it imploded rushed to replace lost revenue, only to find that erstwhile buyers -- chastened by Enron's collapse -- now restricted how much business they would do with one entity unless they received costly credit guarantees.

This narrative suggests the power industry's post-California funk was a one-time event, and on the surface, the industry does appear healthier. Rising fuel and power prices since mid-2004 have translated into higher profits for utilities and owners of low-cost nuclear and coal plants. But beneath the surface, more fundamental problems remain. Independent power generators are still struggling. Last December, one of the biggest, Calpine, entered bankruptcy. For utilities, too, the horizon is increasingly cloudy. Upset by rising power prices -- on top of higher gasoline and natural gas rates -- utility regulators in many states are starting to consider capping prices that utilities charge retail consumers.

So what does continued turmoil mean for the independent power suppliers and utilities? Can U.S. power companies provide investors with consistent growth and returns? What steps should power companies take to manage new plant construction more prudently? What changes to the industry's structure or management could improve the chances of sustainable growth?

Research by two Wharton professors, [Matthew White](#) and [Witold Henisz](#), provides useful guidance. White, professor of business and public policy, researches regional energy trading markets, identifying and quantifying the impact of market rules. Henisz, a management professor, studies how multinational power companies manage political and social risk outside their home markets.

Collectively, their research suggests that the power industry's woes are as much questions of political risk

as they are about nuts-and-bolts operational issues. At both industry-wide and firm-specific levels, meaningful change will require a more intensive focus on managing political threats to long-term stability. The persistence of discriminatory regional market structures in parts of the country inhibits price competition among power suppliers, limiting investment in new assets and increasing the chance of California-like supply crises. Within firms, managers should build stronger pro-industry coalitions to engage local "influentials" and citizens. Grassroots knowledge will help companies better anticipate the costs of building new plants -- taking into account local labor practices and landowner interests -- and better implement strategies that, seemingly less profitable, are actually more likely to be achieved.

Three Components of Success

White focuses on efforts in the U.S. power industry to move from private, bilateral power trading to multi-party, exchange-based commodity trading. In private, bilateral trading, one power company with power to sell from assets it owns calls another power company and concludes a sale agreement. However, in most bilateral deals, volume, price and product quality terms are not revealed to other market participants, making it difficult to develop more competitive offerings. In multi-party, exchange-based trading, a single entity "runs" the regional market, publishing, for everyone to see, the volume and price of all transactions involving a representative sample of power products. This facilitates price competition, and provides pricing benchmarks to develop customized, higher-value power products.

Most wholesale power in the Pacific Northwest, Rocky Mountain states and the Southeast is traded through private, bilateral agreements. However, in many more populated areas -- the Northeast, the Mid-Atlantic, the Upper Midwest and Texas -- regulators and regional organizations have established multilateral, exchange-like regional power markets.

Looking at the different regional models, White identifies three features integral to a market structure's success. First, regional markets must provide price transparency, meaning all market participants have equal access to a universally-agreed set of representative price metrics. "It's clear there's no way we can be confident, given the huge investment costs and long lead times of building power plants, that market forces are going to give the right information about what kinds of plants to build, how much to build, and where to build unless everybody sees the value of power delivered as determined in the marketplace," says White.

Second, power industry regulators must stabilize rules governing how regional power markets work. "A lot of problems have arisen," White observes, "not because rules could have been slightly better or slightly worse, but because policymakers kept changing the rules. This creates all kinds of uncertainty. It was one of the main reasons there was under-investment in California in the early 1990s."

One senior manager at an independent power company that has suffered through the industry's ups and downs says power companies should bear some responsibility for building too many plants too quickly, but seconds White's regulatory critique: "The constant regulatory roller coaster and the lack of rational market designs were a big contributor to making those decisions look even worse."

The need for regulatory certainty has been noted in recent media reports, including a February 28, 2006, *Wall Street Journal* story about state utility regulators' efforts to limit retail power price increases. The article chronicled the charge by consumer advocates that some power plant owners -- who paid low prices for their assets when power prices were depressed -- now will reap unfairly large profits as wholesale and retail power prices rise. Yet the article goes on to note that "proposed [caps on retail power rates] could put utilities in a cost squeeze. Similar proposals backfired five years ago during California's electricity crisis, bankrupting the state's biggest utility."

The third ingredient in a successful market design, White argues, is that the entities managing regional power markets should be "trading institutions that are free from political influence." This means that if power prices spike unexpectedly, not as the result of a market participant's fraud, the entity managing the

power market should not retroactively adjust the high price result downwards. To do so would send a message to suppliers that legitimate prices are subject to change, and purchasers may choose not to fix poor system planning decisions that cause price spikes, preferring instead to erase their mistakes by flexing political muscles. Given the tendency of power prices to spike disproportionately due to short-term demand and supply imbalances, White says, all market participants must believe prices are not subject to "explicit manipulation to achieve a particular goal in pricing."

Of the regional power markets now in operation, White believes the Mid-Atlantic region's market, called PJM, comes closest to meeting the three-part test: "Everyone knows the algorithm for how prices are determined [in PJM]; everybody understands that algorithm is stable over time, and everybody has confidence that it's not manipulated by any party."

White's insights are supported by a growing body of quantitative research. Working with others at Yale University, White has studied differences in power prices in the Midwest and the Mid-Atlantic before and after a large Midwestern utility, American Electric Power (AEP), joined the PJM power pool. White found that power prices narrowed by approximately 8% in the months after AEP joined the PJM market. Output at AEP's lower-cost, Midwestern plants increased. This suggests that the addition of other Midwestern utilities to PJM could improve prices region-wide, increasing the efficiency of the market and system operations. "The PJM market is very efficient at finding optimal transactions. That's what a centralized market does."

He admits that the growth of regional power markets is neither inevitable nor a panacea. Federal regulators have been trying since 2000 to achieve nationwide acceptance of regional power markets, only to be stymied in the South and West, in part due to the 2001 California energy crisis. Chastened by the cycle of price spikes, market chaos and allegations of fraud, West coast lawmakers -- notably those in the U.S. Senate -- have argued that regional market design efforts should proceed slowly to avoid another California-like crisis, and should proceed locally rather than federally, taking into account each region's unique mix of nuclear, coal, hydro, gas and renewable resources.

White believes adoption of efficient regional markets will depend on actions by market-leading utilities like AEP. The current mix of conflicting regional market structures "just doesn't make economic sense," White says. "From an economic market standpoint, it's hard to imagine that this is the right way for the industry to be organized. On the positive side, I think big players in the industry are now recognizing that. As studies like ours [are published], and other industry players start paying attention, they are going to come to the realization" that not participating in transparent, stable centralized exchanges means "they are leaving money on the table."

Industry practitioners agree. David Fiorelli, president of business development at leading independent power producer Tenaska, based in Omaha, Neb., echoes White's observations about regulatory uncertainty and the need for more open market structures. "We have an awkward patchwork of market designs now." Tenaska, he says, thinks "about deregulated markets differently than ... the traditional regulated markets." But even in areas where regional power markets have been established, "There is a fair amount of work yet to be done by the independent power industry to manage certain risks and processes." In addition, addressing how plant developers are compensated for building new capacity "will be the front line of that battle going forward for developers."

However, Fiorelli cautions, market structure issues will not by themselves assure a stable future for the power industry. The post-2000 building boom, then bust, reflects the failure of power companies and their lenders to question a strategy that everyone else was pursuing. "A fairly substantial number of well-capitalized market participants" all embarked on plans to gain market share. These companies established "very effective incentive structures" to reward growth and the incentives had their desired goal but a distinctly undesirable side-effect: "Their strategy was ... to get market share. It was well executed but the result of it was an over-build."

Politics on the Local Level

Witold Henisz's research addresses this very issue: How large firms make decisions and learn from mistakes. As bad as the last five years have been for many power companies, Henisz says, "some of these companies that made these massive mistakes did survive and did learn." The key to surviving is to "be as profitable as you can during the good times, and learn enough and be robust enough to survive the down times."

To this end, Henisz studies how multinational power companies develop projects outside their home markets. Success begins, Henisz says, when project sponsors recognize the importance of managing local political and social realities. For example, which political parties are in power? Who owns land or natural resources that might be impacted by new power system investment? What are local labor practices? How educated is the local populace, and how advanced are existing pricing schemes for public utilities? "Part of it is moving away from an emphasis on legal contracts and financial hedging strategies to deal with political risk. If you are in the power business, you are in the business of dealing with political and social expectations."

Henisz cites the example of a company buying an underperforming power plant, either in a privatization or from a locally established entity: "You're not just talking about finding a plant that's running at 40% of capacity and changing the work practices so you can run it at 85% of capacity. There's going to be a political backlash to associated pricing and employment decisions and you need to have an active strategy for dealing with it."

Investors should catalog political interests and identify ways to build broad coalitions that provide long-term support for new investment. Henisz counsels companies to be relentless in learning about an area's political and social landscape: "You must understand the political incentives of the actors: Who are they trying to protect? What areas of the country? What interest groups are benefiting from the current system? If you come in and try to move to market-based pricing, you can be sure [those interest groups] are going to come after you. And then, what's your strategy for dealing with that? Who are your local allies?"

Henisz believes the process of identifying and managing political risk is integral to the entire project development lifecycle. "You have to factor the costs and benefits of that strategy into your financial model so you won't have unrealistic expectations about the returns." A substantial portion of executives' time will be spent managing political risks, Henisz says. The challenge is especially difficult in the power industry because opponents of change "have this innate advantage that they are concentrated and the winners are diffuse." Power companies, whether influencing each other or the citizenry of a distant area, must engage in retail politicking. "You have to change the way people think about power ... not just running ad campaigns but really getting out door-to-door, building up an understanding through grassroots public relations about why privatizing the power company, changing the rules of the game, is going to help people."

U.S. power companies may be taking recommendations like White's and Henisz's to heart, devoting more time to advocating regional markets and winning over state utility and environmental regulators. Still, treating political risk strategies as an integral part of bottom-line performance will take its toll on all but the most efficient managements. As one power executive in charge of a multi-state portfolio says, "It's hard to be really low-cost at the same time that you are playing in multiple regions with multiple sets of rules and multiple regulators. In essence, you have to put the same amount of energy into every state and every region to get the same kind of results. That 'spreading-thin' problem is a real challenge."

To this, and the possibility of further booms and busts in the power industry, Henisz offers a sobering thought: "Some firms are going to survive and be profitable in the next wave, and other firms are going to vanish and be liquidated. You might have a period with smaller cycles; then everybody gets really confident that they have figured it all out; then something else blows up in

their face."

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