PUBLIC UTILITY COMMISSION
OF TEXAS

Rulemaking Regarding Demand Response in the Electric Reliability Council of Texas (ERCOT) Market	))	Project No. 41061

COMMENT OF THE STAFF OF THE FEDERAL TRADE COMMISSION[1]

March 11, 2013

I. Introduction

The staff of the Federal Trade Commission (FTC) welcomes this opportunity to comment on the Public Utility Commission of Texas (PUC) "Rulemaking Regarding Demand Response in the Electric Reliability Council of Texas (ERCOT) Market."[2] The PUC invited public comments to answer a series of questions regarding demand response (DR) as one aspect of the PUC's ongoing reliability review. This comment addresses those questions.

The Brattle Group (Brattle),[3] the FTC,[4] and many other observers[5] have made the case that DR can improve the efficiency and reliability of electricity markets. For many of the reasons cited by those observers, the FTC and its staff have long supported allowing DR to compete with more conventional resources to solve energy market challenges. DR programs give participants an incentive to reduce or reschedule power consumption when electricity is scarce and

[1] This comment expresses the views of the FTC's Bureau of Economics and Office of the General Counsel. The comment does not necessarily represent the views of the FTC or of any individual Commissioner. The Commission, however, has voted to authorize the filing of this comment.

[2] Public Utility Commission of Texas, Project No. 41061, Request for Comments – PUC Rulemaking Regarding Demand Response in the Electric Reliability Council of Texas (ERCOT) Market (Jan. 15, 2013), *available at* http://interchange.puc.state.tx.us/WebApp/Interchange/Documents/41061_3_747361.PDF.

[3] The Brattle Group, *ERCOT Investment Incentives and Resource Adequacy* (June 1, 2012), *available at* http://www.ercot.com/content/news/presentations/2012/Brattle%20ERCOT%20Resource%20Adequacy%20Review%20-%202012-06-01.pdf.

[4] *See, e.g.*, Comment of the Federal Trade Commission Before the Arizona Corporation Commission, Workshop on Retail Electric Competition (Jan. 26, 2009), *available at* http://www.ftc.gov/os/2009/01/V090001electricityadvocacy.pdf.

[5] *See, e.g.*, S. Borenstein, "The Long Run Efficiency of Real Time Pricing," 26:3 Energy J. 93 (2005); A. Faruqui and J. Palmer, "The Discovery of Price Responsiveness – A Survey of Experiments Involving Dynamic Pricing of Electricity" (Mar. 12, 2012), *available at* http://ssrn.com/abstract=2020587.

expensive. DR thereby helps manage peak demand, encourages companies to bid competitively (by making it less profitable for generators with market power to attempt to raise price by reducing supply), and reduces price volatility. The considerable untapped DR potential of the United States is well documented.[6] Other organized electricity markets have enrolled a considerably greater percentage of their potentially responsive consumption in DR than has ERCOT under the direction of the PUC.[7]

We encourage the PUC to adopt DR policies that use standard market approaches, allow competition, and offer accurate price signals to all entities that can contribute to balancing the quantity consumed and the quantity supplied. One of ERCOT's fundamental tasks is to balance demand and supply on a continuous basis. ERCOT can deliver the greatest benefit to Texas consumers by allowing DR, generators, and energy storage to compete in the energy and ancillary services markets.[8] Established microeconomic principles favor allowing demand to participate in electricity markets in the tried and true way that demand participates in markets for other goods. In markets for other goods, price-responsive demand plays a crucial role in efficiently allocating scarce goods and services. The value of the marginal (incremental) unit of DR is the cost of using the next cheapest technology to provide the last increment of electric energy that is needed to match production with customer demand (consumption). A well-structured market will compensate DR at that value.

Texas's unique combination of employing smart meters and facilitating competition among sophisticated retailers allows it to pursue options in ERCOT that may not be feasible or appropriate elsewhere. Texas has an impressive record of developing and using economic incentives, retail competition, and smart meters in ERCOT – well-advised practices that we encourage Texas to continue. Texas's policy options also differ because, unlike the rest of the organized markets in the United States, ERCOT has a single regulator overseeing its regional transmission organization (RTO) and its retail sector, which may facilitate efforts to coordinate retail and wholesale policy.[9] In particular, if Texas offers good incentives for retailers to enroll consumers in DR programs, it can then harness competition among retailers to offer innovative DR programs that provide the greatest benefits to electricity consumers.

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[6] *See, e.g.*, Federal Energy Regulatory Commission (FERC) Staff Report, *A National Assessment of Demand Response Potential* (June 2009), *available at* http://www.ferc.gov/legal/staff-reports/06-09-demand-response.pdf.

[7] Brattle at 91; *see also* D. Kathan *et al.*, Federal Energy Regulatory Commission Staff Report, *2012 Assessment of Demand Response and Advanced Metering* (Dec. 2012), *available at* http://www.ferc.gov/legal/staff-reports/12-20-12-demand-response.pdf.

[8] Brattle (at 88) makes this well-established point from competition policy.

[9] This comment does not attempt to evaluate the advantages and disadvantages of different divisions of responsibility between state and federal regulators and of different sizes of regional energy markets. As a practical matter, Texas has a different regulatory model from the rest of the country – a difference that is unlikely to change soon and is worth remembering when considering policy decisions.

Despite Texas's unique infrastructure and tradition of harnessing competition and economics, we concur with Brattle that there are opportunities to better accommodate DR in ERCOT. For example, ERCOT is already pursuing the opportunity to integrate demand bids into its power market optimization process. These bids allow the buyer to make certain purchases contingent on the price's being below a level the buyer specifies. We discuss these opportunities further in responding to the PUC staff's DR questions below. Much of this comment encourages the PUC to give serious consideration to constructive ideas already identified in the Brattle report.

II. Interest of the Federal Trade Commission

The FTC is an independent agency of the United States Government responsible for maintaining competition and safeguarding the interests of consumers. The FTC does so through law enforcement, policy research, and advocacy. For example, in the field of consumer protection, the FTC enforces Section 5 of the Federal Trade Commission Act, which prohibits unfair or deceptive acts or practices. In its competition mission, the FTC enforces antitrust laws regarding mergers and unfair methods of competition that harm consumers. In addition, the FTC often analyzes regulatory or legislative proposals that may affect competition, allocative efficiency, or consumer protection, and also engages in considerable consumer education through its Division of Consumer and Business Education.[10] In the course of all of this work, the FTC applies established legal and economic principles as well as recent developments in economic theory and empirical analysis.

The energy sector, including electric power, has been an important focus of the FTC's merger review and other antitrust enforcement, competition advocacy, and consumer protection efforts.[11] The FTC's competition advocacy program has produced two staff reports on electric power industry restructuring issues at the wholesale and retail levels.[12] The FTC staff also

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[10] For an overview of the FTC's education efforts, *see* the FTC staff's comment to the Consumer Financial Protection Bureau concerning "Request for Information on Effective Financial Education," Docket No. CFPB-2012-0030 (Nov. 2, 2012), *available at* http://www.ftc.gov/os/2012/11/1211cfpb.pdf.

[11] *See, e.g.*, Opening Remarks of the FTC Chairman at the FTC Conference on *Energy Markets in the 21st Century: Competition Policy in Perspective* (Apr. 10, 2007), *available at* http://www.ftc.gov/speeches/majoras/070410energyconferenceremarks.pdf. FTC merger cases involving electric power markets have included *DTE Energy/MCN Energy* (2001) (consent order), *available at* http://wwwftc.gov/os/2001/05/dtemcndo.pdf; and *PacifiCorp/Peabody Holding* (1998) (consent agreement), *available at* http://www.ftc.gov/os/1998/02/9710091.agr.htm.

[12] FTC Staff Report, *Competition and Consumer Protection Perspectives on Electric Power Regulatory Reform: Focus on Retail Competition* (Sept. 2001), *available at* http://www.ftc.gov/reports/elec/electricityreport.pdf; FTC Staff Report, *Competition and Consumer Protection Perspective on Electric Power Regulatory Reform* (July 2000), *available at* http://www.ftc.gov/be/v000009.htm (compiling previous comments that the FTC staff provided to various state and federal agencies).

contributed to the work of the Electric Energy Market Competition Task Force, which issued a *Report to Congress* in the spring of 2007.[13]

The FTC and its staff have filed numerous comments advocating competition and consumer protection principles with state utility commissions, state legislatures, professional organizations, the Federal Communications Commission, and FERC.[14] In particular, we have filed a number of advocacy comments concerning DR.[15] The FTC comments to state policymakers in support of policies that allow or foster competition and thus benefit consumers.[16] The FTC staff submitted an electricity market comment to the PUC in 1998.[17]

III. Increasing DR in ERCOT

The PUC staff asks: "What additional products and programs could ERCOT develop to facilitate DR? How should the programs be designed?"

[13] That report is available at http://www.ferc.gov/legal/fed-sta/ene-pol-act/epact-final-rpt.pdf.

[14] A listing, in reverse chronological order, of FTC and FTC staff competition advocacy comments to federal and state electricity regulatory agencies is available at http://www.ftc.gov/opp/advocacy_subject.shtm#uttg.

[15] The FTC discussed the implications of microeconomics for DR compensation in Comment of the Federal Trade Commission Before the Federal Energy Regulatory Commission on Demand Response Compensation in Organized Wholesale Energy Markets, FERC Docket No. RM10-17-000 (May 13, 2010), *available at* http://www.ftc.gov/os/2010/05/100521fercdemand.pdf ; *see also* the FTC's October 13, 2010, follow-up comment in the same FERC proceeding, *available at* http://www.ftc.gov/os/2010/10/1010wholesaleenegrymarkets.pdf. The previous year, the FTC submitted a comment to FERC on FERC staff's "Discussion Draft of Possible Elements of a National Action Plan on Demand Response" (Dec. 11, 2009), *available at* http://www.ftc.gov/os/2009/12/V100002ferc.pdf.

[16] *See, e.g.*, FTC Staff Letter to Hon. Stephen LaRoque, North Carolina House of Representatives, Concerning North Carolina House Bill 698 and the Regulation of Dental Service Organizations and the Business Organization of Dental Practices in North Carolina (May 25, 2012), *available at* http://www.ftc.gov/os/2012/05/1205ncdental.pdf; FTC and U.S. Department of Justice Comments to Hon. Helene E. Weinstein Regarding New York Assembly Bill A05596 (To Establish that Certain Services Related to Real Estate Transactions May Be Provided Only by Attorneys) (June 21, 2006), *available at* http://www.ftc.gov/os/2006/06/V060016NYUplFinal.pdf.

[17] FTC Staff Comment Before the Public Utility Commission of Texas Concerning Relationships Between Regulated Electric Utilities and Affiliates Operating in Unregulated Markets (June 19, 1998), *available at* http://www.ftc.gov/be/v980013.shtm.

The PUC can reduce costs and increase reliability by ensuring that demand can participate in its electricity markets, that ERCOT defines relevant property rights appropriately,[18] and that ERCOT's markets compensate DR accurately. Reducing costs and increasing reliability will benefit consumers.

DR involves offering incentives for retail customers to reschedule, curtail, or even increase their electricity consumption to address regional operating (wholesale) challenges such as scarcities and surpluses. Efforts to get retail customers to address wholesale challenges require complementary, harmonized approaches in the retail and wholesale markets. Harmonization allows the development of coordinated products that, for example, give retail consumers incentives to respond in short order to rapidly evolving wholesale market conditions.[19]

The Brattle report states: "Enabling large amounts of DR to contribute to efficient price formation in real-time will require significant changes in market design."[20] We encourage the PUC to make such changes a priority. We agree with Brattle that "[a] good market structure provides multiple revenue opportunities, allows DR to compete on a level playing field with generators to provide the same services, and allows each resource to find its highest-value combination of uses."[21] Good policies will allow flexible loads to receive compensation not only when they help reduce peak demand, but also when they respond to fluctuating output from wind turbines,[22] address temporary scarcities caused by "ramping" constraints on how fast generators can change output, and offer ancillary services that help keep supply and demand balanced continuously.

ERCOT runs a sophisticated "security constrained economic dispatch" (SCED) algorithm that seeks to balance electricity demand and supply at the lowest cost, subject to reliability ("security") constraints that require that the system be able to respond to a sudden, unanticipated increase in consumption or to contingencies such as the loss of a generator. As operated in ERCOT, SCED generates LMPs every five minutes at each node (*i.e.*, major electric facility) on the power grid. We suggest that ERCOT configure its SCED to allow DR, energy storage, and

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[18] For example, correctly defined property rights imply that DR should be compensated at the locational marginal price (LMP) less the retail price of power. *See* Comment of the Federal Trade Commission Before the Federal Energy Regulatory Commission on Demand Response Compensation in Organized Wholesale Energy Markets (May 13, 2010), *supra* note 15.

[19] Our references to "the market" throughout this comment usually refer to the combined wholesale and retail electric markets and encompass actions taken at both levels of the market.

[20] Brattle at 96.

[21] *Id*. at 95.

[22] DR is already under contract to address fluctuating output from wind turbines in the Pacific Northwest. S. Stroud, Sustainable Industries Blog, "Bonneville Power Taps EnerNOC for Demand Response" (Feb. 1, 2011), *available at* http://www.sustainableindustries.com/blogs/sustainable-industries-blog/2011/02/bonneville-power-administration-taps-enernoc-demand-respon.

generation sources to participate and compete on equal terms. We recognize, however, that ERCOT must consider the cost and feasibility of incorporating such improvements into the SCED algorithms. SCED algorithms must solve computationally difficult problems quickly enough for ERCOT to run its market.

New networking and electronics technologies allow smaller loads to receive price signals or respond to grid conditions at reasonable costs. The PUC should consider how aggregations of small loads (such as air conditioners) could prove their ability to help balance ERCOT's electricity markets reliably enough to participate in SCED. The PUC may wish to consider whether it is necessary to treat load participating in SCED like generation. Such a requirement would mean that DR participants would "have to have real-time telemetry, nodal dispatch and settlement, and probably continuous controllability."[23] We note that "ERCOT is also considering allowing aggregated resources (not at a single node) and virtual telemetry."[24] The PUC's approach to incorporating DR in ERCOT should reflect clearly defined goals such as economic efficiency and the avoidance of involuntary blackouts. The best rules to accomplish these goals can be adopted, given existing technology and future technologies that power suppliers and retailers could readily develop if there were a supportive market and market rules.

The PUC staff asks: "What mechanisms could ensure that DR deployments appropriately contribute to price formation rather than price reversal?"

As the Brattle report recommends, the strategies that system operators use to reduce demand during times of scarcity should be bid into the market at specific strike (activation) prices. Whenever possible, the strike prices should reflect accurate estimates of the strategies' costs to the electric system and to society as a whole. Reducing the generating reserves available to handle contingencies like equipment failures has costs because it increases the risk of a blackout. Calling emergency DR that shuts down energy-hungry equipment temporarily denies the owners the benefit of running that equipment. Emergency DR providers receive compensation (albeit often a fixed, annual payment) for the possibility that they will bear these costs.

If system operators instead deploy these strategies "out-of-market" (*i.e.*, simply activating programs that reduce demand by decree), prices will be artificially low, which will reduce the incentive for demand to participate.[25] Brattle rightly emphasizes the importance of "[n]ever deploying emergency DR at a zero price."[26]

As in a conventional market, market participants in ERCOT should be able to get accurate information about current and expected future market prices and should be able to trade at prices based on that information. Brattle emphasizes the importance of "timely, *ex-ante* pricing

[23] Brattle at 97.

[24] *Id*.

[25] *Id*. at 99.

[26] *Id*. at 97.

information that enables price-responsive demand to adjust its consumption."[27] Part of this goal might be achieved by having smaller or less flexible loads participate in the day-ahead market. Brattle notes that there already is a proposal for "look ahead" SCED, which is designed to reduce some DR price uncertainty.[28]

Brattle also emphasizes the importance of finding a scheme such that "DR that is not in SCED can respond to prices without depressing prices to levels far below" the strike price at which they are willing to sell power back to the grid.[29] As Brattle observes, ERCOT's existing "generation fleet" results in a supply stack (or supply curve) that features an unusually abrupt transition from typical conditions to scarcity conditions. This supply stack complicates efforts to obtain timely and robust DR, because there is little warning of scarcity situations. Brattle elaborates: "Prices are particularly unstable at the edge of scarcity conditions because there is no width to the power balance penalty curve [in ERCOT], and the rest of the scarcity price schedule is flat at the price cap. A mere 50 MW change in load caused prices to jump from low non-scarcity prices to the price cap. Therefore, any shift in system conditions can move prices from one extreme to the other, no matter what any price-responsive load does."[30] Having a significant amount of demand bid into the market with an explicit maximum willingness to pay is likely to ameliorate this situation.

We concur with Brattle that conditions in ERCOT could lead to insufficient incentives for customers to provide DR if they might provide enough DR to push the price to a non-scarcity level.[31] We are concerned, however, that Brattle failed to mention a subtle but important inefficiency associated with potential buyer-side market power that cuts in the opposite direction. If the DR provider remains a major buyer of power, even after some of its facilities provide DR, then it can have an incentive to provide *more* than the efficient amount of DR in order to reduce wholesale electric prices. This result follows directly from the well-known incentive for large buyers to reduce their consumption relative to what they would consume if they were instead numerous, small decision-makers.[32] Large buyers forgo some purchases in order to reduce the price they pay for their remaining purchases. Specifically, load-serving entities (LSEs) and other major power buyers often will have an incentive to keep prices artificially low during periods of actual scarcity. This could prompt them to buy more than the socially optimal amount of DR from third-party suppliers. In order to do so, they would have to write contracts with DR suppliers to make it profitable (on average) to provide DR during hours when the market might clear at a non-scarcity price. The greater the amount of price-sensitive demand in the real-time market, the weaker either of these harmful incentives will be. Nonetheless, the PUC should be

[27] *Id*. at 96-98.

[28] *Id*. at 96.

[29] *Id*.

[30] *Id*. at 98.

[31] *Id*. at 96.

[32] *See, e.g.*, R. PINDYCK AND D. RUBINFELD, MICROECONOMICS 373-81 (7th ed. 2009).

aware of these contrasting incentives and stand ready to take action should either become a problem.

Some proposals would allow qualified scheduling entities (QSEs) to submit demand curves that make some purchases contingent on a market-clearing price below a level that the buyer specifies.[33] This is an important step toward making the ERCOT electricity market far more like a conventional market. Conventional markets focus companies on providing value to consumers and generally require far less regulatory intervention than is typical in organized electricity markets.

Typical baseline-rebate approaches to retail DR are intrinsically difficult to operate because baseline energy use typically is not a well-defined property right. Baseline-rebate DR programs assign each participating customer a baseline level of power rights based on the customer's past consumption and compensate participants who use less than their baseline during scarcity periods. Typical baseline rights come free, bundled with power use in other periods. This encourages customers to game the system by using more power during the baseline-setting periods than they would normally use.[34] Allowing QSEs to express a maximum willingness to pay is one of several ways around this problem. All of the solutions are fairly similar in operation. In "buy-your-own-baseline" ("block-and-index") arrangements, electricity customers buy the right to use power in the future; each customer then pays or gets refunds at the real-time price for the difference between the amount of power the customer reserved in advance and the amount the customer actually consumed.[35] These approaches are easier to implement, offer better incentives, and are more likely to be sustainable in the long term than having curtailment service providers (CSPs) bid reductions relative to baseline property rights that were obtained for free.

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[33] ERCOT Market Enhancement Task Force on the Technical Advisory Subcommittee, "Real Time Market Enhancement Strawman V0.1" (Aug. 24, 2012), *available at* http://www.ercot.com/content/meetings/metf/keydocs/2012/0830/05_real_time_mkt_enhancement_strawman_8_24_2012.doc.

[34] For further discussion and evidence that even small consumers can respond to these incentives, *see* F.A. Wolak, "Residential Customer Response to Real-Time Pricing: The Anaheim Critical-Peak Pricing Experiment," Stanford Univ. Working Paper (May 2006), *available at* http://www.stanford.edu/group/fwolak/cgi-bin/sites/default/files/files/Residential%20Customer%20Response%20to%20Real-Time%20Pricing,%20The%20Anaheim%20Critical-Peak%20Pricing%20Experiment_May%202006_Wolak.pdf.

[35] Letzler proposed incentive-preserving rebates that create incentives nearly identical to Critical Peak Pricing by creating well-defined, accurately priced property rights. R. Letzler, "Using Incentive Preserving Rebates to Increase Acceptance of Critical Peak Electricity Pricing," Center for Study of Energy Markets Working Paper 162R (2010), *available at* http://www.ucei.berkeley.edu/PDF/csemwp162r.pdf.

The Brattle report raised serious questions about the need for CSPs to bid DR (namely, demand reductions) as supply into the ERCOT market. According to Brattle, "Given the healthy retail competition in ERCOT, it may be less important to accommodate CSPs than in other jurisdictions. It may be that the most appropriate role for a CSP in an energy-only market is as a subcontractor to an LSE."[36] Brattle also observed that, compared to CSPs, retail electricity marketers "can much more easily monetize the *expected* value of DR if physical hedging through curtailments allows them to manage their exposure [to periodic extreme prices spikes] with less financial hedging."[37] Markets for goods other than electricity in which customers offer demand reductions as a source of supply based on inappropriately priced property rights are extremely rare.[38]

Admittedly, allowing CSPs to bid to supply energy and capacity appears to have facilitated the development of DR in the PJM Interconnection and other organized U.S. electricity markets. Others have expressed concerns about the rules and incentives for CSPs in those markets[39] similar to the concerns that Brattle expressed about the potential regime for CSPs in Texas. The CSPs that have taken root in the rest of the United States earn much of their revenue from administratively designed capacity markets.

The PUC staff asks: "How do price-based DR incentives offered by LSEs contribute to load forecasting errors? What other pricing and rate structures impact the wholesale market?"

Failure by ERCOT or LSEs to revise load forecasting models to reflect price-responsive demand can lead to forecasting errors and inefficient dispatch decisions. We note that PJM already incorporates price-responsive demand into its load forecasts.[40] It makes sense to keep forecasting models up-to-date. It is likely to be far cheaper to generate new demand models than to discourage price-responsive demand in order to keep old demand models accurate.

Ultimately, nearly all pricing and rate structures at the retail level impact wholesale markets, because nearly all wholesale demand for electric power is derived from retail demand at any

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[36] Brattle at 97.

[37] *Id*. at 94 (emphasis in original).

[38] Airlines do pay their customers to reduce or reschedule consumption when a flight is oversold. This is perhaps not surprising, because – as in electricity markets – the commodity (seats on a particular flight) is considered impractical to store, and the production equipment (airplanes) has fixed maximum capacity. Rights to airline seats are well defined.

[39] *See, e.g.*, J. Bushnell, B.F. Hobbs, and F.A. Wolak, "When It Comes to Demand Response, Is FERC Its Own Worst Enemy?," 22:8 Electricity J. 9 (2009).

[40] PJM Manual 19: Load Forecasting and Analysis, Revision: 21 (effective Oct. 1, 2012), *available at* http://www.pjm.com/~/media/documents/manuals/m19.ashx.

point in time.[41] Electricity customers typically respond to any dynamic prices they face, such as by cutting consumption when electricity prices increase. Further, more customers may respond in the future, and participants may learn to respond more intensively, as they gradually acquire energy management expertise, equipment, and software.

The PUC staff asks: "Is load participation in the real-time market feasible when compared to voluntary price response? How does voluntary price response help set pricing or skew scarcity pricing signals?"

ERCOT proposes to use three models of demand participation that have good incentives and long track records in other markets. These models are: (1) bidding a maximum willingness to pay ("load participation"), (2) passively adjusting demand in response to prices ("voluntary price response"), and (3) direct load control.

Electricity buyers could place explicit bids that offer to buy power at any price below a maximum willingness to pay. ERCOT can use such bids in its SCED algorithm to allocate available power as well as to determine the market-clearing price.[42] Stock markets, eBay,[43] and second-price, sealed-bid auctions ask buyers to specify a maximum willingness to pay. These mechanisms can sell items to interested buyers for the lowest price that matches the amount demanded with the amount supplied at that price. Active bidding by demand also makes explicit the demand curves that represent potential customers' combined bids. We emphasize the value of using a single, integrated market to set electricity prices and deploy resources, which means there is considerable value in including demand-side resources in the SCED real-time price formation process.

Decision makers adjust the quantity they demand in response to changes in prices – *i.e.*, they engage in voluntary price response – in many familiar markets. For example, consumers visit the grocery store, check prices, consider their preferences, and then decide how much of which items to buy. Consumers buy fewer grapes when they cost $3.99 a pound than when identical grapes cost $0.99 a pound. The grocery chain can employ an algorithm to predict volume

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[41] Energy storage is a minor, albeit growing, example of a source of demand that is not a retail customer. ERCOT and the PUC could help secure benefits for consumers by taking the growing role of energy storage into account.

[42] To the extent that explicit bidding reduces the need for spending to handle uncertainty about demand, sharing savings with customers who bid could create an incentive to bid.

[43] eBay explains its bidding process as follows: "[W]e suggest that you bid the maximum amount that you're willing to pay for an item. . . . As the listing proceeds, we compare your bid to those of other bidders. When you're outbid, we automatically bid on your behalf up to your maximum bid. We increase your bid by increments only as much as necessary to maintain your position as highest bidder." *See* http://pages.ebay.com/help/buy/bidding-overview.html (emphasis in original). (Note that eBay uses the term "bid" in the first sentence to mean the secret maximum price the bidder is willing to pay. Later references to "bid" mean the price publicly offered into the auction.)

purchased as a function of price and adjust prices to maximize profits, subject to competition. Perishable grocery items need to be sold soon after the grocer acquires them. This is similar to electricity, which must be sold as soon as it is produced because it has generally been cost-prohibitive to store. Aside from issues of tardy communication of pricing signals and lags in voluntary DR, there is nothing inherently distortionary in the effects of voluntary price response on scarcity pricing signals.

Direct load control is an "option" in the financial market sense.[44] A company pays the electricity consumer a fixed amount to buy the well-defined right (option) to use direct load control to turn off the consumer's equipment a few times a year.

The PUC staff asks: "Should economic incentives be developed to stimulate large DR programs and if so, should the incentives be market based or load-ratio share based obligations?"

Our discussion above implies that there is a correct economic value of DR and that DR resources should be compensated at the value they provide (at the margin) in all of the markets in which they participate. We believe that this is an appropriate foundation for DR policy development and implementation.

The ERCOT area within Texas is transitioning from a traditional electric market – where controllable generators handled fluctuations in demand – to a smart-grid-enabled system in which demand has incentives to respond to fluctuations in supply relative to demand. As we have noted before, "Future electricity systems will likely have much more wind generation [that is not as readily controlled as conventional, thermal generators] and empower millions of consumers to save by helping to solve power system problems through smart grid technologies."[45] Reasonable policies will obtain the full benefits of DR, smart grid technology, and demand participation over the next decade. There is far less reason to think that even the best market design policies can achieve this in the next year or two. Transition policies may therefore be appropriate.

To the extent that the PUC perceives a need to adopt administrative policies to jump-start demand participation, it should consider whether it would be appropriate to plan to phase out those transitional, "jump-starting" policies or to structure them so that they allow a gradual transition to a more conventional market structure. For example, if Texas were to adopt a capacity market that allowed demand to participate appropriately, expanded demand participation could eventually drive capacity prices close to zero and make the capacity market irrelevant.[46] The capacity markets developed by other RTOs have found that, under their

[44] Such options are common in financial and energy markets.

[45] Comment of the Federal Trade Commission Before the Federal Energy Regulatory Commission on Integration of Variable Energy Resources, FERC Docket No. RM10-11-000, at 8 (Apr. 8, 2010), *available at* http://www.ftc.gov/s/2010/04/V100009ferccomment.pdf.

[46] Brattle at 113.

administrative rules, DR can often provide the capacity to handle infrequent, severe scarcity events more efficiently than conventional generation.

Similarly, as demand-side participation improves, ERCOT and the PUC may be able to phase out rules and regulations that they adopted initially because the demand side neither received nor reacted to price signals. These rules often have unintended, undesirable consequences. If an active demand side eliminates the strongest justification for such rules, then phasing them out may benefit consumers.

Given that residential and small commercial load accounts for 70 percent of peak load in ERCOT,[47] it may be constructive for public policy to reduce impediments to cost-effective investments in DR-enabling equipment for residential customers. Enabling equipment includes "smart thermostats, switches on pool pumps, and other controls [that] dramatically increase residential customers' ability to respond."[48] There is considerable evidence that many electricity customers are reluctant to make substantial upfront energy investments because they lack funds or credit to do so, and because many customers will invest only in energy management equipment that pays for itself quite quickly.[49] It seems efficient for public policy to facilitate utilities' or electricity retailers' efforts to offer cost-effective energy management equipment on terms that consumers find attractive. In a related area, we note that renewable distributed generation installations by residential customers – investments that can help shave peak consumption – appear to be more popular with such customers when private firms offer to finance the investments.[50] There is, however, strong reason to believe that customers care about more factors than just the interest rate.[51]

Fortunately, competition among retailers is likely to spur innovation in technology, customer experience, and financing (including on-bill financing). For example, Reliant Energy already

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[47] *Id*. at 93.

[48] *Id*. at 94.

[49] *See*, *e.g.*, J. Hausman, "Individual Discount Rates and the Purchase and Utilization of Energy-using Durables," 10:1 Bell J. Econ. 33 (1979); S. Frederick, G. Loewenstein, and T. O'Donoghue, "Time Discounting and Time Preference: A Critical Review," 40:2 J. Econ. Lit. 351 (2002); K. Gillingham, R.G. Newell, and K. Palmer, "Energy Efficiency Economics and Policy," NBER Working Paper 15031 (2009), *available at* http://www.nber.org/papers/w15031.pdf.

[50] J. Montgomery, "Third-Party Residential Solar Surging in California; Nearly a Billion-Dollar Business" (Feb. 15, 2013), *available at* http://www.renewableenergyworld.com/rea/news/article/2013/02/third-party-residential-solar-surging-in-california-nearly-a-billion-dollar-business.

[51] P.C. Stern, L.G. Berry, and E. Hirst, "Residential Conservation Incentives," 13:2 *Energy Pol'y* 133 (1985); S. Benartzi and R.H. Thaler, "Save More Tomorrow: Using Behavioral Economics to Increase Employee Savings," 112:1 J. Pol. Econ. S164 (2004).

offers the Nest thermostat to some of its customers.[52] If an enabling technology offers annual savings that exceed the annual payments required to pay for it, then there is room for an on-bill financing deal in which consumers "pay for" installations using a portion of their savings on energy charges.[53] Retailers with good incentives will focus on cost-effective investments, such as targeting larger residential customers.

The local monopoly transmission and distribution service provider could acquire the not-yet-paid portion of the cost of standards-compliant enabling equipment from the retail firm when customers move. The local distribution company could then provide on-bill financing for the remaining cost of the equipment to the next tenant. This might be a fairer alternative to contracts with early termination fees that charge customers for equipment that they leave behind. Retailers could compete to offer products that interface with any installed, standards-compliant equipment.

In the mid-term, the rise of DR will require rethinking the role of generation reserve margins. Traditional generation reserve margin calculations assume that demand is neither controllable nor responsive to price, and thus regulators using these calculations historically emphasized the need for enough physical infrastructure to deal with the highest realization of electricity demand when most customers pay a time-invariant price. When scarcities and constraints lead to higher prices that prompt many customers to reduce or reschedule demand, those assumptions are no longer valid. A market with a functional demand side has far more tools to avoid involuntary blackouts without the need for regulatory intervention. As the Brattle report suggests, "We expect [LSEs] to implement these [DR] options more as price caps increase and reserve margins tighten."[54] Efforts to keep the reserve margin inefficiently high may keep energy prices artificially low, stunt the deployment of DR, and force electricity customers to pay for excessive generating capacity. Exposing customers to efficient scarcity prices will encourage them both to learn appropriate response procedures and to invest in DR equipment. By contrast, allowing the reserve margin to drop in a market with limited DR exposes customers to the risks of high electricity prices and blackouts.

The PUC staff asks: "What regulations are needed to ensure residential and small commercial customers are adequately protected when participating in aggregated DR programs?"

The rise of consumer-facing electricity technologies poses the kinds of consumer protection issues that arise in many markets for new technologies. They include protecting consumers from unscrupulous firms or individuals and ensuring that consumers can make appropriately informed choices. The FTC addresses such challenges using a variety of tools, including enforcing laws prohibiting deceptive practices, mandating disclosures and labels, and consumer education. Interested readers should review FTC comments about consumer protection approaches in

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[52] Reliant Learn & Conserve Plan (retrieved Feb. 14, 2013), *available at* www.reliant.com/nest.

[53] Letzler, *supra* note 35, explores a situation in which consumers are likely to have quite different perceptions of two ways to present economically identical incentives.

[54] Brattle at 94.

specific contexts relating to retail electricity markets[55] and to demand response,[56] as well as general comments the FTC has submitted about consumer testing of disclosures[57] and consumer education.[58] We encourage the PUC to consider similar approaches to protecting customers who participate in aggregated DR programs.

Consumer education can be a public good that benefits all DR retailers and customers regardless of whether they pay for it. Without public intervention, education is likely to be undersupplied, since each retailer may not capture the benefits of its education campaign that accrue to its rivals.[59]

A competitive retailer that offers a DR program will seek to recruit customers by claiming that its DR program offers savings. We recommend that Texas consumer protection authorities take action if advertisements or disclosures regarding savings are misleading or deceptive. Consumer protection authorities in Texas may find it helpful to consider developing simple, clear model disclosures that describe actual cost savings, measured fairly. We also recommend that, to the extent that DR programs produce savings in regulated transmission and distribution charges, the PUC approve distribution rates that appropriately pass these savings on to residential customers. These steps will help ensure that smaller customers benefit from DR opportunities.

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[55] Comment of the FTC Staff Before the New York State Public Service Commission Concerning Proceeding on the Motion of the Commission to Assess Certain Aspects of the Residential and Small Non-residential Retail Energy Markets in New York State (Jan. 24, 2013), *available at* http://www.ftc.gov/os/2013/01/130125nypsccomment.pdf.

[56] FTC comment on FERC staff's "Discussion Draft of Possible Elements of a National Action Plan on Demand Response," *supra* note 15.

[57] Comment of the Staff of the Federal Trade Commission in the Matter of Request for Comment on Notice of Proposed Rulemaking: Integrated Mortgage Disclosures under the Real Estate Settlement Procedures Act (Regulation X) and the Truth in Lending Act (Regulation Z), Docket No. CFPB-2012-0028 (Sept. 25, 2012), *available at* http://www.ftc.gov/os/2012/09/1209cfpbmortgagedisclosures.pdf.

[58] For an overview of the FTC's education efforts, *see* the FTC staff's comment to the Consumer Financial Protection Bureau concerning "Request for Information on Effective Financial Education," Docket No. CFPB-2012-0030 (Nov. 2, 2012), *available at* http://www.ftc.gov/os/2012/11/1211cfpb.pdf.

[59] There are additional results about situations in which markets underprovide education that allows consumers to pay fewer hidden fees to the firm. *See* X. Gabaix and D. Laibson, "Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets," 12 Q.J. Econ. 505 (2006).

IV. Conclusion

The FTC staff appreciates the opportunity to submit this comment. If you have any questions or comments, please feel free to contact John H. Seesel, Office of the General Counsel, at (202) 326-2702, or Robert Letzler, Bureau of Economics, at (202) 326-2912.