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DTE Energy

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February 1, 2017

Ms. Kavita Kale
Executive Secretary
Michigan Public Service Commission
7109 West Saginaw Highway
Lansing, Michigan 48917

Re: 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.
MPSC Case No. U-17936

Dear Ms. Kale:

Attached for electronic filing, please find DTE Electric Company's 2016 Annual Report required by the Commission's November 7, 2016 Order in the above-referenced matter.

Very truly yours,

Michael J. Solo

Digitally signed by: Michael J. Solo
DN: CN = Michael J. Solo email = michael.solo@dteenergy.com C = AD O = DTE Energy OU = General Counsel Organization
Date: 2017.02.01 14:42:02 -05'00'

Michael J. Solo, Jr.

MJS/kbk
Attachment

DTE Electric Company
2016 Annual Demand Response Report
Case Number U-17936
February 1, 2017

The Final Order in Case No. U-17936, dated November 7, 2016, required DTE Electric Company (DTE Electric or the Company), to file a report with the Michigan Public Service Commission (Commission) by February 1, 2017 and annually thereafter on DTE Electric's demand response programs.[1] The report provides data on enrolled capacity and demand response events for each program, as applicable, as well as a supporting narrative. The Order specifies the following items for inclusion in the narrative report: (1) information describing in detail legacy, pilot, and new DR programs by customer class, including an explanation of any program changes resulting from lessons learned in the previous year; (2) in the event that energy was purchased in the market, a description of the company's method for determining whether to purchase energy rather than relying on DR; and (3) a description of any other programs that the company is considering implementing that might have potential for expanding DR resources. Additionally, DTE Electric is directed to provide forecasted available demand response annually from 2017-2021.

The following is DTE Electric's 2016 Annual Report, which provides detailed information on DTE Electric's residential and commercial and industrial (C&I) demand response programs. DTE Electric's cumulative and forecasted load reduction capability over Planning Year[2] (PY) 2016 – 2017 is 645 MW.[3] DTE Electric's demand response portfolio includes the following programs:

- Tariff D1.1 Interruptible Space-Conditioning Service Rate,
- Tariff D1.8 Dynamic Peak Pricing Rate,
- Tariff D3.3 Interruptible General Service Rate,
- Tariff D5 Interruptible Hot Water Heating Service Rate,
- Tariff D8 Interruptible Supply Rate,
- Tariff R1.1 Alternative Electric Metal Melting,
- Tariff R1.2 Electric Process Heat,
- Tariff R10 Interruptible Supply Rider, and
- Tariff R12 Capacity Release.

The Company also implements a Behavioral Demand Response (BDR) pilot in partnership with Opower.

[1] Case U-17936, In the Matter of 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, Order Filed November 7, 2016.
[2] June 1, 2016 – May 31, 2017
[3] Case No. U-17992, In the matter of the investigation, on the Commission's Own Motion, into the electric supply reliability plans of Michigan's electric utilities for the years 2016 through 2020, Order Filed May 2, 2016.

Program Summary

DTE Electric continues to develop its demand response resources as part of its overall goal to expand options available to customers, satisfy evolving customer preferences and expectations, and grow the contribution of cost-effective demand side alternatives to DTE Electric's resource portfolio. The Company relies on these programs to avoid market purchases whenever possible. The Company has emergency procedures that include the deployment of demand response resources to support reliability. These procedures lay out the process and communication plan between DTE Electric, MISO, and customers. Additionally, in order to ensure DTE Electric is maximizing the value of assets in the energy market, the Company seeks to deploy air conditioning demand response (D1.1) when forecasted energy market prices indicate deploying demand response is more economic than purchasing energy. In 2016, demand response resources were only deployed based on economics and testing, and not for reliability purposes. As such, in 2016, the Company made no real-time energy market purchases as an alternative to relying on its demand response resources.

Many of the existing demand response programs have been in place for decades and form a solid foundation for future demand response efforts. As noted in the Company's April 28, 2016 Comments in this docket, the Company seeks to develop a portfolio of programs that balances affordability, flexibility, and reliability in anticipation of a future need.[4] DTE Electric expects to file an Integrated Resource Plan (IRP) in the coming months which will include a discussion of proposed new demand response programs.

The following sections provide an overview of DTE's current demand response programs, report on 2016 called events, and provide forecasted available demand response over the 2017-2021 period as identified in its electric supply reliability plans filed on May 2, 2016 in Case No. U-17992[5]. The tables included as Attachment A summarize the enrolled capacity, availability, and dispatch of existing demand response resources, in the format provided by the Commission.

Programs Available Primarily to Residential Customers

DTE Electric operates four demand response programs as part of its residential demand response portfolio: Interruptible Space Conditioning, Water Heating Service Rate, Dynamic Peak Pricing, and Behavioral Demand Response. Together, these programs provide over 161 MW of load reduction capability, based on 2016 data. In 2016, DTE Electric initiated control events under the Interruptible Space-Conditioning Rate, Dynamic Peak Pricing Rate, and Behavioral Demand Response Pilot.

Tariff D1.1 - Interruptible Space-Conditioning Service Rate

Tariff D1.1, also referred to as the Interruptible Air Conditioning (A/C) program, is an interruptible rate for residential and commercial central A/C and heat pump customers. The program is marketed under the CoolCurrents brand. Participating customers receive a reduced

[4] Case U-17936, Comments of DTE Electric Company, Filed April 28, 2016, p. 2.

[5] Pursuant to the Commission's Order in Docket U-18197, the Company will be updating its demand response program capacity for the 2017-2021 planning years on April 21, 2017.

rate on central A/C and heat pump electric usage in exchange for allowing the Company to control the customers' equipment. The Company may issue a control signal for capacity or economic reasons. For example, the Company may issue a control signal to maintain system integrity and reliability when available system generation is insufficient to meet anticipated system load. Additionally, the Company may interrupt when there are economic reasons to do so, such as when the Locational Marginal Price (LMP) of the Midcontinent Independent System Operator (MISO) exceeds the tariff price for D1.1.

Program participation requires a separate meter and installation of a radio control unit (RCU), which cycles the equipment on and off in 15-minute intervals on control days. To minimize the impact to customers, the interruption does not exceed thirty minutes in any one hour or eight hours in any one day. As reported in DTE Electric's September 14, 2015 Report in this docket, the Company is in the process of upgrading the existing one-way RCUs with new two-way ZigBee enabled switches that leverage the Company's Advanced Metering Infrastructure (AMI) network. The new switches are expected to allow DTE Electric to better leverage the program as both a capacity and economic resource in the MISO market. RCU replacement began in the third quarter of 2015 and continued throughout 2016. As of December 1, 2016, approximately 13 percent of the nearly 280,000 switches in the field have been replaced.

There were two control events in 2016. The first event was on July 7, 2016 for a system test prior to the peak summer season. The second event was on August 11, 2016 between 4:30 p.m. and 6:30 p.m. in response to high market prices. The Interruptible A/C program is used whenever possible in lieu of more expensive market purchases.

Tariff D1.8 – Dynamic Peak Pricing (DPP)

The DPP tariff encourages residential customers and secondary commercial and industrial customers who have AMI installed to reduce or shift their demand from on-peak periods to off-peak periods, when the cost of generation is lower. The program relies on price signals to motivate customers to change their behavior and usage patterns. As shown in Table 1 below, the current tariff varies the rate based on three prescribed time periods, and includes a significantly higher rate for consumption during critical peak events. Critical peak events may be tied to anticipated increases in wholesale market prices or when the power grid is stressed, such as during a heat wave. The higher Critical Peak price is intended to induce load reduction during these events, which the Company can call for no more than 80 hours per year under this program. In return, the participants receive a discount on the standard tariff price during the other hours of the day or season. In accordance with the tariff, customers are notified of an upcoming Critical Peak event by 6:00 p.m. the day before an expected critical peak event. Once enrolled on the DPP Tariff, customers are ineligible for other tariffs, riders, or separately metered service.

Table 1: DPP Schedule

	Full Service Residential Customers	**Full Service Secondary Commercial and Industrial Customers**
Power Supply Charges - Energy Charges		
On-Peak	14.185¢ for all On-Peak kWh	14.282¢ for all On-Peak kWh
Mid-Peak	8.274¢ per kWh for all Mid-Peak kWh	8.331¢ per kWh for all Mid-Peak kWh
Off-Peak	4.728¢ per kWh for all Off-Peak kWh	4.761¢ per kWh for all Off-Peak kWh
Critical Peak Hour	$0.95 per kWh for all kWh during Critical Peak Hours	$0.95 per kWh for all kWh during Critical Peak Hours
Delivery Charges		
Service Charge	$7.50 per month	$11.25 per month
Distribution Charge	5.576¢ per kWh for all kWh	3.884¢ per kWh for all kWh

The DPP Tariff has approximately 1,500 customers currently enrolled in the program, the majority of whom were enrolled as part of a pilot program launched in conjunction with the 2013 Smart Grid Investment Grant program. In 2016, DTE Electric called seven DPP events, resulting in peak demand reduction between seven and 30 percent with an average reduction of 20 percent per event, representing approximately 1 MW of demand reduction. These results are consistent with the behavioral impacts observed in the 2013 pilot program, suggesting that customer education and predictable price signals can lead to significant and sustainable changes in behavior and usage.

Tariff D5 – Water Heating Service Rate

Rate Schedule D5, also referred to as the Interruptible Hot Water Heating Service Rate, is available to customers with electric water heaters, including solar thermal hot water heaters, on the Residential or General Service rate. The water heaters must be separately metered and dedicated to sanitary purposes (i.e. pool heaters are not eligible). Pursuant to the tariff, the water heater will be controlled by a timer or other monitoring device in intervals not to exceed four hours per day. The Company may establish the times in which to interrupt.

Currently, 57,000 customers are enrolled in the Water Heating Service Rate, representing 5 MW of potential load reduction. Interruptions on this tariff were not called in 2016.

Behavioral Demand Response Pilot

In June 2015, the Company partnered with Opower to launch a Behavioral Demand Response (BDR) pilot program for 50,000 residential customers. The purpose of the pilot program was to test customer response to a notification-based peak demand reduction program. The BDR pilot used a Randomized Controlled Trial (RCT) experimental design, in which qualifying households (i.e., those with a single AMI meter with 12 months of historical interval, on the standard Residential Service D1 tariff, with valid phone and email, etc.) were randomly allocated into

statistically equivalent test and control groups of 50,000 and 25,000 customers, respectively. Participants in the treatment group received a pre-season letter announcing the program, pre-event emails and automated phone notifications containing tips on ways to save during each Peak Day event, as well as post-event emails designed to reinforce energy saving behaviors with immediate feedback on their peak event usage in comparison to their neighbors or similar homes.

The pilot program called six Peak Day events between July 17 and September 2, 2015, which resulted in an approximate two percent demand reduction per event. Based on these positive results, the Company conducted a second pilot for the BDR program in 2016, which investigated whether greater demand reduction can be achieved through increased customer communication and integration with the existing Home Energy Report program. Ten events were called throughout the summer of 2016. Customers responded by reducing peak demand by between 1.3 and 3.2 percent, equivalent to between 3.8 MW and 8.4 MW of load reduction capability. These pilot results suggest that targeted customer notification in combination with the existing Home Energy Report program is effective at driving additional peak load reductions.

Programs Restricted to C&I Customers

DTE Electric offers a suite of interruptible tariffs for C&I customers, including:

- Tariff D3.3 Interruptible General Service Rate,
- Tariff D8 Interruptible Supply Rate,
- Tariff R1.1 Alternative Electric Metal Melting,
- Tariff R1.2 Electric Process Heat,
- Tariff R10 Interruptible Supply Rider, and
- Tariff R12 Capacity Release.

Together, these programs provide 503 MW of unadjusted load reduction capability. The Company has emergency procedures that include the deployment of demand response resources to support reliability. These procedures lay out the process and communication plan between DTE Electric, MISO, and customers. In 2016, demand response resources were only deployed based on economics and not for reliability purposes.

Tariff D3.3 – Interruptible Generation Service Rate

Rate Schedule D3.3 is available to no more than 300 customers desiring interruptible service. Service to participating customers must be permanently wired and taken through separately metered circuits. This rate is not available for primarily off-peak loads such as outdoor lighting. There are 276 customers participating in this rate offering, representing 18 MW of load reduction capability. Company interruptions may include interruptions for, but not limited to, maintaining system integrity, making an emergency purchase, economic reasons, or when available system generation is insufficient to meet anticipated system load.

Tariff D8 – Interruptible Supply Rate

Customers must contract for a minimum of 50 kW of separately metered service at a single location and at primary voltage to qualify for this rate. The interruptible capacity on this rate is limited to 300 MW. Customers may be ordered to interrupt only when the Company issues an order to maintain system integrity or prevent a capacity deficiency. Customers who do not

interrupt within one hour following a notice are subject to fees and/or penalties. Currently 281 customers are enrolled in Tariff D8 for a total of 139 MW of load reduction capability.

Tariff R1.1 – Alternative Electric Metal Melting
Rate Schedule R1.1 applies to customers who operate electric furnaces for metal melting or for the reduction of metallic ores, and who receive service under Tariffs D3, D4, D8 or D11 and consume electricity for holding operations. These customers are subject to immediate interruption on short-term notice in order to maintain system integrity, but will be provided advance notice of probable interruption and the estimated duration whenever possible. There are 20 customers enrolled in Tariff R1.1, representing 2 MW of load reduction capability.

Tariff R1.2 – Electric Process Heat
This rate applies to Customers who use electric heat in a manufacturing process, or who use electricity in an anodizing, plating or coating process. These customers are subject to immediate interruption on short-term notice in order to maintain system integrity, but will be provided advance notice of probable interruption and the estimated duration whenever possible. There are 193 customers enrolled in this program, for a total of 81 MW of load reduction capability.

Tariff R10 – Interruptible Supply Rider
Under this rate, Primary Supply Rate (D11) customers may contract for no less than 50,000 kW of interruptible service at a single location. The Company will notify the customer as to the total amount of load to be curtailed, which will be stated as a percentage of the total supplied load for the immediately preceding hour. This notification will generally come one hour in advance, but may arrive as soon as 10 minutes in advance. Interruptions will be those necessary to maintain system integrity. There are currently 60 participants, representing 259 MW of load reduction capability.

Tariff R12 – Capacity Release
Rate schedule R12 is available to customers who desire a voluntary capacity release payment for loads of not less than 250 kW. Under this rate, the customer must reduce load by at least 50% of their normal load at a single location. Customers will be requested to curtail load in advance of such probable request and estimated of the duration of load reduction. There are no customers taking service under this rate.

Potential Commercial DR Programs
The Commission has specifically asked for information regarding (3) a description of any other programs that the company is considering implementing that might have potential for expanding DR resources. As a response, the Company is constantly reviewing successful DR programs being implemented throughout the country to determine their cost effectiveness and applicability for Michigan. Additional DR programs would be included in subsequent rate case filings when deemed applicable to not only cost effective measures for the Company but also by customer acceptance in the marketplace.

Forecasted Available Demand Response Capacity

The tables below summarize projections for the Company's current demand reduction program. Table 2 shows forecasted available demand response capacity by MISO Planning Year (PY). This capacity is adjusted to reflect transmission losses and PRM_{UCAP} in Table 3. Net forecasted available capacity is shown in Table 4. As noted in footnote 3 above, pursuant to the Commission's Order in Docket U-18197, the Company will be updating its demand response program capacity for the 2017-2021 planning years on April 21, 2017.

Table 2: Forecasted Available Demand Response Capacity, Planning Year (PY) 2016-2021

Demand Response Programs Capacity (MW)	**PY2016-2017**	**PY2017-2018**	**PY2018-2019**	**PY2019-202**	**PY2020-2021**
R-1.1 Metal Mining	2	2	2	2	2
R-1.2 Process Heat	81	81	81	81	81
R-10 Interrupt. Supply Rider	259	259	228	228	228
D3.3 Interrupt. General Service	18	18	18	18	18
D5 Interrupt. Hot Water Htg	5	5	5	5	5
D8 Interrupt. Supply Rate	139	182	228	228	228
Year Round Total	503	547	562	562	562
D1.1 Interruptible A/C	142	142	157	187	202
Total Qualified Resources	645	689	719	748	764

Table 3: Adjustments to Forecasted Available Demand Response Capacity, Planning Year (PY) 2016-2021 for PRMucap

Adjustment for Transmission Losses and PRM_{UCAP} (MW)	**PY2016-2017**	**PY2017-2018**	**PY2018-2019**	**PY2019-202**	**PY2020-2021**
R-1.1 Metal Mining	0	0	0	0	0
R-1.2 Process Heat	8	8	8	8	8
R-10 Interrupt. Supply Rider	26	26	22	22	22
D3.3 Interrupt. General Service	2	2	2	2	2
D5 Interrupt. Hot Water Htg	0	0	0	0	0
D8 Interrupt. Supply Rate	14	18	22	22	22
Year Round Total	50	54	55	55	54
D1.1 Interruptible A/C	14	14	15	18	20
Total Qualified Resources	64	68	70	73	74

Table 4: Qualified Forecasted Available Demand Response Capacity after Adjustment, Planning Year (PY) 2016-2021

Qualified Capacity after Adjustment (MW)	PY2016-2017	PY2017-2018	PY2018-2019	PY2019-202	PY2020-2021
R-1.1 Metal Mining	2	2	2	2	2
R-1.2 Process Heat	89	89	89	89	89
R-10 Interrupt. Supply Rider	285	284	250	250	250
D3.3 Interrupt. General Service	20	20	20	20	20
D5 Interrupt. Hot Water Htg	5	5	5	5	5
D8 Interrupt. Supply Rate	152	200	250	250	250
Year Round Total	553	600	617	617	616
D1.1 Interruptible A/C	156	156	173	205	222
Total Qualified Resources	710	757	789	821	838

Conclusion

DTE Electric's demand response portfolio is designed to support the overall goals of expanding options available to customers, satisfying evolving customer preferences and expectations, and growing the contribution of cost-effective demand side alternatives. The demand response programs are expected to continue to provide significant load reduction capabilities and benefits to customers. DTE will continue to update the Commission via these annual reports, as well as via future rate case filings.

ATTACHMENT A

2016 ANNUAL DEMAND RESPONSE REPORT

Tariff & Sheet No.	Total demand reduction	Maximum demand reduction	Total resource capacity reported to MISO (MW)[3]	Total energy reduction achieved (MWh)[4]	Total spending on marketing and administration ($)	Total capital expense ($) (excluding AMI)	Average customer response (%)[5]	Notes
RESIDENTIAL INTERRUPTIBLE AND PRICE RESPONSE								
D1.1 (Third Revised Sheet No. D-4.00)	142	61	156 (LMR)	135	430,000	$5,000,000	21%	Capital spend related to replacement of one way system. Administrative costs represent the entire Demand Side Management staff and are applicable to all programs
D1.8 (First Revised Sheet No. D-14.01)	1	1	0	25	0	0	N/A	
D5 (Third Revised Sheet No. D-26.00)	5	N/A	5 (LMR)	N/A	0	0	N/A	
BDR (Behavioral Demand Response)	8	7	0	54	0	$400,000	2%	Budget as part of EO pilot program Average customer response is over 10 events, with a max of 2.4%
COMMERCIAL AND INDUSTRIAL INTERRUPTIBLE AND PRICE RESPONSE								
D3.3 (Third Revised Sheet No. D-21.00)	18	N/A	20 (LMR)	N/A	0	0	N/A	
D8 (Second Revised Sheet No. D-40.00)	139	N/A	152 (LMR)	N/A	0	0	N/A	

R1.1 (Third Revised Sheet No. D-57.00	2	N/A	2 (LMR)	N/A	0	0	N/A	
R1.2 (Third Revised Sheet No. D-61.00)	81	N/A	89 (LMR)	N/A	0	0	N/A	
R10 (First Revised Sheet No. D-90.00)	259	N/A	285 (LMR)	N/A	0	0	N/A	
R12 (Original Sheet No. D-95.00)	N/A	N/A	N/A	N/A	0	0	N/A	

	On-Peak Energy Purchased (MWh)	Average on-peak energy purchase price ($/MWh)
Annual Total	N/A	N/A

[1] Report total demand response (i.e., potential demand reduction), in MW, available at the end of the year for each tariff.
[2] Report the maximum amount of demand reduction achieved during a single event in the reported year. If this is an estimate, indicate how the estimate was calculated.
[3] Report the capacity amount associated with the DR program that was reported to MISO as a capacity resource (if it was reported as a resource). Also indicate the MISO category (LMR, DRR, other (specify))
[4] Report the total energy reduction achieved, on a cumulative basis, for each DR program during the reported year.
[5] Report the annual customer responsiveness (i.e., number of customers who responded) as a percentage of customers called for each program for the reporting year. If this is an estimate, indicate how the estimate was calculated.