

McCullough Research

Transparency in ERCOT: A No-cost Strategy to Reduce Electricity Prices in Texas

A Report to AARP

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Transparency in ERCOT:
A No-cost Strategy to Reduce Electricity Prices in Texas

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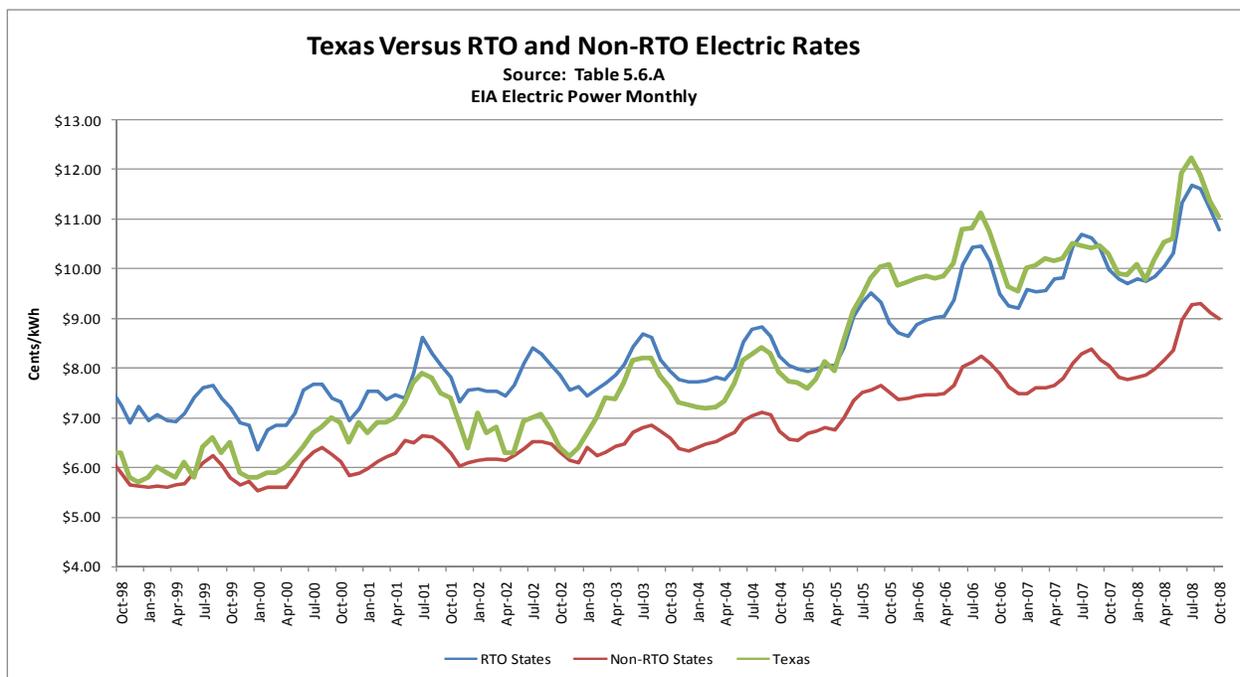
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Executive Summary

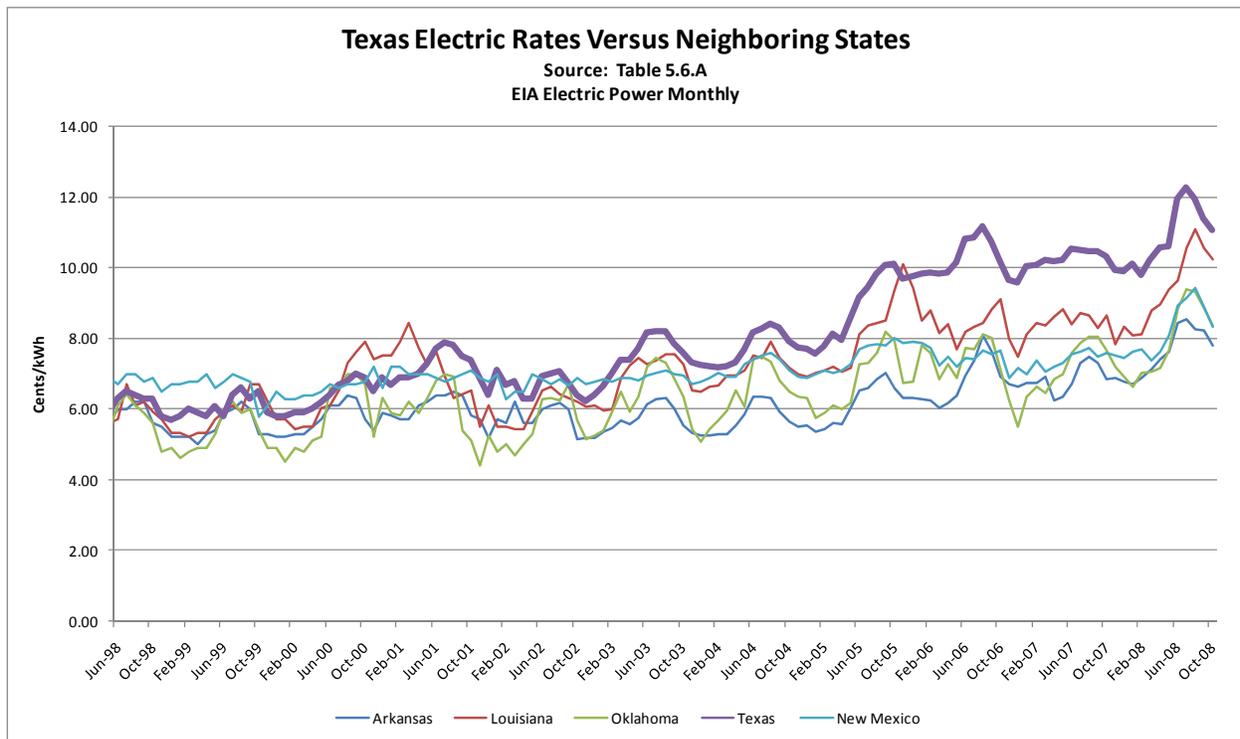
Texas took a leap of faith in 1999 when state legislators, believing that the deregulation of the electricity market would ultimately result in cheaper bills for consumers, passed Senate Bill 7. Instead, the law which took effect in 2002 left few restrictions on what power generators could charge and what consumers would pay. The state regulator, the Public Utility Commission, or PUC, lost the authority to set electricity prices in about 75% of the state, except for those areas not covered by municipally owned utilities, rural cooperatives, or the service territory of investor-owned utilities that are connected to the national power grid. Seven years later, lower rates, the fundamental promise of deregulation, have never been realized. Instead residential electricity customers in deregulated areas of Texas went from paying below national average rates to rates significantly above the national average.¹



¹ The chart compares Texas versus RTO and non-RTO states. The terms Independent System Operator (ISO) and Regional Transmission Organization (RTO) are often used interchangeably. In Texas, the organization is the Electric Reliability Council of Texas (ERCOT). The states with ISO/RTOs are: California, Connecticut, Delaware, District of Columbia, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, South Dakota, Texas, Vermont, Virginia, West Virginia, and Wisconsin. The non-RTO states are: Alabama, Alaska, Arizona, Arkansas, Colorado, Florida, Georgia, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Mississippi, Montana, Nevada, New Mexico, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Utah, Washington, and Wyoming.

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In fact, average deregulated electricity rate increases in deregulated areas of Texas have far outpaced still-regulated investor-owned utilities in the other 25 percent of Texas and in neighboring states that are equally dependent on natural gas. Residential electricity prices in Texas have risen 64% since 1999.² The cumulative effect of deregulated rates increases is staggering for Texas households and the state's economy.



The major reason for today's high retail electricity rates is the wholesale electricity market consisting of power generators that sell power directly to retail electric providers and a "real time" spot market called the Balancing Energy Services Market (BES) operated by the Electric Reliability Council of

² As reported by the Cities Aggregation Power Project, www.capptx.com. The Energy Information Administration, providing "Official Energy Statistics from the U.S. Government" collects data on every state. Texas data are at http://tonto.eia.doe.gov/state_energy_profiles.cfm?sid=TX. The EIA also publishes "Electric Power Monthly". Table 5.6.A shows the retail price of electricity by state (note that due to collection issues, the data lags by a few months, i.e. the February issue contains November 2008 data); http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html. This calculation is based on all Texas retail providers and significantly underestimates rate increases in deregulated areas, due to the fact that its calculated state average for Texas includes rates from utilities under traditional regulation as well as public power customers which are lower.

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Texas (ERCOT)³. Although only a small percentage of wholesale transactions take place at the BES, the high prices obtained through it affect all wholesale electricity transactions in ERCOT.

Another problem contributing to the high price of electricity is that ERCOT's markets lack transparency. Markets for all commodities, including electricity, function best when transparency – the open and full exchange of information – is adhered to by market managers, regulators, suppliers, and purchasers. Bringing openness to ERCOT's market operations does not require an expensive, new superstructure of computers and additional personnel, or the implementation of ERCOT's next stage of design, the nodal market.⁴ In fact, transparency is a no-cost option that will help to reduce prices and protect consumers against market manipulation.

Texas' flawed wholesale electric market severely impacts the prices residential consumers pay under deregulation. Prior to deregulation residential consumers could be confident that the rates they paid were directly related to the cost of generating power and delivering it to their homes. Today, deregulation has broken the long-standing bond between what it actually costs to generate electricity and what consumers ultimately pay. Under deregulation, a poorly performing BES market raises prices to all retail consumers of electricity (regardless of the retail electric provider they choose), because all retail electric providers obtain power in the inflated wholesale market.

Two years ago, state regulators took a preliminary step in reducing the lag in disclosing wholesale market information to 60 days. The logic of this step reflects common sense. Delaying market information protects non-competitive behavior from discovery. When market prices are unusually high, it is useful for both decision-makers and competitors to know why they are high and to be able

³ “The Electric Reliability Council of Texas (ERCOT) manages the flow of electric power to 21 million Texas customers – representing 85 percent of the state's electric load and 75 percent of the Texas land area. As the independent system operator for the region, ERCOT schedules power on an electric grid that connects 38,000 miles of transmission lines and more than 550 generation units. ERCOT also manages financial settlement for the competitive wholesale bulk-power market and administers customer switching for 6 million Texans in competitive choice areas.” Source: <http://www.ercot.com/about>. ERCOT was “formed by consortium of Texas utilities to meet federal requirements” in 1970; its history is at http://www.ercot.com/news/press_releases/2001/nr20010927.

⁴ “Hardware and software costs are expected to stabilize at approximately \$15.2 million per year in 2012 based on the current design, up from current nodal operational cost of approximately \$9.5 million.... ERCOT estimates it will need to employ the equivalent of approximately 50 new FTEs to operate the nodal market....each employee is estimated to cost approximately \$110,000 per year, including salary and benefits.” Source: http://www.puc.state.tx.us/electric/reports/31600/PUCT_CBA_Report_Final.pdf, page 46.

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to take steps to repair the situation. However, state regulators did not go far enough. The Australian market, for example, requires information disclosure within two days.

This report finds that additional transparency in the Texas wholesale electricity market can make substantial improvements that would lower prices to consumers and reduce the possibility for market manipulation. We run a statistical test of the hypothesis that removing the barriers that restrict access by Texas consumers and decision-makers to market information can dramatically cut the cost of electricity.

This report recommends:

- Maximize transparency in the ERCOT market by cutting the lag for reporting real time bids in the wholesale market from 60 days to 2 days. *This report finds that this additional transparency will save consumers in Texas \$956 million annually, or about \$52.00 on an average annual household electric bill.*⁵ Additionally, it is an important protection against market manipulation. In the words of one scholarly article: “The expectation is that the threat of public identification will deter unwarranted, high offers by generators averse to bad publicity (or in some cases, averse to *further* bad publicity) and by public power authorities who must be responsive to elected public officials.”⁶ While fundamental reforms are needed to fully address rising electricity prices in deregulated areas of Texas, HB 4059 (Smith) and SB 2165 (Ellis) would make the wholesale electricity market more transparent.
- Maximize transparency throughout the decision-making process at ERCOT. Increasing public access to the data and increased public involvement in the decision-making process (webcast, recorded, transcribed, and available for public inspection) will add credibility to the organization.

⁵ Of the \$956 million annual savings, approximately \$353 million in savings go to residential electricity customers.

⁶ Protecting the Market from “Hockey Stick” Pricing: How the Public Utility Commission of Texas is Dealing with Potential Price Gouging by David Hurlbut, Keith Rogas, and Shmuel Oren, *The Electricity Journal*, April 2004, page 32.

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Background

In 1999 the Texas state legislature passed Senate Bill 7 (SB 7).⁷ The legislation separated fully integrated electric utilities into three distinct entities (generators; transmission and distribution companies; retailers) and allowed generators and eventually retailers to charge what they wanted for this essential service.⁸ SB 7 provided a marked departure from a regulated system whereby the state government reviewed and approved electric utility company rates to ensure they were “just and reasonable” and directly reflected the cost of providing service. Supporters of the new legislation believed that consumers would see their monthly electricity bills drop. In fact, just the opposite has happened; the overall residential electric rate for the state has increased 64% since 1999.⁹ The 64% increase significantly understates the situation for consumers in deregulated areas, because this statewide average includes still-regulated utilities, cooperatives, and municipally-owned utilities that have experienced far lower increases.

The Texas deregulatory structure is different from most other states. First, ERCOT and its protocols (rules) are not subject to federal regulatory oversight.¹⁰ Second, because only portions of Texas were deregulated, it is easy to compare the price of electricity, for example, between deregulated and still-regulated areas (e.g., Austin and San Antonio), or between natural gas-dependent Louisiana, which is still regulated and Texas. Third, although the ERCOT wholesale electricity market is for energy only, and not energy and capacity as in New England and PJM,¹¹ it

⁷ A bill enacted in 1995 “allowed competition in the Texas electric wholesale market. The law gave exempt wholesale generators and independent power marketers [sic] to sell electricity into the grid for regulated industries to purchase. It also stipulated that utilities had to provide open access to transmission networks for these new wholesale players. This move paved the way for retail competition.” Report to the 81st Texas Legislature, The Texas House Select Committee on Electric Generation Capacity and Environmental Effects, January 12, 2009, page 24.

⁸ While SB 7 deregulated much of the Texas electric system, it exempted investor-owned utilities located in Texas but outside of the ERCOT system, cooperatives, and municipally-owned utilities. Former monopoly utilities, now called Affiliated Retail Electric Providers (AREPs), were mandated to offer a “price to beat” rate from 2002 through 2007. AREPs had the ability to adjust their price to beat rates based on fluctuations in the price of natural gas. Over the five-year period AREPs used the price to beat mechanism to increase rates several times, but never to decrease the rates.

⁹ http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html

¹⁰ Associated with the movement to deregulate the nation’s electricity industry is Federal Energy Regulatory Commission Order 2000 that encouraged the formation of RTOs.

¹¹ “PJM Interconnection is a regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina,

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constitutes the measuring stick for wholesale prices throughout the deregulated portion of Texas.¹² In Texas, ERCOT administers the real time market for electricity as well as markets for other ancillary services.

Commodity markets generally are not competitive unless they meet a number of conditions, including the existence of many small suppliers, transparency, and freedom of entry. However, ERCOT's wholesale electricity market is characterized by a limited number of bidders; difficult entry; and a secret and evolving computer algorithm that is used to map the bids, operating conditions, and transmission constraints to prices.

ERCOT is planning to increase the complexity of its current structure by "going nodal."¹³ Proponents assert that the new nodal market will reduce transmission congestion costs. Yet a study of the proposed nodal market found that ERCOT's consultants made poor assumptions based on inadequate data, thus throwing the promise of lower electricity costs into doubt.¹⁴

The transfer of responsibility for transparency from traditional regulation to ERCOT, a quasi-state bureaucracy, makes it virtually impossible for frustrated consumers to find out why their monthly bills are so high. Under traditional utility organization, information on costs, operations, and prices were disclosed in the regulatory process. Under the ISO/RTO model, there is little disclosure and ERCOT itself is exempted from open meeting and open records laws.

Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia." <http://www.pjm.com/about-pjm/who-we-are.aspx>.

¹² Capacity is "[t]he amount of electric power delivered or required for which a generator, turbine, transformer, transmission circuit, station, or system is rated by the manufacturer." <http://www.eia.doe.gov/cneaf/electricity/page/glossary.html#ab>. An energy-only market is one in which only energy is bought and sold; in a capacity and energy market, capacity and energy are bought and sold.

¹³ The nodal market's locational marginal pricing, or LMP, represents the market price paid to the generators at a specific location for each time period. While market bids are an important component, it is usually impossible to calculate LMPs simply from bids without knowing a variety of additional factors.

¹⁴ Review of the ERCOT December 18, 2008 Nodal Cost Benefit Study by McCullough Research, January 7, 2009, <http://www.mresearch.com/pdfs/359.pdf>

Three Reasons Why Deregulated Areas of Texas Are Experiencing Some of the Highest Electric Rates in the Continental United States

1. ERCOT's BES is significantly raising prices for the entire wholesale market

The heart of the Texas electricity market is a real time market called the Balancing Energy Services Market (BES). It operates every 15 minutes and provides the electricity needed to balance demand and supply throughout the portion of Texas that ERCOT serves. ERCOT's independent market monitor describes the market's function:

“The balancing energy market allows participants to make real-time purchases and sales of energy in addition to their forward schedules. While on average only a small portion of the electricity produced in ERCOT is cleared through the balancing energy market, its role is critical in the overall wholesale market.”¹⁵

Generators in Texas can sell their electricity via a one-to-one contract with a retail electric provider (bilateral contract), or through the BES. High prices in the BES give generators the ability to successfully demand high prices on direct sales to retail electric providers (and the higher prices are then passed along to consumers). ERCOT's independent market monitor explains:

“In addition, the balancing energy prices also provide a vital signal of the value of power for market participants entering into forward contracts. Although most power is purchased through forward contracts of varying duration, the spot prices emerging from the balancing energy market should directly affect forward contract prices.”¹⁶

¹⁵ 2007 State of the Market Report for the ERCOT Wholesale Electricity Markets, Potomac Economics Ltd, August 2008.

¹⁶ Ibid. page v. Page viii notes “we continue to observe in 2007 a clear relationship between the net balancing energy deployments and the balancing energy prices. This is not expected in a well-functioning market. This relationship is partly due to the hourly scheduling patterns of most of the market participants. The energy schedules change by large amounts at the top of each hour while load increases and decreases smoothly over time. This creates extraordinary demands on the balancing energy market and erratic balancing energy prices, particularly in the morning when loads are increasing rapidly and in the evening when loads are decreasing rapidly.” Forward contracts are used for electricity (or any other commodity) that the seller delivers to the buyer at a time in the future mutually agreed upon by both parties.

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The change from traditional regulation to ERCOT's structure confers an enormous windfall on the region's electricity generators. Owners of electricity that is relatively cheap to generate (coal; nuclear) are paid as if their electricity is produced by a high-priced fuel like natural gas. A report commissioned by the *Dallas Morning News* in June 2007 found that TXU's "generation business is a huge profit maker. The ability to generate cheap and sell high into the wholesale markets makes TXU one of the most profitable utilities in the US. With wholesale prices set against the price of natural gas, lignite coal and nuclear generation costs are no more than 25% of the wholesale price TXU gets for the electricity produced. Along with Entergy, Exelon, Constellation and a few similarly-positioned utilities, TXU has one of the most lucrative business formulas in America."¹⁷

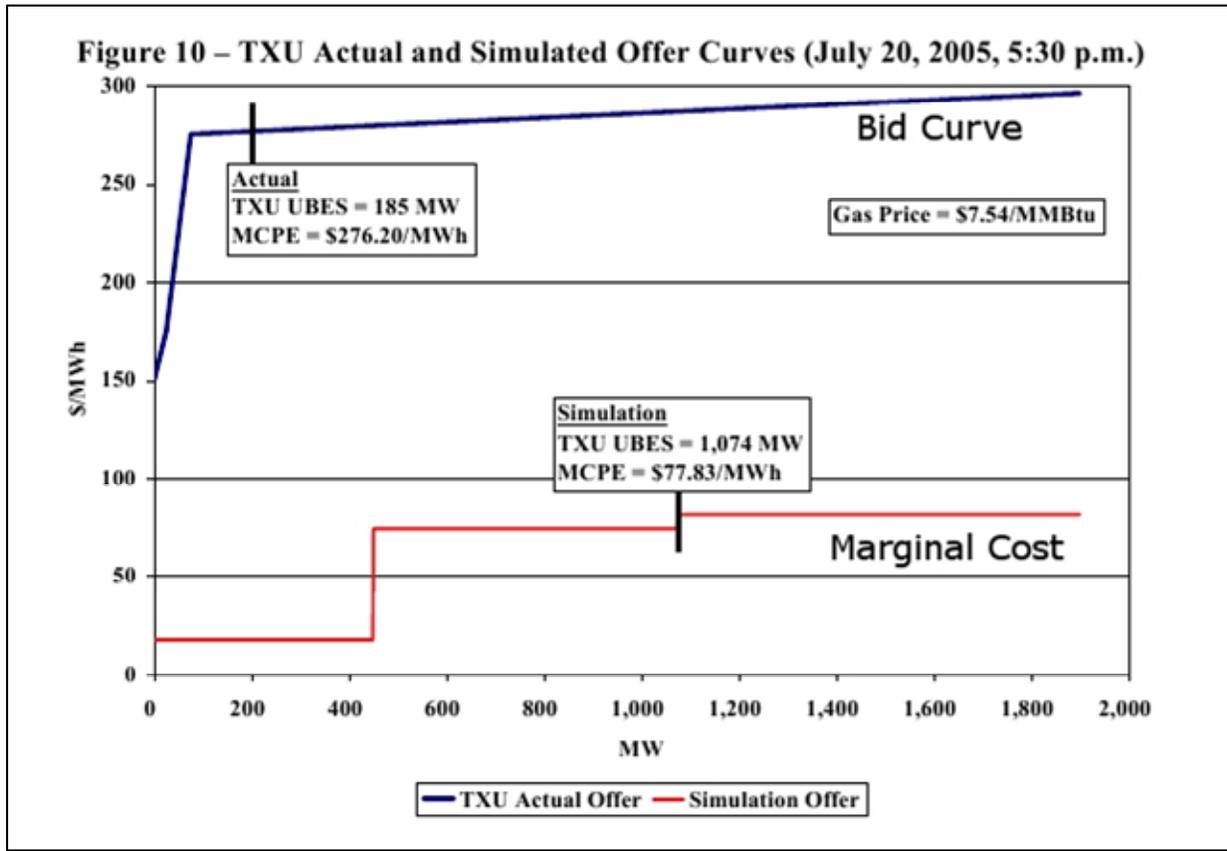
2. ERCOT's wholesale electricity market is not competitive

Nobel Prize winner Paul Samuelson identified five conditions for perfect competition (many buyers, many sellers, transparency, freedom of entry, freedom of exit). ERCOT's wholesale electricity market does not meet these conditions. The absence of competition results in a variety of market imperfections. One significant imperfection is the existence of pivotal suppliers (suppliers whose generation cannot be replaced by competing supplies). The PUC recently settled its complaint against TXU for pivotal bidding. The following chart from an analysis by the PUC demonstrates the scale of the problem.¹⁸ TXU generally bids into the ERCOT market at \$300/MWh (blue line) even though TXU's costs are vastly lower (red line).

¹⁷ See <http://www.dallasnews.com/investigativereports/txu> for the newspaper's investigative reporting.

¹⁸ http://www.puc.state.tx.us/about/reports/2005_TXU_Investigation_IMM_Cover.pdf

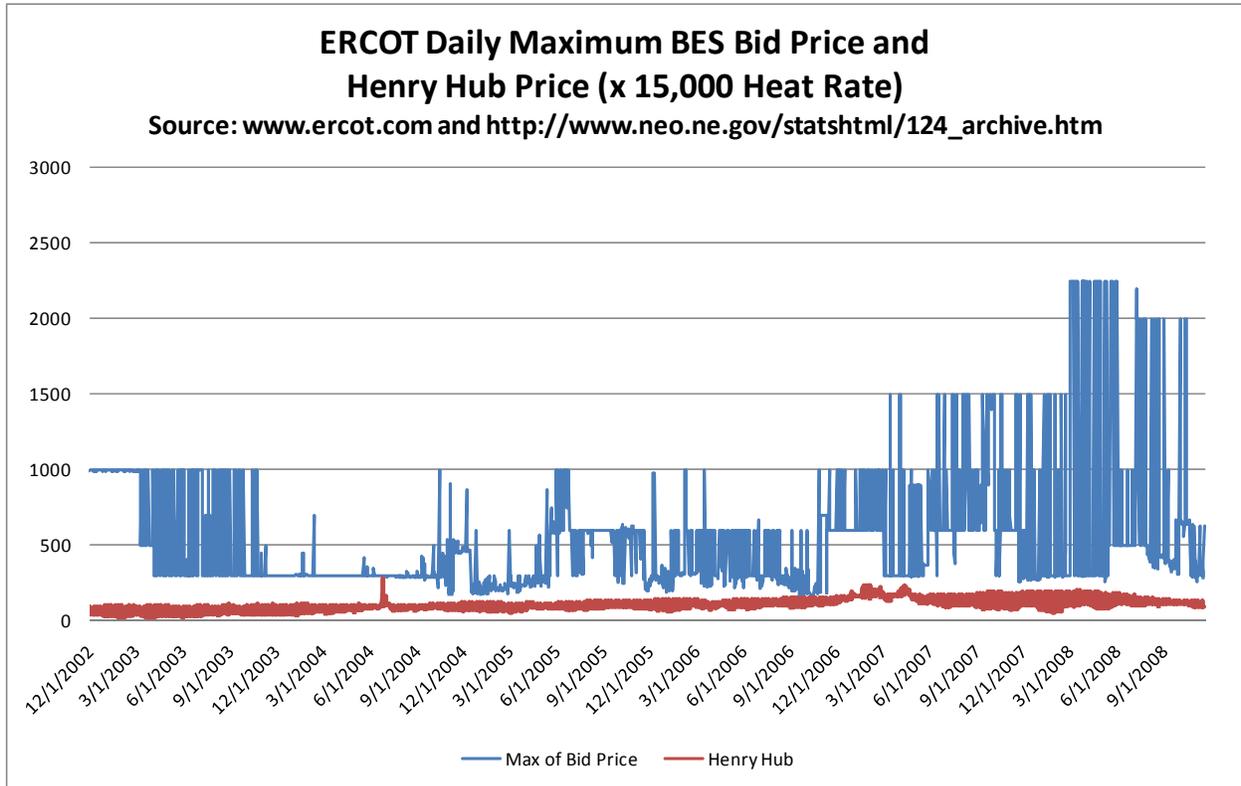
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Source: Project No. 32125; Investigation by the Independent Market Monitor of the Wholesale Market Activities of TXU From June 1 to September 30, 2005.

Although ERCOT’s market surveillance reports do not address actual bidding behavior in the market, a review indicates that the bids provided by the market participants often differ dramatically from what we would expect in normal markets. Economic theory predicts that in competitive markets the supply curve should reflect the marginal costs of the bidding units. In Texas, very high bids are commonplace.

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Since no plant in Texas has marginal costs that even approach \$1,000/MWh, the continuous submission of non-economic bids is a symptom of market dysfunction. Marginal costs above \$100/MWh are unusual given current fuel costs, let alone when fuel prices are ten times as high. (Stated another way, if a new grocery store opens with prices of \$1,000 per head of lettuce, even the most committed advocate of grocery stores would quickly deduce that something irregular was taking place.) The blue lines in the chart represent the irregular hockey stick bids made by market participants, and the much-lower red line represents the marginal cost of a very inefficient natural gas-fired power plant.

The lack of competition has created wholesale prices considerably above marginal cost. In 2006 and 2007 bulk power prices in Texas were always greater than would be expected based on normal efficiencies of power plants, even on an average monthly basis. In a competitive market, prices

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should reflect underlying economics, and heat rates of 7,000 for base load and 10,000 for peak load would be expected.¹⁹ In Texas, even low load months experience high prices.

3. ERCOT's wholesale electricity market is not transparent

As noted above, the ERCOT BES is more a complex computer program than a market. The computer algorithm calculates the published price by comparing the need for balancing energy against a supply curve. This computer program is not available to the public. It can produce prices that are clearly in error – as high as a thousand times any reasonable level. For example, ERCOT reported corrections to the April 2008 published price on April 12, 15, 18, 21, 22, and 24.²⁰

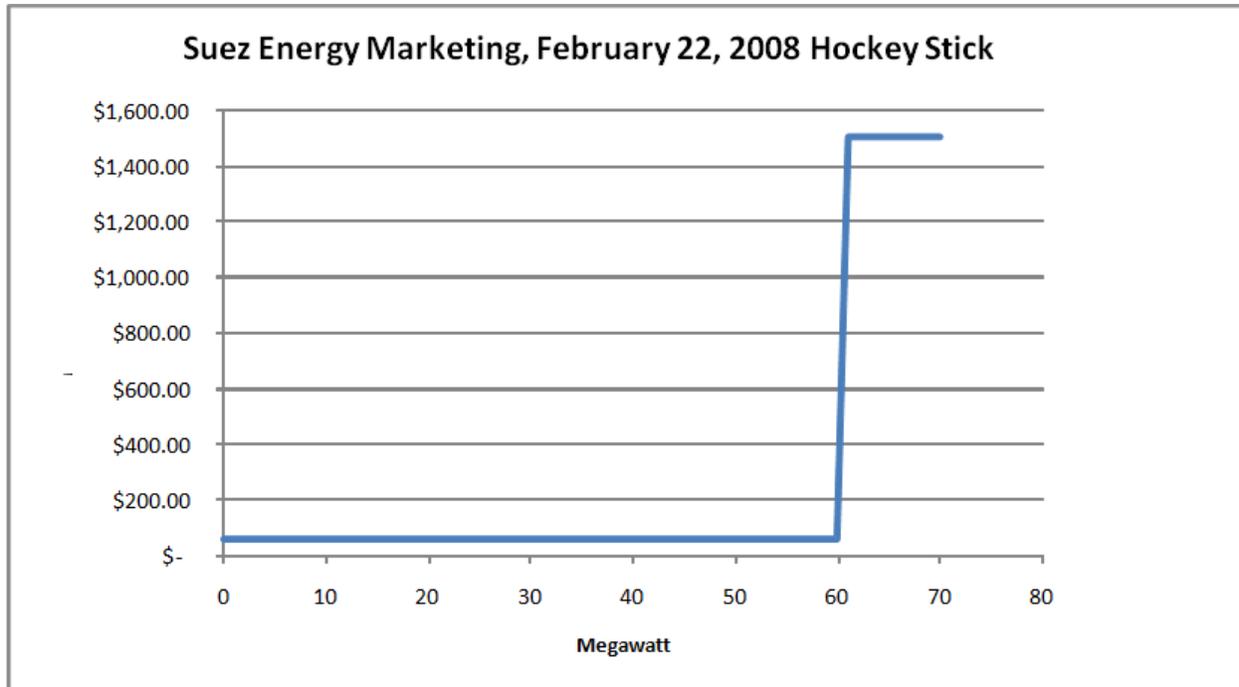
Lack of transparency also encourages irregular pricing, market manipulation, and gaming. One method of manipulating the wholesale electricity market is “hockey stick” bidding. We have selected a recent bid from ERCOT data to illustrate why the bids are named hockey sticks.²¹ On February 22, 2008, Suez Energy Marketing offered 60 MW at prices up to \$61.35/MWh (the “blade” of the hockey stick bid), and offered the remaining 10 MW at prices between \$1,499.99/MWh and \$1,500/MWh (the “stick”). These last 10 MW constitute a bid with no possible economic justification. If generated from a standard natural gas-fired plant, they would represent natural gas costs over ten times current market prices.

¹⁹ Heat rate is “A measurement used in the energy industry to calculate how efficiently a generator uses heat energy. It is expressed as the number of BTUs of heat required to produce a kilowatt-hour of energy. Operators of generating facilities can make reasonably accurate estimates of the amount of heat energy a given quantity of any type of fuel, so when this is compared to the actual energy produced by the generator, the resulting figure tells how efficiently the generator converts that fuel into electrical energy.” http://www.energyvortex.com/energydictionary/heat_rate.html

²⁰ http://www.ercot.com/content/mktinfo/services/bal/2008/2008-04_BES.xls

²¹ https://pi.ercot.com/contentproxy/publicDownload?doc_id=52154822. An explanation in the popular media describes a July 7, 2005 hockey stick bid entered in PJM: “A big power company started the bidding with a very low offer: 4,300 megawatts for zero dollars or other nominal amounts...It offered the next 2,700 megawatts at gradually higher prices until it reached \$100 per megawatt hour. But the last 1,000 megawatts were offered at \$200 to \$1,000, and it's those last high-cost blocks of power that often set the rate overall.” “In deregulation of electric markets, a consumer pinch,” Mark Clayton, *Christian Science Monitor*, April 25, 2006.

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The hockey stick strategy exploits short-term “crunches” in demand in markets that price a commodity according to the highest bid. For example, if an electricity generator submits a bid to the ERCOT BES for a small quantity of electricity at a very high price and ERCOT must purchase that electricity to meet demand, ERCOT pays that price to all bidders for that period. According to the PUC, “the presence of even one ‘hockey stick’ offer can drive market prices to extremely high levels.”²² Evidence from ERCOT and electricity markets elsewhere indicates that such bids are often cooperative in nature.²³ In other words, generators can work together to inflate the price paid for electricity.

Prices and Transparency

In the ideal competitive market, both bids and offers are public. For instance, when buying a car you engage in a very basic form of price discovery. You can check industry publications like the “Blue Book” for car prices and characteristics, and then visit the dealerships and compare the prices.

²² “Protecting the Market from Hockey Stick Pricing: How the Public Utility Commission of Texas is Dealing With Potential Price Gouging,” *The Electricity Journal*, March 2004, http://www.puc.state.tx.us/rules/rulemake/27917/CSM_EJ_0404.pdf

²³ TCE v. TXU, et al, Plaintiff’s Second Amended Complaint – February 3, 2004.

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This informal price discovery equips you to reject market manipulation; you would exclude a dealership that routinely quotes prices significantly above market. You also aid competition in the car market, because your final purchasing decision tells the other dealers whether their prices are too high. In other words, the operation of an open market (public bids and public offers) rewards responsive bids and punishes unusual market behavior.

The administered market in Texas, however, operates under different rules. Unlike the data equivalent to the automotive Blue Book, ERCOT's data is only released when out of date. In ERCOT competing bids are secret and the determination of the final price takes place in a virtual back room that is inaccessible to the public. Yet it is easy to observe that the market is not working well. Comparison of prices in ERCOT with neighboring states indicates that the prices are often unusually high. Historical data also shows that many of the bids are nonsensical, with prices ten, twenty or even fifty times marginal costs.

The timely release of market data would improve market functions in Texas. Elsewhere, Australia provides substantial evidence that a two-day delay is sufficient.²⁴ However, transparency's opponents often argue that open information will make conspiracies among market participants easier, but in reality conspirators do not have to wait for ERCOT to publish reports on its Web site in order to conspire.²⁵

Common economic logic contradicts the argument against greater transparency. Instead we would expect transparency to lower prices since every market participant, consumer, and producer will see non-economic behavior. To return to the car purchasing example, a consumer is advantaged by knowing that certain dealers attempt to trap the unsuspecting by quoting unreasonable prices. These dealers would prefer to have the posting of their bids delayed to hide their efforts to exploit consumers. Reputable car dealers and consumers would prefer fewer or no delays in posting.

²⁴ Order Adopting Amendment to §25.505 As Approved at the August 16, 2007, Open Meeting – Project No. 33490 – Public Utility Commission of Texas. Also reference Project No. 31972.

²⁵ Conspirators in Project Stanley used the telephone to coordinate their activities to manipulate prices at the Alberta, Canada ISO. Substantial details on how to arrange such schemes can be found at <http://www.ferc.gov/docs-filing/elibrary.asp> including transcripts of the telephone conversations and Enron's PowerPoint on the scheme.

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Texas is unique in that it has changed its policies within the last two years. This allows us to test the proposition that increasing transparency reduces the price of electricity. While there are many ways to test the proposition, testing for the efficiency of transparency must itself be transparent.²⁶

Analysis

The statistical analysis used in this report addresses the impact of system conditions and bidding rules on the maximum bids in every hour and the average bids in every hour. For our explanatory variables we used data concerning fuel costs and system loads to characterize system conditions. For bidding rules we used the timing of changes in bid caps, the so-called “shame cap”, and bid reporting delay. To develop dependent variables we used bid data from ERCOT’s Web site for July 2006 through October 2008. The bid data set is large – approximately 7.5 million individual offers at specific prices and quantities. From the bid data we developed two summary values that describe bids for a specific hour. The two metrics are the average bids in an hour, and the maximum bid in the hour. Statistical theory provides a tool that can estimate the impact of changes in bidding rules on average and maximum bids, allowing for the impact of system conditions. If we find that reducing the delay in posting bids has decreased the average and maximum bids, it is a persuasive argument that ERCOT’s balancing energy market reflects the economic logic we can observe elsewhere in the economy.

Findings

The statistical results strongly support the economic benefits of transparency for consumers.²⁷ The results indicate that maximum bids are highly responsive to transparency rules. The maximum bid increases by \$.69/MWh for every day that bids are delayed. This indicates that reducing the current

²⁶ The PUC’s decisions in Project 31972 were litigated extensively in the courts. Project 33490 implemented a settlement imposing a 60-day delay. It took effect on September 22, 2007. The first BES bidding reports under the new reporting rules date from early December 2007.

²⁷ A central concept in statistics is “significance”. It reflects a judgment of how likely the results could have happened by random chance. If one tosses a coin once and it comes up heads, a statistician will give little weight to the conclusion that it will always come up heads. If one tosses a coin many times and it always comes up heads, the statistician will be likely to conclude that the result is statistically significant. Using the 20,000 hourly observations of ERCOT data, the results are significant at 99.9%. Academic standards differ, but significance levels considerably lower (95% and 99%) are often accepted in the literature.

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delay from 60 days to 0 would lower maximum bids by \$42/MWh. Average bids show an identical relationship. Each day the posting delay is reduced lowers average bids by \$.054. Reducing the delay to 0 would reduce average bids by \$3.20/MWh.

It would have been useful to evaluate whether reductions below two months would have a larger impact than our simple linear test. While logic indicates that reducing data posting delays would be more significant at lower levels – changing from 2 days to 1 day is likely to be more significant than changing from 180 days to 179 days – there is not enough data at this time to validate our hypothesis.

Conclusion

The major reason for today's high retail electricity rates can be blamed on the flawed wholesale electricity market in which power generators sell directly to retail electric providers, or in a spot market called the Balancing Energy Services Market operated by the Electric Reliability Council of Texas (ERCOT). While only a small percentage of wholesale transactions take place at the BES, the prices obtained through it negatively affect the 5.5 million residential customers of electricity in the deregulated areas of Texas, regardless of the retail electric provider they choose.

One no-cost option is to require that wholesale electricity bids to the BES become public after only two days, a reporting rule proposed by HB 4059 (Smith) and SB 2165 (Ellis). Based on the statistical analysis presented in this report, this transparency would save Texans \$956 million annually, or about \$52.00 on an average annual household electric bill. This report also supports additional transparency throughout ERCOT's market operations. Hearings and subsequent meetings involving decision-making should always be public (webcast, recorded, transcribed, and available for public inspection), and ERCOT's documents must be subject to open records requests. These no-cost options protect consumers.

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Glossary²⁸

Ancillary Services: *“Those services, described in Section 6, necessary to support the transmission of energy from Resources to Loads while maintaining reliable operation of transmission provider's transmission systems in accordance with Good Utility Practice”*

Balancing Energy: *“represents the change in zonal energy output or demand determined by ERCOT to be needed to ensure secure operation of ERCOT Transmission Grid, and supplied by the ERCOT through deployment of bid Resources to meet Load variations not covered by Regulation Service”*

Balancing Energy Ex-Post (BEEP): *balancing energy after the fact*

Balancing Energy Services Market (BES): *operates every 15 minutes and provides the energy needed to balance demand and supply throughout the part of Texas served by ERCOT*

Bid stack: *“Bids received for Ancillary Services organized from lowest price to highest price bid for the same service and time interval”*

Customer: *“An Entity that purchases electricity for its own consumption”*

Customer choice: *“The freedom of a retail Customer to purchase electric services, either individually or on an aggregated basis with other retail Customers, from the provider or providers of the Customer's choice and to choose among various fuel types, energy efficiency programs, and renewable power suppliers”*

Day ahead: *“The twenty-four hour period prior to the beginning of the Operating Day”*

Electric Reliability Council of Texas (ERCOT): *“A Texas nonprofit corporation that has been certified by the PUCT as the Independent Organization, as defined in §39.151 of PURA, for the ERCOT Region”*

ERCOT region: *“The geographic area under the jurisdiction of the PUCT that is served by TDSPs that are not synchronously interconnected with electric utilities outside the state of Texas”*

Load: *“The amount of electric power delivered at any specified point or points on a system”*

Public Utility Commission of Texas (PUC): *the state regulator for all electricity matters*

Real Time: *“The current instant in time”*

Reliability Must Run (RMR): *“A Generation Resource unit operated under the terms of an annual Agreement with ERCOT that would not otherwise be operated except that they are necessary to provide voltage support, stability or management of localized transmission constraints under first contingency criteria where Market Solutions do not exist”*

Retail Electric Provider (REP): *“A person that sells electric energy to retail Customers in this state. As provided in PURA §31.002(17), a Retail Electric Provider may not own or operate generation assets. As provided in PURA §39.353(b), a Retail Electric Provider is not an Aggregator”*

Transparency: *“the condition in which nothing is hidden. This is an essential condition for a free market in securities. Prices, the volume of trading, and factual information must be available to all”²⁹*

²⁸ With the exception of the definition of transparency, the words in quotations are taken from

<http://www.ercot.com/glossary>. Another comprehensive glossary is at <http://www.eia.doe.gov/glossary/index.html>

²⁹ <http://dictionary.bnet.com/definition/transparency.html>