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R STREET SHORTS NO. 62
September 2018

AN ELECTRIC SUMMER UPDATE IN TEXAS

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INTRODUCTION

The Texas electricity market has been as hot as the Lone Star State this summer. After the market signaled the retirement of excess power supply early this year,[1] the tightened supply-demand equilibrium continues to spur creative maneuvering among suppliers and consumers to manage their costs, financial risks, and preferences for things like power quality and green power. This provides fascinating lessons for Texas policymakers and, just as importantly, for the rest of the country.

BACKGROUND

Texas is the only state that relies exclusively on spot prices, which reflect real-time grid conditions, to drive supplier and consumer behavior at the wholesale level. These spot markets pay suppliers for providing *delivered* service. Other restructured or "deregulated" states supplement this spot market with a forward-capacity market, which requires consumers to pay for the amount and type of power *capability* a central planner deems appropriate through a competitive auction.

States clinging to the monopoly utility model also employ capacity planning, but rely on inferior procurement mechanisms biased toward inflating capital expenditures, consistent with utilities' incentives. In either form, capacity planning has consistently resulted in procuring excess capacity and in forms that often do not comport with actual real-time grid needs. In 2014, Texas decided against adopting a capacity market, which likely saved the state billions of dollars.[2] Thus, the Texas model provides a great comparison point to all other states.

SUMMER DEVELOPMENTS

This summer has begun to reveal the dynamic elements of the freest electricity system in the country, where consumers have a variety of options to meet their electricity preferences. Recent price fluctuations are putting the full menu on the table. In recent years, excess supply contributed to low spot prices, which drove some uneconomic power plants off the system. As the supply surplus disappeared this year, expectations of higher average spot prices and volatility rose, providing an excellent case study on how market participants respond to new conditions.

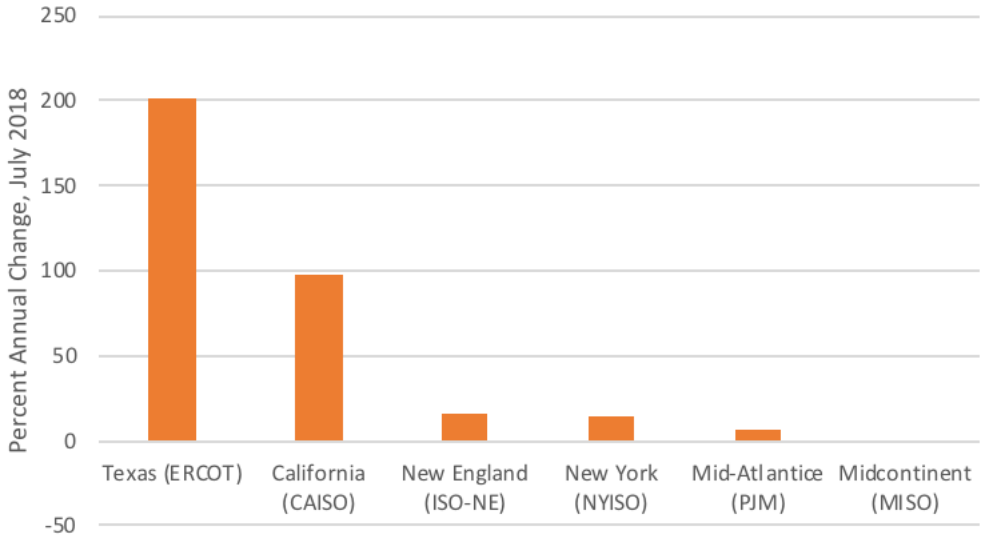
As forward prices climbed this summer, power suppliers strategically adjusted their behavior in hopes of capturing higher revenues. Some plants postponed their retirements, while others accelerated their construction timelines to come online this summer instead of in the fall.[3] Higher forward prices also coaxed some "mothballed"[4] plants to re-enter the market.[5]

While supply-side responses are highly visible, this summer should begin to reveal the extent that demand is responsive to spot prices. Price responsive demand is commonplace in most retail markets, but has been severely limited in the electric industry. Large consumers, who often buy directly off the wholesale market, have exhibited considerable price responsiveness in recent years. But it has been notoriously elusive with smaller consumers, who buy power from retailers (companies that buy on the wholesale market and then offer services to consumers).

In preparation for the summer, retailers markedly adjusted their exposure to higher wholesale price forwards. Some hedged through bilateral contracts with wholesale suppliers; others renegotiated terms with their customers to manage their consumption in exchange for bill reductions. Given that half of peak demand in Texas comes from residential consumers,[6] it would be quite telling to see how demand management programs like programmable thermostats responded to large fluctuations in real-time prices.

As the summer arrived, heat waves prompted record demand, resulting in real-time prices that exceeded $1,000

TABLE ONE: ON-PEAK POWER PRICE CHANGE



SOURCE: Derived from Duquiatan. https://platform.mi.spglobal.com/web/client?auth=inherit#news/article?id=45667563&KeyProductLinkType=4.

per megawatt-hour (MWh)[7] across Texas (for comparison, average summer prices are around $30/MWh). From July 2017 to July 2018, on-peak power prices tripled in Texas [8] and, in some locations, prices reached $4,000/MWh.[9] These prices fall in line with the increased likelihood of a supply shortfall and the degree consumers value the avoidance of a power outage (commonly in the single thousands to low tens of thousands of dollars per MWh). In contrast, planning requirements in other markets imply consumers are willing to pay an absurd $200,000/MWh or more.[10]

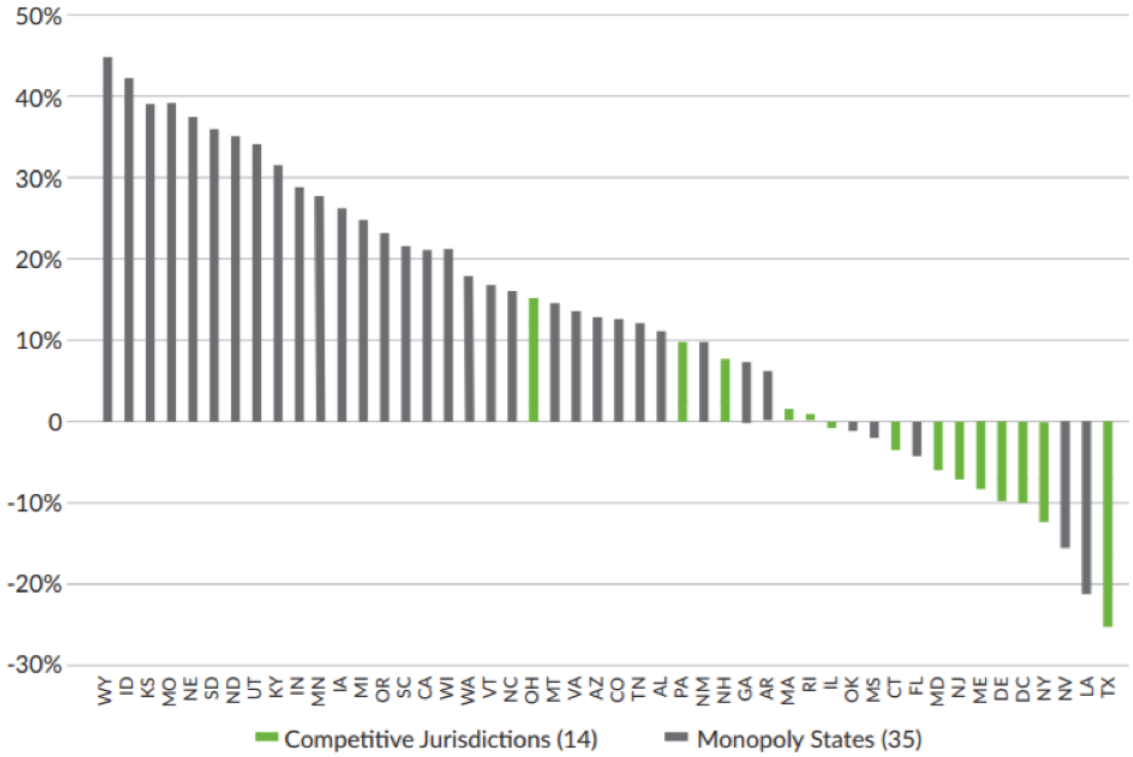
These price signals put the invisible hand of the market to work by fine-tuning power procurement and consumption practices. The granular prices in Texas reflect real-time conditions that fluctuate in a matter of minutes across thousands of points across the system. This summer, price spikes often lasted 15 minutes. This provides very concentrated signals to suppliers to improve the responsiveness of the resources. For retailers and consumers, they incentivize brief reductions or shifts in consumption, or even self-supply with the option to sell distributed power back to the central grid without a special administrative program (thereby avoiding the distributed-generation rate battles waged in other states).

Growing expectations of brief price spikes have prompted entrepreneurs to develop rapid-response energy management services and on-site generation, like micro turbines that start in 45 seconds. For example, popular grocer H-E-B has contracted with Enchanted Rock Energy to provide on-site backup generation at 50 locations in Houston, with plans to go statewide.[11] Generally, grocers often work with retailers to employ demand-response programs, like rotating overhead-light illumination or briefly turning off refrigeration services. This reflects how low the consumption value is relative to costs for short durations for specific end-uses of electricity, and their voluntary nature demonstrates that grocers find the power bill savings worthwhile.

At first glance, price spikes seem bad for consumers. However, as long as prices reflect underlying fundamentals, consumers are better off in the long-term. In fact, a lack of price movement, especially during high demand periods, suggests that supply infrastructure has been overbuilt, which consumers pay for through other means. Thus, artificially stable prices result in electricity systems that raise average costs for consumers. By comparison, the Texas model squeezes the most efficiency out of supply and demand resources, which puts downward pressure on average costs. This has resulted in the Texas competitive market producing "average retail rates that consistently trend lower than those seen in other parts of the country in all sectors."[12]

Critics of the Texas model often believe a planner must establish procurement targets rather than trusting market participants to respond to price expectations. However, this summer has dispelled numerous misplaced criticisms amid record demand. Economists and large consumers have praised the market as working as intended,[13] with pro-market groups calling this a demonstration that the "free market on its own can produce enough power for everyone."[14]

TABLE 2: STATE RANKING—ALL SECTOR PRICE PERCENTAGE CHANGE 2008-2016



SOURCE: Philip R. O'Connor, "Restructuring Recharged," Retail Energy Supply Association, April 2017. https://www.resausa.org/sites/default/files/RESA_Restructuring_Recharged_White%20Paper_0.pdf.

TAKEAWAYS

Several takeaways have emerged following the summer stress test in Texas:

- ***Suppliers and consumers demonstrate sensitivity to forward price expectations.*** Incentives matter. Suppliers, retailers and consumers appear to have adjusted behavior in an efficient manner not previously seen in this industry. Further analysis should validate the extent of this anecdotal evidence.

- ***Price volatility is not inherently "bad" – a common political misconception – but rather prices should reflect underlying fundamentals that tend to be volatile in wholesale power markets.*** In fact, the artificial price stability imposed in federal markets by mandatory forward-procurement mechanisms adversely affects active demand and unconventional supply participation, while at the same time causing excess procurement from conventional supply. This drives up average costs and reduces consumer options. Free markets, on the other hand, permit various retail products and allow consumers to choose a plan based on their willingness to pay for rate stability. Energy expert Joshua Rhodes notes that price volatility can be a sign of a healthy electricity system and a good trade-off "if the cost of lower average prices is occasionally higher peak prices."[15]

- ***Texas has the most consumer-friendly market in the country, as gauged by retail prices and consumer options.*** Large, sophisticated consumers consider Texas the best electric system in the country.[16] Everywhere else in the nation, consumers overpay for excess amounts of reserves, whereas Texas has an economically efficient level. Granted, sole reliance on price signals to ensure electric reliability takes some political stomach, but it "forces the system to run lean and efficient."[17] The Public Utility Commission of Texas agreed with this sentiment and added that the "system is functioning as designed and desired."[18]

- ***Texas has the best market structure to signal resource investment and integration, especially for variable and use-limited resources, suggesting that it offers the best model for affordable decarbonization in the country.*** This past year saw 25 percent of the Texas coal fleet retire.[19] Looking ahead, investments and system integration of storage and solar will be far more efficient in Texas, thanks to voluntary private investment that tracks granular price signals. This will make for a compelling contrast to California, which relies on mandates, subsidies and

an inefficient state procurement process that is driving costs up and driving industry out.[20]

- ***The Texas wholesale and retail markets are imperfect and robust analyses may inform market-enhancing reforms.*** Evaluating the health of wholesale price formation may reveal better practices for procuring real-time services, such as including the cost of transmission-line losses in spot prices and co-optimizing energy and balancing services.[21] To ensure risk management incentives are working appropriately, regulators may wish to further examine the hedging practices of retailers.

- ***Texas is moving in the opposite direction of federal markets.*** Federal regulators are contemplating prescriptive market reforms in the name of grid resilience, "correcting" for state subsidy plans and a lack of trust in price signals to achieve grid reliability. Consumers, environmental groups and free market groups oppose these reforms.[22] This emerging coalition will increasingly point to the Texas model as the path forward for federal markets in the 2020s.[23]

Texas is also poised to lead the overdue national conversation on reframing electric reliability and resilience policy consistent with economic principles.[24] For example, the policy goal should be to have the optimal level of supply reserves rather than an arbitrary "adequate" level determined by central planners that forces consumers to overpay.[25] Texas is the only jurisdiction that currently does this.[26] In particular, resilience should focus on cost-effectively mitigating threats on the regulated transmission and distribution systems (which cause most customer outages),[27] and should maintain market incentives to affordably manage risk to power generation. It also means embracing new technologies that empower consumers to manage their own service quality, which will require regulators to loosen their grip. For example, retailers can monetize the value of backup generation for retail consumers.

As with many retail products, consumers are willing to pay different amounts for different levels of quality. Electricity is no different. In fact, the variance in consumers' willingness to pay to avoid power outages often varies by *one to two orders of magnitude.*[28] Such consumer heterogeneity begs for a decentralized decision-making model rather than top-down planning requirements.

Centralized markets and grid reliability procedures should better reflect individual consumer preferences—something even Texas can do much better. All grid operators treat most demand as homogeneous and implement rolling blackouts when bulk demand exceeds supply. Yet, uses of uninterrupted power range from essential to trivial, and efficient practices would allocate scarce supply to higher value uses. Thus, indiscriminate rolling blackouts and service restoration after a mass outage are economically inefficient procedures, not to mention a political headache that paradoxically gives ammunition to anti-consumer interventions.

It would be economical to see rolling blackouts as a thing of the past and service restoration pricing as a thing of the future. Texas should pioneer this agenda, which would open up more opportunities for entrepreneurs to experiment.

CONCLUSION

Overall, perhaps the best advice for Texas policymakers comes from Eric Gimon: "Instead of revisiting fixes like capacity markets, Texas policymakers should let markets show their stuff while focusing on continual improvement to energy-market efficiency that maintains acceptable risk [...] By doubling down on its faith in markets, Texas can continue to demonstrate a market-driven transition to a cleaner, cheaper and more reliable grid."[29]

ABOUT THE AUTHOR

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