

THE STATE OF THE TEXAS ENERGY CRUNCH

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Finding the ways that work

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INTRODUCTION

The energy crunch: achieving resource adequacy and reliability in Texas

What exactly is an energy crunch? Simply put, it describes a situation where demand for energy exceeds available supply. The need for energy service continues to grow in Texas, spurred on by scorching temperatures and a record drought. These environmental extremes coupled with strong economic headwinds make it harder for conventional energy supplies to meet our needs.

The ongoing drought puts Texas' power plants at risk, threatening a return of the rolling blackouts caused by extreme winter conditions from 2011. State Climatologist and Governor Rick Perry appointee, John Nielsen-Gammon states: “Statistically we are more likely to see a third year of drought”. In recent testimony, Nielsen-Gammon reaffirmed this year is likely to be the second worst episode of drought in Texas’ history.

At the same time, the Electric Reliability Council of Texas (ERCOT) feels the energy crunch is in large part due to “low natural gas prices, an influx of low marginal cost wind power, increased wholesale market efficiencies, low wholesale power prices, tight credit markets”.[1] With limited ability to invest new capital given current market conditions, and over 11,000 megawatts (MW) of power dependent on water sources that are at historically low levels, Texas needs to tap into resources that can be deployed rapidly, require less capital and conserve vital water supplies.

We cannot solve this problem with the same thinking that got us here; technology has changed our lives and the energy industry over the past few years alone, creating new opportunities for innovation. Now the state needs to be smarter about the way energy is used, and it starts with using technology to better manage our electric grid. This includes taking advantage of market-based solutions such as demand response (DR), energy efficiency programs and the continued growth of renewable energy into a smart grid.

The energy crunch is not a fleeting issue that will go away in the near future. It’s crucial that we take action now to preserve our electric grid, the engine of the Texas economy, over the long-term as we face a shrinking water supply, a growing population, and rising summer temperatures.

The solutions are out there in the form of demand side resources like demand response (DR) initiatives, energy efficiency programs and solar and wind power, all of which consume almost no water and can be built far more quickly than gas and coal. This report provides an overview of these issues and concludes with legislative recommendations addressing near-term challenges for keeping the power on in Texas.

MARKET DESIGN

The Electric Reliability Council of Texas (ERCOT)

The non-profit corporation, ERCOT, is responsible for ensuring the flow of electricity across 40,000 miles of transmission lines to approximately 22 million residents.[2] ERCOT is the independent system operator (ISO) for the state and the decision-making entity that operates under the purview of the Public Utility Commission of Texas (PUC).[3] The ERCOT region encompasses approximately 75 percent of the state, ensuring the ongoing operation of the wholesale electricity market, in addition to transmission planning, sufficient power supply, and transmission congestion management.[4]

An overview of ERCOT's energy-only electricity market

The ERCOT electricity market is energy-only, meaning that both operations and investment are guided solely by energy price signals. The deregulated wholesale market, run by ERCOT, was created in 1995 and has continued to evolve since that time, adopting new technologies and new market opportunities, including the development of a nodal market in late 2010, which increased the system-wide offer cap.[5] In comparison to other U.S. markets, ERCOT is unique in its energy-only market design, as other markets maintain a minimum reserve margin through regulation, defined resource adequacy standards, or capacity payments. Within the energy-only model, reserve margins are the aggregation of private investment decisions based on wholesale prices.[6] The reserve margin set by ERCOT is currently 13.75 percent, a target that is unenforceable through regulation or market structure; it is not mandated. Spot prices in energy-only markets are typically low ($30-$40/MWh) but can spike as high as $4,500/MWH during periods of scarcity; the PUC has taken steps to increase this cap to allow prices to reach as much as $9,000 /MWh. The available generation capacity in the market can be illustrated with a "hockey stick" shaped supply curve (see Figure 1). The energy-only market uses price signals to show resource shortages under the assumption that firms will enter the market when prices are high.

As ERCOT has made clear, the threats to system reliability are of our own making. Market failures caused a lack of proper signals to encourage the building of new power capacity and 2011's record breaking drought, made more extreme by climate change,[7] threatened to shut down more than 11,000 MW[8] of power generation capacity. When it comes to ERCOT and reliability, the issues are complicated, but the solutions are not. It will take real focus and effort to prevent Texas from experiencing the same rolling blackouts experienced during the winter of 2011.

Reserve margin
Percentage by which available capacity is expected to exceed forecasted peak demand across the region.

The Texas electric market is not being manipulated, it was built that way (and that is not a good thing)

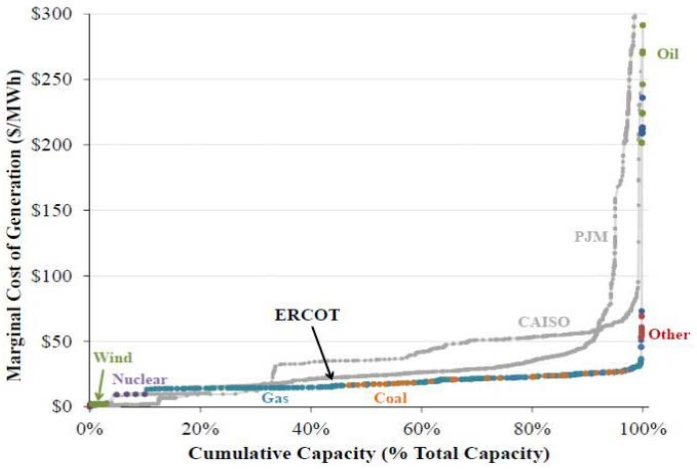
The problem of market abuse surfaced in the summer of 2012 when there was speculation that the violent price fluctuations of June 25 and 26 were the result of market manipulation.[9] This assertion was found to be false by the Independent Market Monitor for ERCOT, contrary to prior reports.[10] Most have greeted this as welcomed news, but the finding could spell rocky years ahead with wild swings in electric prices from day-to-day, which make it difficult for investors, generators and, most importantly, customers to plan ahead.

Wild mood swings

If the market is not being manipulated, it is at least feeling a little bipolar: one hot summer day with high demand, prices are up slightly but everything was in working order. The following day, however, a 2 percent uptick in demand

combined with an unexpected loss of 1.6 percent of power plant capacity sent prices soaring. The peak price on June 25 hit $438 per megawatt hour (MWh),[11] but on June 26 prices maxed out at $3,000/MWh, meanwhile average prices skyrocketed to 640 percent above the average for June 25.

Figure 1: ERCOT Supply Stack vs. Other Markets



Source: The Brattle Group: ERCOT Investment Incentives and Resource Adequacy. June 1, 2012

The cause of these swings is pretty straightforward. This issue was outlined in the June 1, 2012 Brattle Group report entitled *ERCOT Investment Incentives and Resource Adequacy*. This report was commissioned by ERCOT to determine how to best address the resource adequacy issue in Texas. The report states that the ERCOT supply curve does not efficiently reflect current or upcoming scarcity conditions in the market. The supply curve is dominated by low price resources like wind, efficient natural gas power plants, along with nuclear power and some cheaper coal, all of which come in at or under about $30/MWh. But as Figure 1 indicates, when you start approaching the 100 percent peak demand level, there is a sharp "hockey stick" curve upwards in price. This means that when we are in that high demand territory, a single power plant going offline or an unexpected spike in demand can send electric prices from $30/MWh to $3,000/MWh without warning, as was the case in late June 2012. Other regions have a more gradual curve of price increases during scarcity conditions, providing a kind of "warning" to the market that the Brattle Report suggests as part of its suite of recommended market reforms. That gradual curve is important because it allows demand side resources to help stabilize prices and at the same time provide potential investors with the kind of predictable certainty that encourages investment in the Texas electricity market.

In a well-functioning market these price swings would not be so dramatic and unpredictable, pointing to fundamental problems with the electric market in Texas. In extreme situations prices and profits may warrant the support for new investments, but these extremes are so unpredictable that no power company can properly forecast, deterring new investments. As Brattle Group states in the June 1 report "reliance on scarcity prices is unlikely to achieve ERCOT's current reliability objectives." The solutions presented in that report were either to reduce our reliability standards or implement reforms that will lead to reliable electricity supply over the long term without the need for emergency regulatory intervention.

ERCOT report on the Texas energy crunch: PUC tweaks are a move in the right direction, but not enough to keep the lights on

ERCOT has many variables to consider and decisions to make to address the issues of resource adequacy and reliability. ERCOT commissioned the Brattle Group to study various policy options in a report entitled "ERCOT Investment Incentives and Resource Adequacy." The Brattle Group is no stranger to resource adequacy issues in Texas: in 2009 they reported on demand response opportunities in Texas and other states in a report commission by the Federal Energy Regulatory Commission (FERC).

Using this work and more recent analyses, the report identifies the potential role that demand response can play in meeting Texas' future energy needs. Demand response is any change a customer makes in normal electric usage patterns in response to market signals; Brattle recommends developing programs that pay customers a market-based price for their actions, rather than simply asking them to reduce energy during peak hours.

The PUC's recent decision to raise offer caps in the wholesale market to better reflect the true cost of peak energy usage is supported by the Brattle report. This action will help, and may even be needed, but "reliance on scarcity prices is unlikely to achieve ERCOT's current reliability objectives," largely due to extreme weather events which are expected to become more frequent as a result of global warming.[12]

Raising the offer caps is not just a purely abstract concept; it means real rate increases for Texans.[13] At the same time, Brattle found that Texas could meet 15 percent of our peak energy needs through demand response alone, but only if ERCOT gets serious about allowing residents and small businesses to participate in demand response programs that have historically been aimed at big industrial customers. Demand response programs mean more money in ratepayers pockets, all while helping to stabilize the grid.

Improvements in small programs with a limited scope like the "ERS"[14] are certainly helpful, but as Brattle points out repeatedly, those improvements will not be enough to keep the lights on in the next few years. Hopefully the PUC will direct as much effort into programs like demand response, which puts money back in customer's pockets, as they have on increasing wholesale offer caps.

Demand response is a big part of the picture but it is not the whole painting: energy efficiency programs and an expansion of peaking renewable resources like solar and coastal wind power will also play a large role, particularly under the assumption of a hotter, drier future in Texas with less water to cool power plants.

PUC & ERCOT

The PUC recently voted to approve a staged increase of wholesale offer price caps in the ERCOT zone in order to bolster lackluster investment interest in new power plants.[15] This change fits well with established theories of competitive markets, but it does little to resolve current issues beyond sending a signal to investors that the PUC intends to further incentivize investment in new resources.

Additionally, commissioners "swatted aside" a petition[16] to revisit the state's goal for non-wind renewable energy without allowing any public discussion. Given the need for new drought-proof energy and the fact that solar costs have fallen 80 percent in the last three years,[17] this seems like an issue the PUC would be eager to take up. In fact, when PUC Chairman Donna Nelson was pressed during a state senate hearing in the spring of 2012 to identify state policies that had successfully added electric drought-proof resources, she focused on both the state's renewable portfolio standard (RPS) and energy efficiency goals.

In contrast to Nelson's promotion of energy efficiency goals, the PUC recently voted to lower the state's program's[18] price caps, making it more difficult for the programs to succeed. Furthermore, since the PUC denied the petition to create a rulemaking to expand the RPS, it

seems that the work on expanding electric generation is mainly focused on developing non-renewable, fossil fuel power plants. This is unfortunate given the fact that renewable energy is expected to be the world's second largest source of power by 2015, according to the recently released World Energy Outlook.[19]

Over the last century, Texas has dominated the international energy scene. However, as the global market evolves, action is needed to ensure Texas does not fall behind both domestically and on the world stage. Recent PUC decisions may help Texas keep pace with the use of innovative technologies and resources worldwide, but their final decisions on a new market structure will likely be the ultimate deciding factor. Texas and its citizens deserve a competitive and diverse energy infrastructure that allows for a wide variety of characteristics in energy resources such as energy storage, customer-side energy resources, renewable energy, and cleaner-burning modern natural gas-fired power plants.

ERCOT protocols

ERCOT is governed by a set of market rules called "protocols," which are constantly evolving through a market-participant driven stakeholder process to adapt to new market realities, new technologies, and new resources. It is important for the protocol development process to remain flexible and stakeholder driven, but new emerging technologies and demand resources are being brought into the market where process is dominated by incumbents. The current stakeholder process favors the status quo, making it difficult for technologies like demand response or distributed generation to gain a toehold in the marketplace, despite their competitive profile to reduce the energy crunch.

An excellent example of this pattern occurred over the last several months. In an effort to engage smaller customers in demand response programs, ERCOT staff worked with demand response providers to develop protocols for a new program. Although this program was supported by ERCOT staff and the companies most directly engaged with DR customers, incumbent market participants – notably generators and energy traders – pushed back, forcing the protocol revision to be tabled. While the program will move forward in a much smaller scale as a pilot, the future of residential and small commercial DR programs remains in limbo for the foreseeable future.

According to Brattle, "competitive demand response resources can reduce our peak demand needs by 15 percent, greatly improving system reliability and playing a critical role in addressing future resource adequacy concerns." Large commercial and industrial customers, who are already "quite engaged" in various demand response programs, only represent 14 percent of the total demand response potential in ERCOT. In contrast, during the summer of 2011 residential and small commercial customers accounted for 72 percent of peak load and "currently provide little demand response."

Solving the problem

The PUC decided to raise the offer cap from $3,000 to $4,500 per MWh without a cursory analysis of the impact on ratepayers. The PUC recently voted to raise the offer cap to $9,000 per MWh, triple the original level. Scarcity pricing by itself, especially when viewed in light of its dependence on weather extremes, is not sufficient to keep the lights on in Texas. In order to do so, regulators and stakeholders must collaborate, putting politics aside, and find a solution that works for all Texans.

If ratepayer impacts are taken into account, demand side resources will play a key role, not only in maintaining reliability, but also in the form of payments to ratepayers. In the PJM market, another grid operator, demand side resources are already included in the markets and customers are compensated for the same way as generators. Participants have received over $174 million[20] for over 10,000 MW of

customer supplied demand side resources, and more than $20 million of the payments went directly to residential customers. In Texas, as we consider implementing new policies to improve reliability and provide stable predictable market signals, it is critical to include demand response and tap into the growing residential and small business markets.

DEMAND SIDE RESOURCES

It is imperative that the Texas Legislature explore options that ensure a better balance between supply side and demand side investments for reliable grid management. Whether this is accomplished through improved public sector facility management or residential, commercial and industrial sector demand response programs, demand side resources offer the potential to offset additional generation capacity.

At the beginning of 2012, the Texas Senate Business and Commerce Committee took up the critical issue[21] of the impact of extreme drought conditions on electric generation capacity and state officials' plans to respond to those risks. A number of important issues and policy solutions were raised, from on-bill financing of energy efficiency[22] to renewable energy to sending the right "market signals" to incentivize the construction of new power plants. PUC Chair Donna Nelson singled out, in particular, the state's energy efficiency and renewable energy goals as the only successful policies in Texas to encourage new resources. These policies have helped reduce pollution, saved customers money and have the benefit of reducing our dependence on water for electricity production.

DEMAND RESPONSE

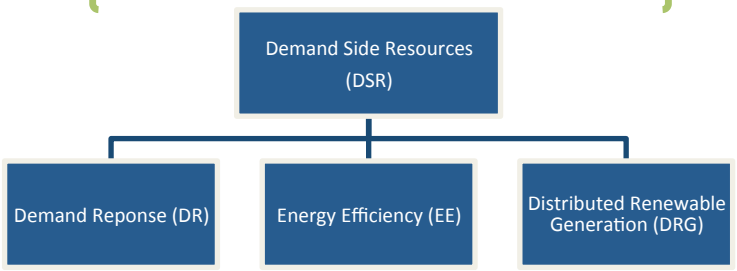
Demand response: an untapped resource in Texas' electricity market

As ERCOT CEO Trip Doggett and PUC Chair Nelson pointed out, demand response is a market competitive resource that uses no water, and as a result, may prove to be a valuable resource in view of the state's record drought. According to the Federal Energy Regulatory Commission (FERC), Texas could add as much as 19 GW in capacity by 2019 if the electric market is opened up to allow customers to compete alongside generators.

Unfortunately Texas lags behind other states and regions that have expanded[23] market-competitive demand response programs, despite having the highest potential by far according to FERC and the Brattle Group. If allowed to participate fully in Texas' energy markets, as is the case in other regions, demand response could benefit customers and increase grid reliability.

The benefits of demand response are considerable: not only is demand response a low cost, zero water resource that provides capacity through conservation, but it can also provide a direct financial benefit to consumers. Furthermore, since residential and small customers account for "more than 70 percent of peak load" it is paramount that these sectors are targeted.

Breakdown of demand side resources



The 13.75 percent reserve margin

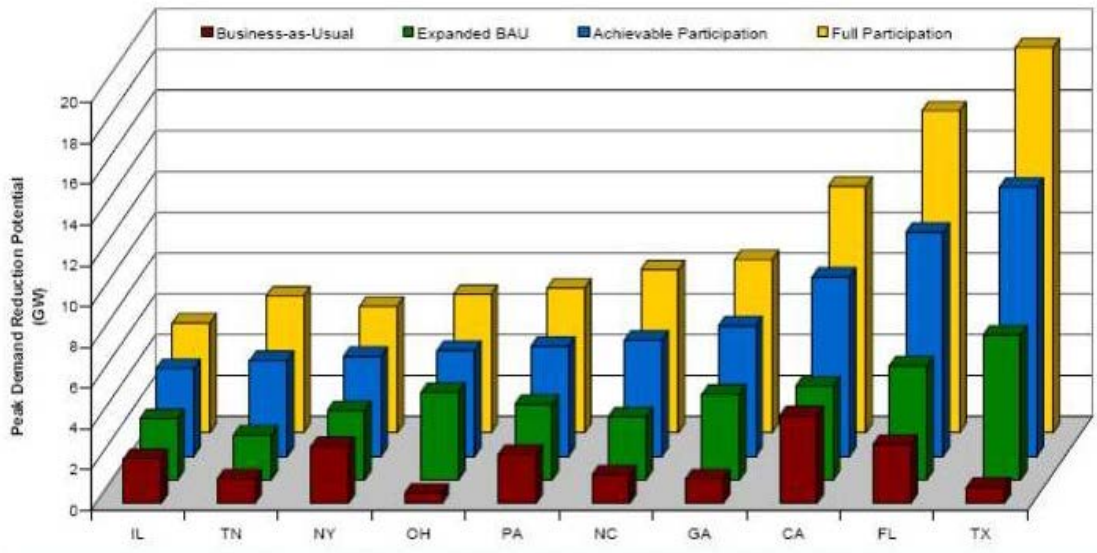
In May 2012, the 13.75 percent reserve margin became the center of discussion. Set in 2010 by the ERCOT, the 13.75 percent target planning reserve margin is to ensure enough power is available for contingencies during extreme events, such as severe weather and unplanned power plant outages. However, a newly revised Capacity, Demand and Reserves (CDR) report shows that in 2014 we may be only at 10.9 percent and by 2015 this could drop to 10.5 percent, numbers that are very far away from the original goal. A failure to meet this reserve margin means an increased risk of blackouts, not only for the ERCOT market as a whole, but for all businesses and households. In June 2012, the peak energy forecast for this summer was surpassed. ERCOT had predicted a 66,195 MW peak demand for the whole summer, but this was surpassed with 66,583 MW in June, well before the string of 100+ degree-days that followed.

The 15 percent potential from demand response

ERCOT's Brattle Group report indicates the potential for achievable participation in demand response is 15 percent of capacity in Texas. This means that "dynamic pricing and load control technologies are deployed on an opt-out basis, with roughly 75 percent of customers participating."[24]

If Texas met this 15 percent demand response goal, it would be possible to cover the reserve margin of 13.75 percent and then some. This could be accomplished without building new power plants or adding additional generation capacity infrastructure.

Figure 2: Top Ten States by Achievable Potential in 2019 (GW)



Source: FERC

The best news is that DR pays customers, unlike other proposed solutions such as raising price caps. Not only do demand side resources encourage reductions in energy consumption and in turn, energy bills, they also provided the added value of "negawatt" capacity back into the system. An example of this outcome can be seen in the PJM market, where DR is quantified with the same value as generation, and where $20 million in payments from demand response programs went to residential customers.

Alcoa Inc. worked with grid operator Midwest ISO (MISO) to develop a new approach to industrial demand response to maintain international competitiveness for their Warrick County, Indiana plant. Alcoa is looking to expand demand response to other parts of the

Last year, FERC Rule 745 required "wholesale energy market operators to pay demand response participants the market price for energy when those resources are able to balance supply and demand as an alternative to additional generation, and when demand response dispatch is cost-effective." This lays the foundation for how consumers will be compensated. FERC Chairman Jon Wellinghoff reaffirmed this outcome by stating: "[this] final rule is about bringing benefits to consumers. The approach to compensating demand response resources as we require here will help to provide more resource options for efficient and reliable system operation, encourage new entry and innovation in energy markets, and spur the deployment of new technologies. All of this contributes to just and reasonable rates."

In June of 2012, ERCOT moved in the right direction by approving a demand response pilot project that "will allow eligible participants a half hour to respond to ERCOT requests to reduce their electric use. The program is open to electric users — either as individual customers or as part of an aggregated group of consumers — who can reduce demand on the ERCOT grid by at least 100 kilowatts, which is the amount 20 homes use during peak demand." ERCOT is currently developing a pilot program for smaller commercial and residential customers as well, though the scope of these pilots is naturally limited.

Demand response means big money for big users

The looming crunch does not have to be so foreboding, assuming that the PUC and ERCOT move quickly and decisively to encourage demand response. The benefits of demand response for residential customers and small businesses are well documented, and that is probably where the greatest overall potential lies. But the quickest return – and the most financially savvy electric customers – may be within the commercial and industrial markets.

Ancillary services market

A market used to ensure grid reliability. Transactions in this market take place a day ahead and an hour ahead of when customers actually use the electricity.

Why does Texas lag behind the nation in demand response?

By next year, demand response will comprise 14,000 MWs of PJM's peak demand, meaning customers will be paid to reduce the risk of blackouts. At ERCOT, despite great potential, demand response only amounted to just over 4,000 MW of peak demand, limited by unnecessary market barriers. Texas leads the nation in smart meter deployment, intended by the Legislature to "facilitate demand response initiatives." Regardless of this success, ERCOT is far behind in load management and still lacks full-fledged programs that enable it.

NYC-based Rockefeller Group Development Corporation sold its demand reductions to the grid and managed to:

- **reduce energy usage by 60,000 kWh per month**
- **reduce peak demand by 1.4 MW**

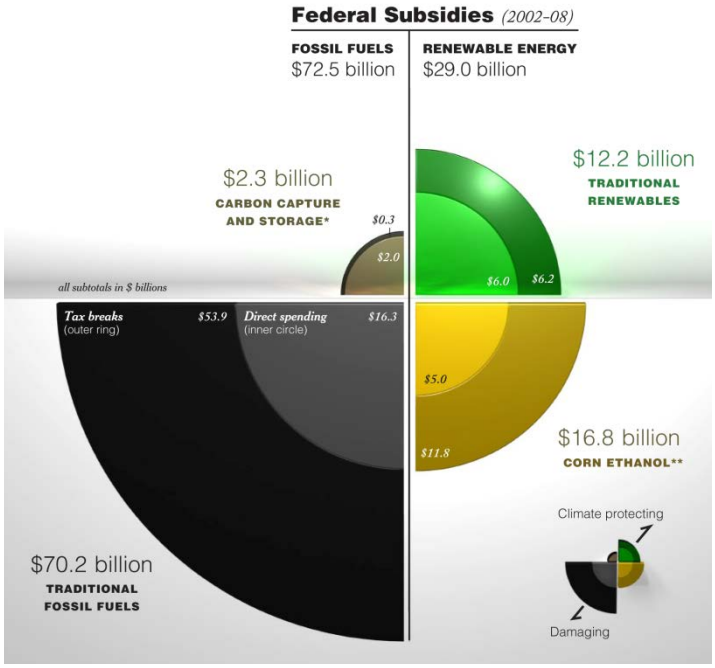
Market barriers prevent customers from competing in ERCOT

ERCOT's legacy demand response program is capped at 1,150 MW and is effectively limited to large industrials within ancillary services markets. ERCOT's Emergency Reliability Service (ERS) is the only program in the market that allows any customer to participate if they qualify. The program is limited in scope (it can only be called on twice per year) and to date has been unable to reach the original goal of 500 MW.[25] Despite these limitations, the program helped avoid rolling blackouts in the summer of 2011.

RENEWABLE ENERGY

Wind sets multiple records

Having escaped the 2012 summer without rolling blackouts and the kind of heat experienced in 2011, Texas can be considered lucky it was spared the consequences of the energy crunch for now. Luckily, our state is home to the nation's largest wind power industry and it contains about a fifth of the country's wind turbines. Following a string of monthly broken records since November 2012, on February 9th another one was set with 9,481 MW of wind leading to the highest generation on record for ERCOT.



This is in addition to wind helping Texas avoid blackouts in February of 2011, when a cold front proved too much for many traditional power plants. Wind energy played a critical role in limiting the severity of the blackouts, providing enough electricity to keep the power on for about three million typical households.[26] ERCOT confirmed that wind performed as expected, providing about seven percent of ERCOT demand at that time, roughly what it was forecasted and scheduled to provide. Texas wind provided this electricity during the critical five to seven a.m. window when the grid needed power the most.

In Texas, despite the fact that fossil fuel subsidies far outweigh incentives for renewable energy, political wrangling over renewable energy continues to risk stunting job growth and causing layoffs. According to Walt Hornaday, president of Cielo Wind Power, an Austin-based wind farm developer[27], "We haven't had the industry come to a stop like this before in a long, long time." His company is pursuing work in other countries, but otherwise, he said, "we would definitely be looking at very large layoffs."[28] Governor Perry's own report[29] cites a Mitchell Foundation analysis that the expanding wind and solar energy industries are projected to add 6,000 jobs in Texas per year through 2020 and, as of last year, over 1,300 Texas companies employ nearly 100,000 workers in industries directly and indirectly related to renewable energy.

The Brattle Group: solar power can help mitigate the energy crunch in Texas

In the report, "The Potential Impact of Solar PV on Electricity Markets in Texas," the Brattle Group identifies solar power as an energy source with the ability to minimize the costs to consumers associated with recent PUC decisions. Solar power also has the potential to address the state's long-term energy problems

by providing reliable power during peak usage times without the need for water.

The rapid decline in solar panel prices presents an opportunity to Texas as we struggle to fix the energy crunch. Panel prices have declined almost 75 percent over the last three years, and many other states have entered the solar market, using policies to attract jobs from the fastest growing industry in the U.S. This shift and our stagnant solar policies have left Texas behind; according to the latest report from GTM Research, Texas has fallen from a ranking of 9th in the nation for new solar installations to 15th.[30]

As the Brattle Group's report shows, the importance of this shift relates not only to growing jobs in Texas, but also to the state's ability to provide homeowners and businesses with reliable electricity. This year marked the warmest spring on record in Texas, and this serves as an omnipresent reminder that reliable electricity is critical. The new rules proposed by the PUC will help companies build new power plants, but these rules cannot focus solely on power companies. As the Brattle Report shows, we can meet the energy crunch head-on with policies that help Texans invest in solar to meet our growing energy demand in a way that relies less on water to operate.

A non-partisan issue

Solar and wind power have a long history as a non-partisan issue – one where nationally recognized conservative Republicans like Texas Governor Rick Perry and Kansas Governor Sam Brownback have publicly supported the policies such as Renewable Portfolio Standards (RPS). Polls across the country show strong voter support for solar and wind energy, reaching across political ideology and party lines. In fact, as Governor of Texas, President George W. Bush signed into law the most successful RPS in the country and considers it one of his proudest achievements in Texas. Speaking in Dallas in 2012 at the American Wind Energy Association's annual conference, former President Bush noted that "when we diversify our energy supply, we create jobs."

ENERGY EFFICIENCY

The future of energy efficiency initiatives will be affected by rising fuel and capital costs, advances in appliance and building material technology, government policy, market forces, and shifts in consumer behavior, but the most critical shift in energy efficiency may come from a surprising place: Wall Street. Using innovative financing programs like Property Assessed Clean Energy and On-Bill Repayment, customers are able to invest in energy efficiency upgrades for factories, buildings and homes without paying the upfront costs. Instead, customers pay off those investments over time through the savings from reduced energy bills.

Expanding energy efficiency through innovative financing

In the face of electric resource shortages, the state must explore how electric use can be made more efficient. We know efficiency makes sense – in terms of grid reliability, reduced costs to ratepayers, lower water consumption and fewer emissions. Upfront costs still act as a barrier for electric customers wishing to invest in efficiency upgrades; several options currently exist to finance efficiency, such as home equity loans and incentive programs through utilities. New approaches will create a market to allow the private sector to invest in efficiency by offering low rate loans to customers who are

able to repay those loans with the savings reaped from efficiency upgrades.

Property Assessed Clean Energy (PACE) offers building owners an opportunity to finance energy efficiency and renewable electricity generation projects through cost-saving loans from third-party investors. The loans are repaid through customer's utility bills. The money comes from private sector lenders at no cost to ratepayers or taxpayers.

The general concept of PACE is not new: several states have active PACE programs that help customers upgrade buildings, factories, and homes by reducing upfront costs and saving customers money over the long run. Additional financing programs are being developed throughout the country, including a new approach called "On-Bill Repayment" (OBR). On-bill repayment would use new money from third parties, such as banks, to create a new market that is secure, cost-effective, and more beneficial in terms of what the ratepayer receives. OBR also allows for longer term loans with lower interest rates.

CONCLUDING REMARKS & RECOMMENDATIONS

As economic growth continues to surge in Texas, state leadership must ensure a stable and secure supply of electrical power to businesses large and small, homeowners, hospitals and schools. This challenge is critical in the face of a worsening drought, population growth, and the failure by the PUC to take meaningful action after almost two years of deliberation. In the final months of the 83rd Legislative Session, lawmakers have an opportunity to directly address the energy crunch through several pieces of legislation that will reduce customer energy bills, lower water consumption and increase business opportunities in Texas, all while reducing peak electric demand throughout the state.

Several of these opportunities have been identified by the PUC, but a lack of clear direction from Commissioners has left businesses hesitant to engage directly in the Texas market without a clear understanding of the long-term outlook. By providing the PUC with clear guidance on issues like demand response, innovative financing approaches for clean energy, and fair payment for locally generated electricity, the Legislature can help reduce the threat of rolling blackouts across the state.

In light of the considerations and issues addressed in this report, Environmental Defense Fund supports the following recommendations for the 83rd legislative session:

1. Allowing all customer classes to participate in electric markets either directly or through aggregators as is done in other markets in the U.S.

2. Fair compensation for consumers that provide services including demand response and excess electric generation from distributed, renewable generation.

3. The development of innovative financing mechanisms like Property Assessed Clean Energy (PACE) to enable businesses to develop clean energy and reduce water usage.

On the following page we list selected legislation that supports these three goals. The list is not comprehensive but does highlight promising legislation.

EDF supports the following legislation, which will address the energy crunch while reducing water assuage and customer electric bills.

Allowing all customer classes to compete in electric markets either directly or through aggregators as is done in other markets in the U.S.

- **HB 2194 by Rep. Anchia**
- **SB 1279 by Sen. Watson**
- **SB 1280 by Sen. Watson**
- **SB 1351 by Sen. Carona**
- **HB 2196 by Rep. Anchia**

Fair compensation for consumers that provide services including demand response and excess electric generation from distributed generation.

- **SB 304 by Sen. Rodríguez**
- **SB 305 by Sen. Rodríguez**
- **HB 303 by Rep. E. Rodriguez**
- **HB 723 by Rep. Anchia**
- **SB 1239 by Sen. Rodriguez**
- **SB 1453 by Sen. Rodriguez**
- **SB 1478 by Sen. Rodriguez**
- **HB 3701 by Rep. Lucio III**

The development of innovative financing mechanisms like Property Assessed Clean Energy (PACE) to allow businesses to develop clean energy and reduce water usage.

- **SB 385 by Sen. Carona**
- **HB 1094 by Rep. Keffer**
- **HB 1362 by Rep. Rodriguez**
- **HB 2500 by Rep. Bohac**
- **SB 1278 by Sen. Watson**

APPENDIX

Source: Brattle Group: ERCOT Investment Incentives and Resource Adequacy. June 1, 2012

Brattle Group Comparison of Policy Options

Option	How reliability level is determined	Who makes investment decisions	Risk of low reliability	Investor risks	Economic efficiency	Market design changes	Comments
1. Energy-only with market-based reserve margin	Market	Market	High in short-run; lower in long-run w/more DR	High	May be highest in long-run	Easy	- Depends on substantial DR participating to set prices at willingness-to pay, ERCOT does not yet have much DR
2. Energy-only with adders to support a target reserve margin	Regulated	Market	Medium	High	Lower	Easy	- Not a reliable way to meet target - Adders are administratively determined
3. Energy-only with backstop procurement at minimum acceptable reliability	Regulated (when backstop imposed)	Regulator (when backstop imposed)	Low	High	Lower	Easy	- Attractive as an infrequent last resort, but long-term reliance is inefficient, non-market based, slippery-slope
4. Mandatory resource adequacy requirement for LSEs	Regulated	Market	Low (with sufficient deficiency penalty)	Med-High	Medium (due to regulatory parameters)	Medium	- Well-defined system and local requirements and resource qualification support bilateral trading of fungible credits and competition - Cannot be a forward requirement - Flexibility: DR is like opting out; customers not behind a single distribution feeder could pay for higher reserves and reliability
5. Resource adequacy requirement with centralized forward capacity market	Regulated	Market	Low	Med-High (slightly less than #4)	Medium (due to regulatory parameters)	Major	- Working well in PJM - Forward construct can efficiently respond to requirements and meet needs with sufficient lead time -Transparency valuable to market participants and market monitor - Many administrative determinations

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