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

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?"

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[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.

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 requ

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.

information that enables price-responsive demand to adjust its consumption."

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

Some proposals would allow qualified schedulin

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.

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 – that is, 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.)

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 equipg0 Tcnribution

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.