STREAM DATA CENTERS

EXECUTIVE **BRIEF**

Capacity Energy Markets

All too often, data center users enter new markets and are greeted with unpleasant surprises on their energy spending. For those who are considering acquiring data center space in deregulated markets, including Chicago, the Mid-Atlantic and Texas, this article is intended to drive transparency and uncover cost drivers that will impact your energy spend.

Amid energy market volatility, pricing knowledge is power

In deregulated U.S. energy markets, there are two prevailing market structures — energy-only markets that charge customers solely on their energy use, and capacity markets that incorporate fees to pay energy producers for their ability to provide reserve capacity to meet peak demand. And with the recent shutdown of a significant amount of coal-fired capacity in Texas, along with the latest wave of blizzard conditions in the Northeast, it's important for commercial customers to understand potential pricing pitfalls as volatility pushes rates upward in both markets.

Big changes in the energy-only Texas market

The energy-only Texas market is governed by the Electric Reliability Council of Texas, or ERCOT. The council not only schedules power to the state's massive electric grid to match supply with demand; it also serves as a neutral broker in connecting the wholesale and retail markets. In late 2017, ERCOT approved Luminant's request to retire roughly 4,200 megawatts of capacity from coal-fired units at its Sandow, Monticello and Big Brown plants. And while ERCOT found that the production from these plants was no longer needed for long-term reliability, Texas energy markets experienced a level of price volatility not seen in several years.

The bad news is that pricing will go up, at least over the short term, as customer demand stretches the capacity of the remaining facilities to supply Texas' growing energy needs. But the good news is that with an energy-only market, producers have an economic incentive to bring new production online to take advantage of the demand opportunity in an expanding retail market with higher wholesale pricing. This theory will be tested in short order as the Texas market adjusts to the capacity reduction. In the meantime, customers can expect higher pricing quotes than they have seen since 2014.

In response to pricing spikes in the ERCOT market, supporters of capacity market structures are urging Texas to reconsider that approach. Many generators would embrace the arrangement, because they get paid no matter what the energy price may be at the moment. Yet making the switch to a capacity model is no guarantee of immunity against real-time volatility.

Capacity markets gain momentum in the U.S.

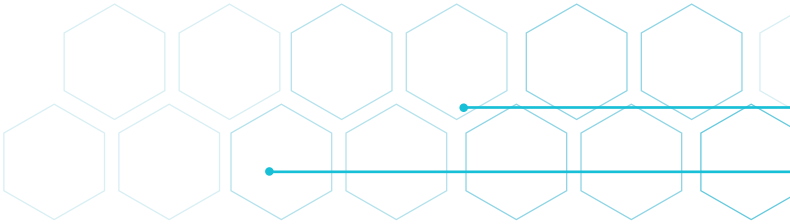
Capacity energy markets have been around for decades, but it wasn't until the North American cold wave of 2014 — marked by prolonged record-low temperatures and relentless snowfall — that these markets began to reveal fundamental pricing and performance issues. Stoked by a sudden stratospheric warming, the circling winds of the Arctic polar vortex changed direction, migrating southward and bringing the chilling temperatures with them.

From late winter into early spring, a broad swath of the northeastern United States was plunged into prolonged periods of extreme cold that led to record high demand for electricity. This heavy demand, paired with limited supply, made brownouts a constant threat and sent energy prices soaring. This extreme example of volatility helped to fuel reliability-focused structural changes to capacity markets, shifting the focus from "free money" for energy producers to an accountability-based system designed to keep capacity fees in check while spurring new development. As capacity markets matured, regional transmission organizations like PJM Interconnection — which coordinates wholesale electricity for a number of the hardest-hit states in the Northeast — enforced incentives for energy producers to proactively ensure that capacity will be available at peak periods. Customers in these markets pay for the energy they use, plus a capacity and transmission cost based on their historic usage as a data center, hospitality company, manufacturing facility or other commercial profile.

While the addition of performance metrics has helped to ensure that power suppliers are taking action to address aging fleets, today's capacity markets can still be susceptible to price spikes. In theory, capacity markets moderate price volatility in part by removing uncertainty surrounding generators' ability to meet peak demand. Yet as recently as January 2018, a punishing "bomb cyclone" dumped up to 15 inches of snow from Maine down to North Carolina — and the volatility was back, driven by near-record heating demand that pushed natural gas prices to levels not seen in years, driving real-time electricity pricing into the $0.70 per kWh range. Ultimately, capacity markets, like energy-only markets, have their pros and cons — and customers need to be aware of them to give their business a good line of sight to energy costs. A reputable consultant, retailer or landlord should be able to tell prospective customers what's on the horizon in terms of market factors that could affect pricing over time, as well as what part of their energy expense the customer can or cannot control by managing their own energy use.

Factors at work in the energy pricing market

Across all U.S. energy markets, the "poles and wires" of the electrical grid remain a very regulated part of the industry. Yet the breakdown of additional fees and charges on an energy contract can be difficult to navigate. For the most part, both energy-only and capacity markets offer a great deal of transparency into their operations. Unfortunately, retailers and landlords don't always offer the same level of clarity in the way they quote electricity pricing. While pricing quotes are more straightforward in energy-only markets, both models have distinct pricing idiosyncrasies that decision-makers should be aware of.



Energy Markets: Be aware of volatility

Real-time pricing volatility can be more pronounced in energy-only markets like Texas compared with capacity markets. A megawatt-hour can trade for $20–$30 in real time, but prices reached the $9,000/MWh price cap for a brief period in late January before returning to more normal ranges averaging in the high $30s/MWh later that day. A prolonged period at $9,000 megawatt-hour pricing could significantly impact customer budgets and drive long-term fixed pricing upward, as retailers must cover their risk.

Capacity Markets: Do the math on pricing

In some capacity markets, like PJM, the customer's capacity obligation is determined in part by calculating the five peak hours of use over summer months. For new facilities, this can result in an artificially low capacity price that will likely rise over time as their actual demand can be calculated by the grid operator. Customers that can manage their demand in peak summer hours can reap long-term benefits of managing their capacity obligations.

Planning for energy procurement in specific pricing markets

For many businesses, energy cost is the single biggest spend — and decision-makers are wise to look for a low price per energy unit. But by understanding the special considerations of capacity energy markets, as well as what pricing levers they can or cannot control, they'll be better equipped to make a sound decision. Volatile energy markets and changing capacity charges are a fact of life in those markets. Business leaders simply need to know what they're dealing with.

BRIAN FRAZIER

Director, Energy Services | Stream Data Centers

As director of the Stream Data Centers energy services practice, Brian guides corporate customers through commodity electricity procurement, demand response, discussions with regulated utilities and more. Before joining Stream in 2015, he served in leadership roles with Green Mountain Energy, Florida Power & Light and Portland General Electric. He has also consulted on national projects supporting the U.S. Department of Energy and the Environmental Protection Agency.

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