

STATE OF MICHIGAN
BEFORE
THE MICHIGAN PUBLIC SERVICE COMMISSION

In the Matter on the Commission's own motion, requiring DTE Electric Company to file a report regarding strategies for education, outreach, marketing and customer support of time of use rates and dynamic peak pricing

Case No. U-17936



COMMENTS OF THE MISSION:DATA COALITION
REGARDING

DTE ELECTRIC COMPANY'S *REPORT DESCRIBING STRATEGIES FOR EDUCATION, OUTREACH, MARKETING, AND CUSTOMER SUPPORT OF TOU RATES AND OTHER PRICING OPTIONS*

1. INTRODUCTION

On September 14, 2015, DTE Energy submitted its *Report Describing Strategies for Education, Outreach, Marketing and Customer Support of TOU Rates and Other Pricing Options*.

The Mission:data Coalition is a national coalition of more than 35 technology companies delivering consumer-focused data-enabled energy savings for homes and businesses. We represent a strong, vibrant ecosystem of innovative technology companies – with sales in excess of \$1 billion per year – who have developed many products leveraging advanced meter data to benefit consumers and utilities. Mission:data is focused on empowering consumers with convenient access to their energy usage data and the ability to quickly and conveniently share

that data with third parties of their choice. We comment to provide our feedback on the DTE Report.

As Michigan considers TOU rates, it is imperative to provide consumers a broad range of energy management tools to take full advantage of them. Michigan is making a huge investment to deploy more than 4,400,000 advanced meters that can enable significant innovation in energy management; new technologies, products and services offer enormous potential to help take advantage of their capabilities for consumers.

The Mission:data Coalition has reviewed DTE's submission and believes it offers a step forward to delivering consumers some new tools to benefit from time-based rates. But the submission falls short in one very important respect, and we believe the DTE Plan must – and can at modest cost – be significantly strengthened so that Michigan residents can realize the full benefit of the state's AMI investment.

While DTE's report provides an excellent summary of the products that it is developing, its focus is on offerings by DTE itself – or partners that it chooses to the exclusion of others -- rather than enabling and leveraging the market. There is a rapidly expanding national market for data-enabled energy management solutions. But in this proposal, we see no empowerment of consumer choice, no enablement of market-based forces, no discussion of the offerings of third parties, or appreciation of third party use of compelling new capabilities like the HAN radio or Green Button Connect (further explained below) that the State could easily use to provide a broader array of powerful energy saving tools to its residents.

Three states – California, Texas and Illinois – are letting customers use two interfaces connected with advanced meters: (1) interval data that allows consumers to access their own energy usage data in electronic format from their advanced meters and share that data, with any third party of their choice (provided through the Green Button Connect format in California and Illinois) -- and (2) enablement of the Home Area Network/Premises Area Network (HAN/PAN) radio built into each advanced meter. These states make these functionalities available to their consumers at no charge and as a component of basic utility service.

Michigan can take advantage of the products and services being developed in other markets and help to shape and grow it, providing consumers a broader array of offerings, reducing the need for ratepayers to fund the development of “energy awareness” products and creating opportunities for development of the state’s technology sector.

Furthermore, the electronic data access we describe is essential to meeting the fundamental goals of TOU pricing: changing the customer load shape. The price-elasticity of electricity use is clearly related to the information that customers (or customers’ devices acting autonomously) have about consumption and price. Without that information, electricity use is more inelastic. While electronic data access can impact responsiveness to price signals in different ways depending upon the rate structure, we note that data access can most strongly increase the effectiveness of TOU and RTP rates.

2. MARKET INNOVATION IS ENABLING NEW DATA-DRIVEN TOOLS THAT CAN DELIVER SIGNIFICANT ENERGY SAVINGS FOR CONSUMERS.

Energy usage in homes and buildings makes up approximately 41 percent of total energy consumed in the United States¹ -- more than transportation or industry -- and data-driven strategies being developed across the country to reduce energy use in buildings now represent among the most powerful, cost-effective tools for better managing and reducing energy use. Each home and business is different in its energy consumption, and the rapidly falling cost of computing power and the availability of free data from advanced meters is facilitating the development of individualized energy efficiency strategies that are both powerful and highly cost-effective.

In 2010, the American Council for an Energy Efficient Economy’s review of 36 studies concluded that consumer access to granular energy data yielded household energy savings of between 4% and 12% or more.² The larger savings enabled by granular, real-time data are significantly higher than the savings that many customer engagement strategies are attaining

¹ Energy Information Administration, U.S. Department of Energy.
<http://www.eia.gov/tools/faqs/faq.cfm?id=86&t=1>

² Karen Ehrhardt-Martinez, Kat Donnelly, et.al. *Advanced Metering Initiatives and Residential Feedback Programs: A Meta-Review for Household Electricity-Saving Opportunities*, American Council for an Energy Efficient Economy (aceee.org), Report Number E105, June 2010, p. iii. The assumption is that actual savings across the entire population would be on the order of half this amount, but these studies do not account for ongoing improvements in new energy management technologies.

today. As tools evolve and improve, potential savings will increase further: As such the potential savings made possible by advanced metering represent a tremendous opportunity.

As examples, in Alameda and Santa Clara Counties in California, the use of data-access functionality now available broadly across the state has demonstrated significant household savings: a study in Alameda County found electricity savings of 7.4% for electricity and 13% for natural gas and another in Mountain View found 5.5% savings in electricity and 16.4% savings in gas – at a cost per household a small fraction of the cost of traditional efficiency programs.³ The City of Benicia has partnered with one company using Green Button Connect to deliver electricity bill savings averaging 10 percent.⁴ Moreover, these gains are very cost effective – in some case delivering savings equivalent to those achieved by traditional energy efficiency programs at a fraction of the cost -- because data enables us to understand the individualized usage patterns of each home and develop strategies tailored to addressing those particular usage patterns.

With regard to interval data used in commercial and industrial sectors, Lawrence Berkeley National Laboratory has found median savings of 17% from individual energy information systems (EIS) that analyze interval usage data.⁵ Many other studies document the benefits of monitoring-based commissioning, which depends entirely on electronic access to interval usage data. One of the primary reasons that EISs and monitoring-based commissioning are not more prevalent in the marketplace today is that conventional methods of acquiring interval usage data for analysis are costly and labor-intensive. Typically, EISs today require installation of a redundant sub meter on the customer's side of the utility meter to record usage in a useful and accessible format. Sub meters, including related data-logging equipment and installation, can cost businesses between \$2,000 and \$6,000 each. The fact that some businesses are willing to pay these costs today demonstrates the tremendous value that EISs have in the commercial and industrial sectors.

³ Rebecca Brown, Bringing It All Together: Design and Evaluation Innovations in the Alameda County Residential Behavior Pilot (Presentation to the Behavior, Energy and Climate Change Conference), December 8, 2014; City of Mountain View, Acterra and Home Energy Analytics, Energy Upgrade Mountain View Final Report, January 2015.

⁴ <http://www.wattzon.com/wp-content/uploads/2015/06/Case-Study-Benicia.pdf>

⁵ *Energy Information Systems (EIS): Technology Costs, Benefits, and Best Practice Uses*. Granderson, J., G. Lin. November 2013. LBNL-6476E.

As to the quantification of the entire demand side benefits of AMI, one study by Edison Foundation's Institute for Electric Efficiency suggested that demand-side benefits for utilities could represent half or more of the total benefits of AMI deployment.⁶ In one California rate case consumer demand side savings were estimated at 40% of the total benefits of AMI.⁷

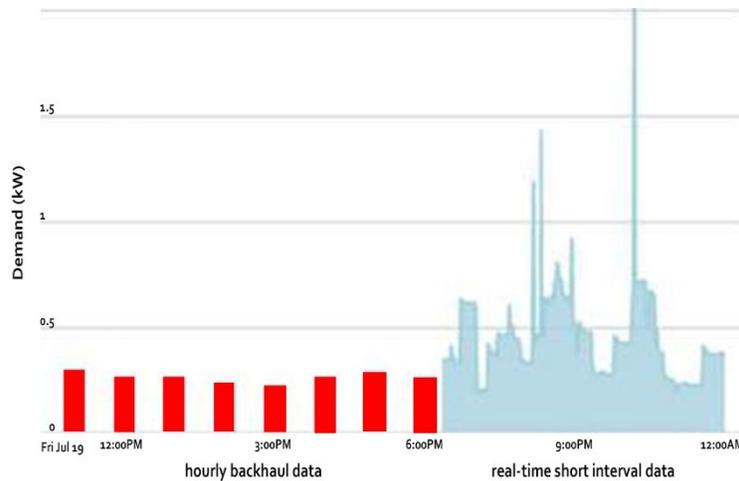
For customers to receive the full benefits of AMI, the maximum variety of energy-saving tools and services should be available to them. The best method of ensuring an abundance of offerings is by allowing non-utility entrepreneurs and innovators to access customer usage data. While DTE has led utilities in creating its own real-time energy management smartphone app, the Commission must ask why ratepayer funds should be spent creating a smartphone app when the private sector can produce more apps with more features more frequently than a utility is capable of producing. When it comes to realizing the value of AMI for consumers, it is clear that the private non-utility sector (such as Mission:data's membership) should also be leveraged to deliver that value.

3. MICHIGAN SHOULD ENABLE TWO INTERFACES FOR DATA ACCESS: THE HOME AREA NETWORK AND BACKHAUL DATA THROUGH NATIONAL STANDARDS, PARTICULARLY GREEN BUTTON CONNECT.

To enable consumers to take best advantage of time of use rates it is important that they have access to granular usage data. There are two interfaces: (1) backhauled *interval data* typically made available through the utility web portal in 15-minute or hourly increments, on a 24-hour delayed basis; and (2) highly-granular *real-time data* from the Home Area Network radio in an advanced meter, which can be provided by the meter in near real-time to an energy monitoring device owned by the consumer in increments as short as six seconds. The chart below depicts household usage graphed through each of these interfaces:

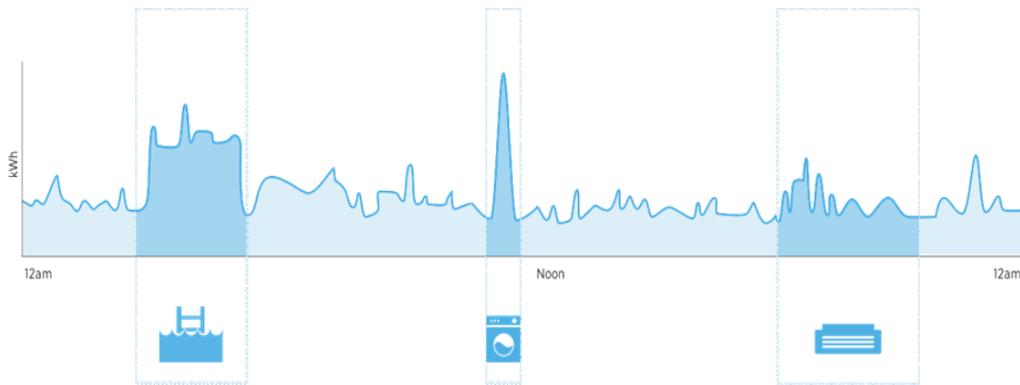
⁶ According to one set of estimates, meter costs per million households are between \$198-278 million, while utility operational savings are likely \$77-208 million. The consumer-driven savings of \$100-150 million are critical to the overall case for deployment – and strengthen the case even where operational savings alone justify deployment. Ahmad Faruqui et. al. *The Costs and Benefits of Smart Meters for Residential Customers*, Institute for Electric Efficiency, July 2011. See also K. Carrie Armel, Abhay Gupta, et. al., *Is Disaggregation the Holy Grail of Energy Efficiency? The Case of Electricity*, Precourt Energy Efficiency Center, Stanford University, Technical Paper 2012-05-1, 2012, p. 3.

⁷ California Public Utilities Commission, Resolution E-4527, September 27, 2012



In terms of interval data, Green Button Connect is the key enabler because it provides consumers and their authorized third parties an ongoing stream of usage data in electronic format, rather than requiring consumers or third parties to manually download data each time it is needed. Something like 17 million of 60 million advanced meters are already or soon will be enabled with data access through Green Button Connect, and that in turn is giving momentum to a strong, vibrant market for energy management services to take advantage of AMI capabilities.

“Real-time data” is typically transmitted from a HAN radio directly to a HAN/PAN device (e.g. a gateway) owned by the customer that can provide that data in a useable format to the customer, allowing the customer to see, understand and/or control his or her energy use in real time through smart phones, personal computers or other devices. Real-time data made available to customers in small increments enables disaggregation, the use of algorithms to interpret advanced meter data to identify energy used in a household by *device*. Appliances have unique electricity usage “signatures” that allow algorithms using high-interval, real-time data to identify the device being used and its energy performance (e.g. whether it is an ENERGY STAR® refrigerator working well or an old clunker that needs to be replaced).



The figure above depicts illustrative examples of these electronic signatures that can be obtained through analysis of whole-house electricity usage data from an advanced meter. The knowledge of what devices are consuming, in turn, enables the development of automated personalized recommendations such as “Save \$__ per month by shifting your pool pump run time to after 7:00 p.m.” Real time data, with feedback, also allows consumers to easily gain an instant understanding of the energy use of any device and enables more effective demand response should the consumer choose to participate in such a program.

Energy management technologies enable consumers to make better use of time of use rates by providing them with targeted, instantaneous recommendations and offering automated solutions. In one study, users of cloud-based disaggregation energy management technology using HAN data on a PG&E time of use plan reduced their consumption by 7.7%,⁸ three times as much as they would with offline programs alone. While California has not yet adopted opt-out time of use rates, Governor Brown recently signed legislation to help ensure that consumers receive the tools to benefit from AMI and an upcoming transition to opt-out time-based rates.⁹ Studies involving BC Hydro’s use of rebates to spur residential use of HAN devices have found average residential savings of 6% - 9% and significant consumer satisfaction, even though electricity costs as low as \$0.07 per kilowatt-hour in that region would appear to create weak incentives for conservation.¹⁰

⁸ Nexant, HAN Phase 3 Impact and Process Evaluation Report, December 2014.

⁹ California Assembly Bill 793 (2015)

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http://www.bchydro.com/powersmart/residential/smart_meters_conservation/monitors.html?WT.mc_id=rd_energy_monitor and <http://rainforestautomation.com/blog/real-time-energy-usage-launched-bc-hydro-customers/>

Especially compared to the massive infrastructure costs of the meters and back-office systems, the investment required to provide consumers access to their own usage data to them is quite small. Opening the HAN to any customer device (“bring your own device” or BYOD) requires activating the HAN radio already embedded in each meter and having in place a process – which can be automated – to securely pair consumer devices with the consumer’s individual meter. Texas, California and Illinois have already done or are doing this.

Enabling Green Button Connect, which involves the utility providing usage data directly to the consumer (typically not in real time), is the critical enabler of low-cost solutions that do not require the consumer to obtain their own device. Mission:data suggests that the Commission require DTE to enable Green Button Connect functionality as a basic utility service so that consumers have the ability to obtain – and share without charge – their data to save energy. It is important to note that vendors such as Schneider Electric recently began offering Green Button Connect software, so the costs are likely to be less than those incurred by early adopter states.

4. DTE SHOULD PROVIDE CONSUMER ACCESS TO DETAILED BILLING AND TARIFF INFORMATION IN ELECTRONIC FORMAT

Energy management tools are most effective when savings are expressed in terms of dollars saved, rather than kilowatt hours, an opaque concept to most consumers. Mission:data suggests that DTE provide detailed billing and tariff information to consumers and third parties in a standardized, machine readable format. This will ensure that energy management tools can provide consumers with accurate estimates of the dollar savings likely to result from recommended actions. We note that the Green Button schema would support an extension to full billing data and that the UCA-IUG OpenADE Task Force has already developed a schema for tariff data.

5. CONCLUSION

To better enable consumers to take advantage of time-based rates, Mission:data requests that the Commission require DTE to provide its consumers and authorized third parties, as part of basic utility service at no charge (1) real-time data through enablement of the HAN radio functionality; (2) interval data through implementation of Green Button Connect; and (3) detailed billing and tariff information to consumers and third parties in machine readable format.

Mission:data appreciates the Commission's consideration of these points.

Dated: December 18, 2015

Respectfully submitted,

For **The Mission:data Coalition**

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