DTE Electric Company
One Energy Plaza, 1635 WCB
Detroit, MI 48226-1279

DTE

David S. Maquera
(313) 235-3724
david.maquera@dteenergy.com

May 30, 2019

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

RE: In the matter of the application of DTE Electric Company for reconciliation of its 2017-2018 demand response program costs.
MPSC Case No. U-20521

Dear Ms. Kale:

Attached for electronic filing in the above referenced matter is DTE Electric Company's Application, and Testimony and Exhibits of Witnesses, Keegan O. Farrell and Rodrigo Cejas Goyanes. Also attached is the Proof of Service.

Very truly yours,

David S. Maquera

Digitally signed by David S. Maquera
Date: 2019.05.30 16:18:04 -04'00'

David S. Maquera

DSM/lah
Encl.

cc: Service list

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of DTE Electric Company for reconciliation of its 2017-2018 demand response program costs.	))))	Case No. U-20521

APPLICATION

DTE Electric Company ("Applicant" or "DTE Electric"), files this Application pursuant to Michigan Clean, Renewable, and Efficient Energy Act, Public Act 295 of 2008 ("Act 295"), MCL 460.1001 *et seq*., as amended by Public Act 342 of 2016, MCL 460.6t ("Act 342"), requesting Michigan Public Service Commission ("MPSC" or "Commission") approval of the reconciliation of DTE Electric's demand response ("DR") program costs for both 2017 and 2018. In support of the relief requested in this Application, DTE Electric states:

1. DTE Electric is a subsidiary of DTE Energy Company, a Michigan corporation with its principal offices located at One Energy Plaza, Detroit, Michigan 48226. DTE Electric is a public utility subject to the jurisdiction of the Commission and is engaged in the generation and distribution of electricity and other related services to approximately two million residential, commercial and industrial customers within the State of Michigan.

2. In Case No. U-18369, the Commission approved a new "three-phase" approach for approval, recovery and reconciliation of DR expenditures on a going forward basis. (See *In re On the Commission's Own Motion*, Case No. U-18369, Order dated Sept. 15, 2017, p. 8.)

3. The three-phase approach is a multi-step process where evaluation of DR proposals begins in the Company's Integrated Resource Planning ("IRP") plan. (See *In re On the Commission's Own Motion*, Case No. U-18369, Order dated Sept. 15, 2017, p. 8.)

4. Recognizing that utilities were not required to file an IRP until 2019, the Commission provided an interim mechanism for reconciliation to bridge the gap between the prior rate case-centered and future IRP-based DR regulatory framework. (See *In re On the Commission's Own Motion*, Case No. U-18369, Order dated Sept. 15, 2017, p. 9.)

5. Specifically, the Commission stated that until an IRP is approved, there shall be annual, stand-alone reconciliation cases that will match actual spending on DR programs with amounts approved in the previous general rate cases. (See *In re On the Commission's Own Motion*, Case No. U-18369, Order dated Sept. 15, 2017, pp. 9-10.)

6. The Commission also stated that the interim mechanism applies to DR activities in ongoing rate cases. (See *In re On the Commission's Own Motion,* Case No. U-18369, Order dated Sept. 15, 2017, p. 10.)

7. DTE Electric recently filed its first IRP on March 29, 2019, Case No. U-20471. However, no order in Case No. U-20471 has been approved at the time of the filing of this DR reconciliation proceeding since the Company's IRP proceeding is still ongoing.

8. At the time the Commission issued its final order in Case No. U-18369, DTE Electric had an ongoing general rate case for which the order approving rates was not issued until April 18, 2018. (See *In re DTE Electric Co*, MPSC Case No. U-18255, Order dated April 18, 2018.)

9. Based on the foregoing, the Company's first reconciliation of its DR expenditures includes the expenditures approved in the Commission's order approving new rates in Case No. U-18255. (See *In re DTE Electric Co*, MPSC Case No. U-18255, Order dated April 18, 2018.)

10. For the capital-related expenditures, DTE Electric is reporting actuals for the Company's DR portfolio from January 1, 2017 through December 31, 2018, compared to authorized spend for the same period.

11. For O&M, the Company is reconciling authorized O&M to the 12-month period from January 1, 2018 through December 31, 2018.

12. In support of its Application, the Company is filing the direct testimony and exhibits of two witnesses: Mr. Keegan O. Farrell ("Mr. Farrell") and Mr. Rodrigo Cejas Goyanes ("Mr. Goyanes"). The contents, recommendations and proposals set forth in the testimony and exhibits are attached to this Application and provide further support for the relief requested.

13. Mr. Farrell describes the Company's DR portfolio and provides details regarding the status and performance of the programs and pilots for the calendar years of 2017 and 2018 that are subject to this reconciliation proceeding.

14. Mr. Goyanes describes how the Company has spent $2,190,647 million in capital expenditures above the originally authorized levels in prior general rate cases and $373,380 in O&M expenses above the authorized levels in Case U-18255.

WHEREFORE, DTE Electric Company respectfully requests that the Michigan Public Service Commission:

A. Approve the Company's 2017 and 2018 DR reconciliation in the amounts of $2,190,647 million in capital expenditures above the originally authorized levels in prior general rate cases and $373,380 in O&M expenses above the authorized levels in Case U-18255;
B. Approve that the actual additional capital expenditures will be deferred as a regulatory asset if the Commission declines to include the costs as plant in a 2019 DTE Electric general rate case filing;

C. Confirm deferred regulatory asset treatment is available for additional operating costs and capital expenditures that are reconciled in future annual reconciliation cases, regardless of whether regulatory asset treatment is ordered in the instant case; and

D. Approve a defined financial incentive structure for the Company's future investment in the DR portfolio subject to future reconciliation cases resulting from a proposal of a joint work group including the Commission's Staff.

Respectfully submitted,

DTE ELECTRIC COMPANY

David S. Maquera

Digitally signed by David S. Maquera
Date: 2019.05.30 16:18:24 -04'00'

By: ______________________________

David S. Maquera (P66228)
Attorney for DTE Electric Company
One Energy Plaza, 1635 WCB
Detroit, Michigan 48226
(313) 235-3724

Dated: May 30, 2019

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of DTE Electric Company for reconciliation of its 2017-2018 demand response program costs. ____________________________________	))))	 Case No. U-20521

QUALIFICATIONS

AND

DIRECT TESTIMONY

OF

KEEGAN O. FARRELL

DTE ELECTRIC COMPANY
QUALIFICATIONS OF KEEGAN O. FARRELL

Line
No.

Q1. **What is your name, business address and by whom are you employed?**

A1. My name is Keegan O. Farrell. My business address is One Energy Plaza, Detroit, Michigan 48226. I am employed by DTE Energy Services, LLC (DTE Energy) as a Principal Supervisor – Demand Response.

Q2. **On whose behalf are you testifying?**

A2. I am testifying on behalf of DTE Electric Company (DTE Electric or Company).

Q3. **What is your educational background?**

A3. I graduated from Michigan State University, with a Bachelor of Arts Degree in Communication. In addition, I received a Master of Science Degree in Decision Technologies from the University of North Texas.

Q4. **What is your professional experience?**

A4. From 2008 until 2012, I was employed by DTE Gas Resources, LLC in Fort Worth, Texas where I held positions of increasing responsibility, ultimately serving as a Decision Support Analyst. In this role, I was responsible for assisting with calculating reservoir economics, monitoring daily oil and natural gas production, and overseeing the compliance and emission calculations for the Environmental Protection Agency's Greenhouse Gas Reporting Program (Subpart W). In 2012, I joined DTE Energy as a Senior Business Financial Analyst – Load Research. In 2014, I was promoted to Principal Financial Analyst – Load Research. In this position, I was responsible for developing and implementing statistical sampling programs used to evaluate customer class usage characteristics, developing allocation schedules for use in cost-of-service studies and rate design, and for measuring and evaluating demand response programs offered by the Company.

Q5. **What is your current position?**

A5. In 2018, I accepted my current position of Principal Supervisor – Demand Response. In this position, I am responsible for overseeing DTE Electric's Demand Response (DR) portfolio, which includes the short and long term strategic development of DR programs.

Q6. **Do you participate in any industry associations?**

A6. Yes. I am the course coordinator for the Association of Edison Illuminating Companies (AEIC) Fundamentals for Load Data Analysis course. In addition, I represent DTE Energy on the board of the Peak Load Management Alliance (PLMA).

Q7. **Have you received any additional training?**

A7. Yes. I have completed the AEIC Fundamentals of Load Data Analysis course. I have also attended various courses at Michigan State University Institute of Public Utilities Annual Regulatory Studies Program as well as the Demand Response Fundamentals and Evolution Course presented by the PLMA.

Q8. **Have you testified previously before the Michigan Public Service Commission?**

A8. Yes, I have sponsored testimony and exhibits before the Michigan Public Service Commission (MPSC or Commission) in the following DTE Electric cases:

Case No.	**Description**
U-18014	DTE Electric 2016 General Rate Case
U-18255	DTE Electric 2017 General Rate Case
U-20162	DTE Electric 2018 General Rate Case
U-20471	DTE Electric 2019 IRP

Line No.

Purpose of Testimony

Q9. **What is the purpose of your testimony?**

A9. The purpose of my testimony is:

1) Discuss DTE Electric's existing demand response resources including residential, commercial, and industrial customer programs and tariffs;
2) Discuss the status of the demand response programs during the corresponding calendar years of 2017 and 2018 subject to this reconciliation proceeding;
3) Discuss DTE Electric's interruptible performance results from 2017 and 2018.

Q10. **Are you sponsoring any exhibits in the proceeding?**

A10. Yes, I am sponsoring the following exhibits:

Exhibit	Description
A-1	DR 2017 Annual Report
A-2	DR 2018 Annual Report

Q11. **Could you describe the two exhibits?**

A11. Yes. Exhibit A-1 is the annual demand response report for the year 2017 as required by the Commission's Order in Case No. U-17936 and filed with the Commission on February 1, 2018. Exhibit A-2 is the annual demand response report for the year 2018. Pursuant to page 4 of Staff's DR Regulatory Framework Recommendations in Case U-18369 (approved by the Commission), the annual DR reporting requirement previously provided in U-17936 is now included as part of the current

Line No.

DR reconciliation filing. Both reports present information regarding the Company's DR portfolio that is complementary to my testimony.

Q12. **Were these exhibits prepared by you or under your direction?**

A12. I assisted with the creation of Exhibit A-1 in my prior role as the report was prepared before I assumed my current role. Exhibit A-2 was prepared under my direction.

Part I. EXISTING DEMAND RESPONSE PROGRAMS

Q13. **What is the purpose of demand response programs?**

A13. Demand response programs are designed to reduce enrolled customers' energy use during peak hours. The reduction in customer usage from DR programs provide value to both the utility and the customer through reduced capacity needs and lower capacity costs.

Q14. **Could you provide an overview of the programs that made up the Company's demand response portfolio?**

A14. Yes. The Company currently has an established DR portfolio, which combines a diverse set of programs and pilots. For simplicity purposes, "programs" is used to refer to established measures that are being managed by the Company and are delivering accountable peak demand reduction. The term "pilot" is used to refer to measures that are in development or exploratory stages and are intended to become programs in the future if they prove successful. Based on the results of these pilots and of benchmarking efforts, the Company identifies alternative DR programs that may become economic and technically viable alternatives to generation capacity, have an appropriate level of customer adoption potential, and are cost-effective for

Line
No.

customers. These pilots seek to identify how a unique customer base will react to specific marketing efforts, program design features, and other characteristics that are dependent on DTE Electric's unique combination of systems, equipment, tariffs, programs and processes. Pilots form part of the overall Company's DR efforts as it is the most prudent business practice to conduct pilots before launching full scale programs. The DR portfolio includes dispatchable and non-dispatchable programs that are available to residential, commercial and industrial customers.

Q15. **What is the difference between dispatchable and non-dispatchable programs?**

A15. A dispatchable program is one in which an action is taken in response to requests or "calls" from a utility. The dispatch may be communicated directly to connected devices such as a control switch on an air conditioning unit or to designated energy managers, who modify their operations. Often, there are non-performance penalties or other conditions designed to increase customer compliance. Examples of dispatchable programs include direct load control of air conditioning units or interruptible tariffs for Commercial and Industrial customers.

A non-dispatchable program is one in which voluntary actions are taken by the customer to reduce or shift demand from peak to non-peak periods. Time-of-use (TOU) rates are an example of a non-dispatchable program. The TOU rates vary based on the time of day to reflect the varying cost to supply, typically higher during peak hours and lower during non-peak hours, and to reduce load, require that customers voluntarily shift their usage to the lower rate non-peak hours.

Line
No.

Q16. **What programs make up the Company's dispatchable demand response portfolio?**

A16. The following are descriptions of each program within the dispatchable demand response portfolio:

- Interruptible Space-Conditioning Rate (D1.1): Commonly referred to as "IAC", this program consists of a separately metered service connected to the customer's central air conditioner (A.C) or heat pump and is available to residential and commercial customers. DTE Electric will cycle the A/C condenser by remote control on selected days for intervals of no more than 30 minutes in any hour and more than eight hours in any day.
- Interruptible General Service Rate (D3.3): Commercial secondary customers can elect to have separately metered service that is subject to interruption. This rate is not available to customers whose loads are primarily off-peak.
- Interruptible Water Heating Service Rate (D5): This program is available to customers (both residential and commercial) using hot water for sanitary purposes or other uses subject to the approval of the Company. A timer or other monitoring device controls the daily use of all controlled water heating service.
- Interruptible Supply Base Service Rate (D8): Primary voltage customers who desire separately metered service for a specified quantity of demonstrated interruptible load of not less than 50 kW at a single location can take service under this rate.
- Alternative Electric Metal Melting (Rider 1.1): Customers who operate electric furnaces for the reduction of metallic ores or metal melting can have that load separately metered, making it subject to interruption.

Line No.

- Electric Process Heat (Rider 1.2): Customers who use electric heat as an integral part of anodizing, plating or a coating process, who are willing to be subject to interruption can take service under this rate through a separate meter.
- Interruptible Supply Rider (Rider 10): Rider 10 allows customers to elect the amount of interruption they are willing to take under a separate meter, up to 650 MW of enrolled load. Rider 10 is designed for customers of greater than 50 MW at a single location, but at DTE Electric's discretion, and with available capacity, the minimum site requirements can be waived.
- Capacity Release (Rider 12): Customers can be provided a voluntary capacity release payment by subscribing at least 50 percent of their facility load to voluntary interruption during peak events.

The DTE Electric's DR 2018 Annual Report attached as Exhibit A-2 sponsored in my testimony includes further details regarding the above-mentioned programs.

Q17. **How many MWs of potential load reduction did each dispatchable program within the portfolio offer in 2017 and 2018?**

A17. The table below shows the number of MWs each program claimed as load modifying resources (LMRs). The Company registered these resources for participation in the Midcontinent Independent System Operation (MISO) Capacity Auction to help meet capacity requirements for the peak period. The 2017 registered capacity by DR program can be seen in Table 1 and the 2018 registered capacity in Table 2.

Table 1 DTE Electric Load Modifying Resource Program

Registered Capacities for 2017/2018 MISO Planning Year

Program	Enrollment[1]	MW (UCAP[2])
R10 Interruptible Supply Rider	61	300
D1.1 Interruptible Space Conditioning	276,566	108
D8 Interruptible Primary Supply Rate	163	100
R1.2 Process Heat Rider	196	83
D3.3 Interruptible General Service	121	25
R1.1 Metal Melting Rider	17	8
D5 Interruptible Water Heating	52,276	6
Total	**329,400**	**629**

[1] Number of customers taking service under tariff as of 12/31/2017
[2] UCAP values are used by MISO for their resource adequacy requirements.

Table 2 DTE Electric Load Modifying Resource Program

Registered Capacities for 2018/2019 MISO Planning Year

Program	Enrollment[3]	MW (UCAP[4])
R10 Interruptible Supply Rider	61	302
D1.1 Interruptible Space Conditioning	274,492	150
D8 Interruptible Primary Supply Rate	166	101
R1.2 Process Heat Rider	196	83
D3.3 Interruptible General Service	128	25
R1.1 Metal Melting Rider	17	8
D5 Interruptible Water Heating	51,031	6
Total	**326,091**	**675**

Q18. **Does the Company offer any non-dispatchable demand response programs?**

A18. Yes, the Company offers residential customers a time-of-day rate (D1.2), a dynamic peak pricing rate (D1.8), a geothermal time-of-day rate (D1.7) and an electric vehicle time-of-day rate (D1.9). Residential customers have the option to put their entire electric load on either the time-of-day rate or the dynamic peak pricing rate. Additionally, or alternatively, a residential customer may put a portion of their load

[3] Number of customers taking service under tariff as of 12/31/2018
[4] UCAP values are used by MISO for their resource adequacy requirements.

Line No.

on the electric vehicle time-of-day rate, the geothermal time-of-day rate, or both, if they fit the criteria of those programs.

Q19. **Can you describe the non-dispatchable programs?**

A19. Yes. The non-dispatchable programs that DTE Electric offers are as follows:

- Residential Time-of-Day (D1.2): Residential customers can pay a lower energy charge during off-peak (7 P.M. to 11 A.M.) than on-peak hours (11 A.M. to 7 P.M.), Monday through Friday. While not a callable program, the time-of-day rate encourages customers to shift their energy usage patterns.
- Geothermal Time-of-Day (D1.7): This rate is available on an optional basis to residential customers who desire separately metered service for approved geothermal space conditioning and/or water heating. The off-peak and on-peak schedule is the same as the residential time-of-day rate.
- Dynamic Peak Pricing (D1.8): Residential and commercial customers can elect to have a tiered time-of-use rate with a critical peak-event overlay. The rate is designed to allow customers to manage their electricity costs by reducing or shifting load during high-cost periods. The three-tiered rate has an off-peak period (weekdays between 11 P.M. to 7 A.M., Company-recognized holidays and weekends), a mid-peak period (non-holiday weekdays from 7 A.M. to 3 P.M. and from 7 P.M. to 11 P.M.) and an on-peak period (non-holiday weekdays from 3 P.M. to 7 P.M.). During a critical peak event, the cost per kWh increases during the on-peak period. The Company is permitted to call up to 14 events per year.

Line
No.

- Electric Vehicle Time-of-Day (D1.9): Customers with electric vehicles have the option to take separately metered service to charge their vehicle. The on-peak period is Monday through Friday from 9 A.M. to 11 P.M., while the off-peak period comprises the remaining hours.

Q20. **How are non-dispatchable programs treated in the Company's DR portfolio?**

A20. Non-dispatchable programs do not meet the requirements under MISO to be treated as a load modifying resource. Unlike dispatchable programs, non-dispatchable programs are used to reduce the Company's capacity requirement. The associated MWs for peak load reduction of non-dispatchable programs are not included in the total reduction value of the Company's DR portfolio.

Q21. **Did the Company engage in conducting any pilots during the 2017 and 2018 timeframes?**

A21. Yes. The Company began evaluating two non-dispatchable residential pilots, a Bring Your Own Device (BYOD) Program and a Programmable Controllable Thermostat (PCT) Program in 2017. Both pilots continued to be evaluated throughout 2018.

Q22. **Could you describe the BYOD Program?**

A22. Yes. The BYOD Program is a pilot program in which the Company enrolls residential customers who already have a Wi-Fi enabled smart thermostat installed in their residence. In this program, customers' thermostats are configured to allow

Line
No.

the Company to send a control signal during BYOD events which raises the thermostat's set-point by four degrees during an event.

Q23. Could you describe the PCT Program?

A23. Yes. The PCT program, marketed under the name SmartCurrents™, is a form of demand response known as Variable Peak Pricing[5] (VPP) where the price of electricity varies by time-of-day but also includes a critical peak price on high load days. Under the PCT Program, the Company is expanding the number of participants in the existing Dynamic Peak Pricing rate (D1.8 Rate). Customers who sign up to participate in the PCT program receive a free Wi-Fi enabled thermostat and agree to take service under the Dynamic Peak Pricing rate. By participating in the program, customers allow the Company to increase the thermostat set-point by four degrees on critical peak days when the cost per kWh increases to $0.95 between the hours of 3:00 P.M. and 7:00 P.M. The customer still retains the option to override the temperature set point; however, manual overrides of the utility signal could drive the customer's bill higher with increased energy usage during the peak period.

Q24. Did the Company complete an evaluation of additional pilots in 2018?

A24. Yes. In 2018, the Company partnered with NextEnergy (a facility space that incorporates an auditorium, meeting spaces, laboratories, microgrid and other areas) and Enbala (a cloud-based platform provider) to implement a pilot encompassing multiple system assets at NextEnergy's commercial customer facility. The goal of the pilot was to specifically assess the performance of the Enbala's Symphony

[5] Variable Peak Pricing is the term used in the 2017 Statewide Demand Response Potential Study. The Company refers to this rate as its Dynamic Peak Pricing rate or DPP.

technology and the communication tool and platform during DR events. The Company was able to use a two-way communication tool and platform to select and manage specific customer assets for load controlling without a full facility shut-off or interruption. The pilot included various customer assets including chilled and chiller water pumps, air handler units (AHU), load bank (microgrid), a generator, and an electric vehicle charger that were all interconnected through Enbala's Virtual Power Plant software. The Company continues to assess the applicability of a similar pilot(s) at a different customer and location.

The Company also began conducting a pilot that involves a partnership with the Electric Power Research Institute (EPRI)'s Transportation Program. The pilot program will leverage EPRI's Plug-in Electric Vehicle (PEV) platform to develop a proof-of-concept to streamline the management of PEV charging. The Company is partnering with specific PEV automotive manufacturers in its service territory in pilots so that the Company can assess the effectiveness of the open-standard-based platform concept to integrate PEV charging with grid objectives through demand response. The Company and the automotive manufacturers hope to learn the responsiveness of the PEV owners and their willingness to participate in DR events specifically targeted at vehicle charging and the amount of demand that is curtailed through events. The planning stage of this pilot has concluded, and the first event was called on February 26, 2019.

The Company is also evaluating battery storage pilots and their applicability to demand response. One such pilot is in the planning stages and consists of a behind-the-meter project combining a battery-based energy storage system (BESS) along

Line No.

with a solar photovoltaic (PV) system on the rooftop of the parking structure at a major automotive company's facility. This pilot is being developed together with the Company's Renewables team, who is sponsoring the solar PV system and integration. The BESS will be used and tested in conjunction with the solar PV system for several purposes that include testing actual performance and operation of batteries in the field as well as testing the use of batteries for peak load reduction and/or energy abatement.

Part II. DEMAND RESPONSE PROGRAM STATUS DURING 2017 AND 2018

Q25. Could you describe what the Company is doing to improve performance of the IAC program?

A25. Yes. Beginning with the approval requested in General Rate Case U-17767, DTE Electric began upgrading the existing one-way radio control units (RCUs) with the new two-way ZigBee enabled switches that leverage the Company's Advanced Metering Infrastructure (AMI) network. The existing one-way radio paging infrastructure is quickly becoming obsolete. The equipment currently in use by the Company is no longer being manufactured and replacement parts are very difficult to find for the outdated 56K modem technology. By utilizing a two-way communication infrastructure, the Company validates the status of each load control device remotely. This functionality allows for the Company to identify and diagnose non-operational units through the AMI network without having to physically visit the customer location. The limitations of the antiquated one-way infrastructure interfere with the ability to receive full capacity credit for the program in MISO. The Company has increased the MISO acknowledged capacity on the IAC program as the replacement of the old technology is occurring. The Company requested approval to start and then continue the ZigBee upgrade in sequential rate cases U-18014, U-18255 and U-20162. At the conclusion of 2017, the Company had installed a total of 60,190 units, which 27,361 were installed within the 2017 calendar year. The Company successfully installed 27,311 ZigBee switches in 2018, to reach a cumulative total of 87,501 at the end of 2018. The Company is forecasting that it will finalize the upgrade of the estimated total of 275,000 units by 2023. This replacement will translate into an increased load reduction capability over time above the lower estimates that would have resulted from the continued operation of the older technology control devices.

Q26. **What has customer enrollment been like in the BYOD pilot program?**

A26. In 2017, the Company began evaluation of a BYOD pilot program. 238 customers were provided a $50 incentive for the ability of the Company to send a 4-degree set-point adjustment to their wi-fi enabled Programmable Communicating Thermostat. The temperature adjustment only occurred during a day- ahead communicated event for the hours of 3:00 P.M. to 7:00 P.M. Based on the initial results of the BYOD pilot, the Company continued offering an incentive for enrolling customers throughout 2018, ultimately enrolling 3,790 additional customers into the program (totaling 4,028 customers at year-end 2018). The cumulative total as of April 30, 2019 reached 4,772 customers. The Company originally set an enrollment goal of 5,000 customers by 2021, however, it has since increased the goal to 25,000 customers by the end of 2020 because of the higher than expected adoption rate of customers.

Q27. **Could you describe the Company's progress in enrolling customers in the PCT pilot program?**

A27. Yes. After the MPSC order in case No. U-18014 was issued, in January 2017, the Company issued a Request for Proposal (RFP) to third party implementation contractors. Evaluations of the RFP responses were conducted during the second quarter and contract negotiations began in the third quarter of 2017. The Company implemented a 50-unit technology test in the third quarter of 2017 to gauge customer interest and the ability to deliver signals to devices in the field. This test provided data confirming the viability of the program as well as some needed modifications. Since then, the Company embarked in the execution of the pilot with the approved initial enrollment goal of 10,000 customers, as the Company received funding to enroll 10,000 customers in the Company's U-18014 rate case. As of the end of 2018, there was a total of 4,118 customers enrolled in the pilot program. As of April 30, 2019, the Company has enrolled an additional 1,355 customers for a total of 5,473 enrolled customers and continues to get actionable feedback from them to inform future improvements and initiatives. For example, when comparing the usage profile from the SmartCurrents™ customers to that of the original D1.8 customers, it is being observed that the SmartCurrents™ customers are not reacting to the time-of-use (TOU) portion of the rate. Using this information, the Company is going to start educating customers that the D1.8 customers has a TOU component that the customers can take advantage of for additional savings. Learnings such as this regarding customer participation are also guiding the structure and development of other similar pilots such as the BYOD pilot program. As this point in time, the Company continues to work toward the initial goal of 10,000 enrolled customers and will re-evaluate the goals of the program going forward once this goal is achieved.

Part III. DEMAND RESPONSE RESULTS FROM 2017 AND 2018

Q28. **Did the Company call any demand response events in 2017 and 2018?**

A28. Yes. The Company called four controlled interruptible air conditioning (IAC) (under rate D1.1) events 2017. In 2018, the Company called four controlled dynamic peak pricing (DPP) events. In addition, the Company called three BYOD events and a series of building automation events to evaluate pilot performance. Over the two years, the Company also called a series of test events to test the demand response technology.

Q29. **What were the results of the IAC events in 2017?**

A29. The four controlled events in 2017 were called on September 21, 22, 25 and 26 due to unseasonably hot weather that increased energy prices. The event on September 21^{st} ran for six hours while the other three events ran for five hours. The maximum megawatt reduction for each event is displayed in Table 3.

Table 3 : IAC Interruption Results from 2017 Event

Date	Hours	Max MW Reduction
9-21-2017	12-18	43
9-22-2017	14-19	39
9-25-2017	14-19	62
9-26-2017	14-19	65

Q30. **What were the results of the DPP events in 2018?**

A30. In 2018, there were four controlled DPP events were called. The first two events dated June 28^{th} and July 3^{rd} included an additional analysis of customers who were

Line
No.

just on the rate as well as the group of SmartCurrents™ (described previously). The last two events of the summer (July 13th and August 28th) did not include a separate analysis for customers enrolled on SmartCurrents™. The average reduction per event for customers enrolled on SmartCurrents™ is displayed in Table 4. The customer reduction is calculated by comparing the SmartCurrents™ load curve to a prorated standard residential load curve.

Table 4 Average kW Reduction per SmartCurrents™ Customer

Date	Hours	Avg. kW Reduction
6-28-18	16-19	.985
7-3-18	16-19	1.07

The average kWh reduction for all customers (both SmartCurrent™ customers and DPP-only customers) enrolled in the dynamic peak pricing rate is displayed in Table 5.

Table 5 Average kW Reduction per Dynamic Peak Pricing Customer

Date	Hours	Avg. kW Reduction
6-28-18	16-19	.444
7-3-18	16-19	.437
7-13-18	16-19	.469
8-28-18	16-19	.582

Q31. **Could you discuss the results of the three BYOD events called in 2018?**

A31. Yes. The Company called three BYOD events in 2018 to evaluate the initial performance of the program. During the three events, the Company evaluated the percentage of customers who overrode the temperature set-point, the percentage of customers who opted out of the event completely as well as the average load reduction achieved by program participants. The details of each event are highlighted in Table 6.

Table 6 2018 BYOD Event Results

Date	Hours	Avg. kW Reduction	% Opt-out	% Override
7-13-18	16-19	.441	21.8%	1.7%
8-28-18	16-19	.519	19.9%	2.6%
9-5-18	16-19	.549	33.4%	4.2%

Q32. **What is the Company's plan for the future of the BYOD?**

A32. In the summer of 2019, the Company will experiment with shortening the notification window to the same day and also reducing the duration of events. The 2018 events had a day ahead notification window and all the events lasted four hours. Shortening the notification window could allow the Company to take credit for the MW reduction of the BYOD program in the MISO market while shortening the event duration could increase customer engagement, reduce the op-out percentage and reduce the override percentage. The Company also plans to experiment with pre-cooling before BYOD events during the summer of 2019 as well.

Line
No.

Q33. **What were the results of the building automation pilot that Company embarked on with Enbala?**

A33. In 2018, the Company evaluated Enbala's Symphony technology by partnering with NextEnergy. Specifically, 12 events were called, which interrupted different assets of NextEnergy. The results of each event, along with the asset(s) that were interrupted during the event are displayed in Table 7.

Table 7 Building Automation Event Results

Date	Asset Interrupted	kW Reduction
2-12-18	Generator	60
3-12-18	AHU1, EV Charger	4.6
3-28-18	AHU1, AHU2, EV Charger	13.6
6-26-18	AHU1, AHU2	31.3
7-25-18	AHU1, AHU2	18
8-9-18	AHU2, Generator	59.7
8-16-18	AHU1, AHU2, Generator	82.4
8-24-18	Generator	83.5
8-28-18	AHU1, AHU2, Generator	46.5
10-3-18	AHU1, AHU2, Generator	2.7
10-9-18	AHU1, Generator	12.4
11-27-18	Generator	5.8

Line No.

Q34. **How is the Company evaluating the results of the Enbala pilot?**

A34. Yes. The Company considers the results from the Symphony Technology satisfactory, and, therefore, is planning to expand the program to larger facilities. Currently, the Company is in the initial stages of finding larger customers who would benefit from the technology and, through potential expanded pilots, the Company can create future programs that would provide overall benefits to the demand response portfolio.

Q35. **Does this conclude your testimony?**

A35. Yes, it does.

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of DTE Electric Company for reconciliation of its 2017-2018 demand response program costs. ___________________________________	))))	Case No. U-20521

EXHIBITS
OF
KEEGAN O. FARRELL

DTE Electric Company
2017 Annual Demand Response Report
Case Number U-17936
February 1, 2018

Introduction

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 2018-2022.

The following is DTE Electric's 2017 Annual Report, which provides detailed information on DTE Electric's residential and commercial and industrial (C&I) demand response programs.

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. DTE Electric's cumulative and forecasted load reduction capability over Planning Year[2] (PY) 2017 – 2018 is 630 MW, after adjusting for 2.2 percent transmission losses and PRM_{UCAP}.[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,

[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, 2017 – May 31, 2018
[3] Case No. U-18197, 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 2017 through 2021, Order Filed April 21, 2017.

- 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, and
- Tariff R10 Interruptible Supply Rider.

The Company relies on these programs to avoid market purchases whenever possible. As such, in 2017, 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]

The following sections provide an overview of DTE's current demand response programs, report on 2017 called events, and provide forecasted available demand response over the 2018-2022 period. 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.

<u>Programs Available Primarily to Residential Customers</u>
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 2017 data. In 2017, DTE Electric initiated control events under the Interruptible Space-Conditioning Rate.

Behavioral Demand Response Program (BDR)
The Company was in the third year of participation in a Behavioral DR program in 2017 and called five events for evaluation purposes. These were called on August 16,17 and 30 and September 25,26 2017. The BDR program provided, on average, 1.5 MW of load reduction per event in 2017. In 2017, the BDR program was presented to the Energy Waste Collaborative Technical Sub-Committee for inclusion into the 2018 Energy Waste Reduction (EWR) Measures database. The white paper was not included into the 2018 EWR Measures database. Given the negative decision on commercialization of the BDR product within the EWR program portfolio, the Company has ended the BDR program as of December 31, 2017.

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

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 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 prices in the Midcontinent Independent System Operator (MISO) market are high.

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 February 1, 2017 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 2017. As of December 1, 2017, approximately 23 percent of the nearly 275,000 switches in the field have been replaced[6].

The Interruptible A/C program represents 98 MW[5] of capacity. There were four control events in 2017. The events occurred on September 21, 22, 25 and 26 in response to high market prices. The Interruptible A/C program is used whenever possible in lieu of more expensive market purchases. The results of the four September events are summarized in table 1.

Table 1: 2017 IAC Events

Date	Event Hours	Peak MW Response
9-21-2017	12 - 18	43
9-22-2017	14 – 19	39
9-25-2017	14 – 19	62
9-26-2017	14 - 19	65

[5] MISO 2018/2019 PY, Net of 2.1 percent transmission losses and adjusted for $PRM_{UCAP.}$

[6] DTE is focused on repair of existing IAC customers. While this program is open to new participants, the Company is focusing its efforts on marketing other demand side management programs such as Dynamic Peak Pricing.

Tariff D1.8 – Dynamic Peak Pricing (DPP)

The DPP tariff encourages residential customers, secondary commercial, and secondary industrial customers 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 2, 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 spikes 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 off-peak hours of the day or season, which keeps the utility's total annual revenue constant. 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 and must stay on the tariff for at least a year.

Table 2: 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	8.1331₵ 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	95.0 ₵ per kWh for all kWh during Critical Peak Hours	95.0₵ 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 2,300 customers currently enrolled in the program. Moving forward, the Company is focused on increasing DPP enrollments in conjunction with its approved Programmable Communicating Thermostat program.

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.

Currently, 57,000 customers are enrolled in the Water Heating Service Rate, representing 5 MW[6] of potential load reduction. This tariff was not called on for interruption in 2017.

Potential Residential DR Programs

The Commission has specifically asked for information regarding a description of any other programs that the company is considering implementing that might have potential for expanding DR resources. In 2017, the Company developed 2 pilot programs for DR resources.

The Company tested a Bring Your Own Device option to approximately 200 customers. They were provided a $50 incentive for the ability of the Company to send a 4-degree set point adjustment to their Programmable Communicating Thermostat for the peak hours of 3pm – 7pm during a communicated event. In 2017, the Company issued 3 events in conjunction with this pilot on September 21, 25 and 26. On average, the customer response was an approximate 0.5 kW reduction over all three events.

In a separate pilot, the Company provided Programmable Communicating Thermostats to 50 residential customers on the Dynamic Peak Pricing rate. These customers allowed the Company to send a 4-degree set point adjustment to the thermostat for the peak hours of 3pm-7pm during a communicated event. In 2017, the Company issued 3 events in conjunction with this pilot on September 21, 25 and 26. On average, the customer response was an approximate 1.0 kW reduction over all three events

Programs Restricted to Commercial & Industrial (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, and
- Tariff R10 Interruptible Supply Rider.

Together, these programs provide 469 MW of unadjusted load reduction capability. There were no interruptions under these tariffs in 2017.

[6] MISO 2018/2019 PY, Net of 2.1 percent transmission losses and adjusted for PRM_{UCAP}

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 121 customers participating in this rate offering, representing 23 MW of load reduction capability.

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 163 customers are enrolled in Tariff D8 for a total of 91 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 Rate Schedules D3, D4, D8 or D11 and consume electricity for holding operations. These customers are subject to immediate interruption on short-term notice to maintain system integrity, but will be provided advanced notice of probable interruption and the estimated duration whenever possible. There are 17 customers enrolled in Tariff R1.1, representing 7 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 to maintain system integrity, but will be provided advanced notice of probable interruption and the estimated duration whenever possible. There are 196 customers enrolled in this program, for a total of 75 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. There are currently 61 participants, representing 273 MW of load reduction capability.

Potential Commercial DR Programs

The Commission has specifically asked for information regarding 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 may be included in subsequent rate case filings when new DR programs have been identified as both cost effective measures for the Company and attractive to customers in the marketplace.

In late 2017, the Company developed a building automation pilot targeted at commercial customers. This pilot is being connected to a building management system and resources identified at NextEnergy to test the ability to curtail load based on price signals from the utility. This work is currently on-going.

Forecasted Available Demand Response Capacity

Tables 3, 4 and 5 below summarize projections for the Company's current demand reduction program.

Table 3 shows forecasted available demand response capacity by MISO Planning Year (PY). This capacity is adjusted to reflect transmission losses and PRM_{UCAP} in Table 4. Net forecasted available capacity is shown in Table 5.

Table 3: Forecasted Available Demand Response Capacity, Planning Year (PY) 2017-2022

Demand Response Programs Capacity (MW)	**PY2017-2018**	**PY2018-2019**	**PY2019-2020**	**PY2020-2021**	**PY2021-2022**
R-1.1 Metal Melting	7	7	7	7	7
R-1.2 Process Heat	75	75	75	75	75
R-10 Interrupt. Supply Rider	273	273	273	273	273
D3.3 Interrupt. General Service	23	23	23	23	23
D5 Interrupt. Hot Water Htg	5	5	5	5	5
D8 Interrupt. Supply Rate	91	91	91	91	97
Year Round Total	474	474	474	474	474
D1.1 Interruptible A/C	98	135	187	202	221
Total Qualified Resources	572	609	661	676	695

Table 4: Adjustments to Forecasted Available Demand Response Capacity, Planning Year (PY) 2017-2022 for PRMucap

Adjustment for Transmission Losses and PRM_{UCAP} (MW)	PY2017-2018	PY2018-2019	PY2019-2020	PY2020-2021	PY2021-2022
R-1.1 Metal Melting	1	1	1	1	1
R-1.2 Process Heat	8	8	8	8	8
R-10 Interrupt. Supply Rider	27	27	27	27	27
D3.3 Interrupt. General Service	2	2	2	2	2
D5 Interrupt. Hot Water Htg	0	0	0	0	0
D8 Interrupt. Supply Rate	9	9	9	9	10
Year Round Total	47	47	47	47	47
D1.1 Interruptible A/C	10	14	17	19	21
Total Qualified Resources	61	61	62	66	68

Table 5: Qualified Forecasted Available Demand Response Capacity after Adjustment, Planning Year (PY) 2017-2022

Qualified Capacity after Adjustment (MW)	PY2017-2018	PY2018-2019	PY2019-2020	PY2020-2021	PY2021-2022
R-1.1 Metal Melting	8	8	8	8	8
R-1.2 Process Heat	82	82	82	82	82
R-10 Interrupt. Supply Rider	300	300	300	300	300
D3.3 Interrupt. General Service	25	25	25	25	25
D5 Interrupt. Hot Water Htg	5	5	5	5	5
D8 Interrupt. Supply Rate	100	100	100	100	107
Year Round Total	521	521	521	521	531
D1.1 Interruptible A/C	108	148	205	221	242
Total Qualified Resources	630	668	724	762	773

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.

Future Reporting Requirements

The Michigan Public Commission Staff (Staff) issued recommendations for future reporting and reconciliation of DR activity as part of Case U-18369. Following comments by other parties, the Commission issued an Order on September 17, 2017 adopting the Staff's recommendations. Therefore, consistent with the Order and recommendations by Staff, this will be the last DR report filed under this docket. Beginning in 2019 and beyond, DTE Electric will be filing the information contained in this report in its future Demand Response Reconciliation filings, which will be part of the annual Energy Waste Reduction Reconciliation filing.

ATTACHMENT A

2017 ANNUAL DEMAND RESPONSE REPORT

Tariff & Sheet No.	Total demand reduction available[1]	Maximum demand reduction achieved (MW)[2]	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)	108	65	98 (LMR)	733	430,000	5,000,000	21	
D1.8 (First Revised Sheet No. D-14.01)	1	1	0	0	0	0	N/A	
D5 (Third Revised Sheet No. D-26.00)	5	N/A	5 (LMR)	N/A	0	0	N/A	
COMMERCIAL AND INDUSTRIAL INTERRUPTIBLE AND PRICE RESPONSE								
D3.3 (Third Revised Sheet No. D-21.00)	25	N/A	23 (LMR)	N/A	0	0	N/A	
D8 (Second Revised Sheet No. D-40.00)	100	N/A	91 (LMR)	N/A	0	0	N/A	
R1.1 (Third Revised Sheet No. D-57.00	8	N/A	7 (LMR)	N/A	0	0	N/A	
R1.2 (Third Revised Sheet No. D-61.00)	82	N/A	75 (LMR)	N/A	0	0	N/A	
R10 (First Revised Sheet No. D-90.00)	300	N/A	273 (LMR)	N/A	0	0	N/A	

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

[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.

DTE Electric Company
2018 Annual Demand Response Report
Case Number U-20521
May 24, 2019

Introduction

The following report provides data on demand response ("DR") enrolled capacity and related events for each program or pilot, as applicable, as well as a supporting narrative. The following items are included in this report: (1) information describing existing programs and pilots by customer class, including an explanation of any program changes resulting from lessons learned in the previous year; (2), if applicable, 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 or pilots that the company is considering implementing that might have potential for expanding DR resources in the future. Additionally, DTE Electric is providing a demand response forecast on an annual basis for the 2019-2023 period.

The following is the DTE Electric's 2018 Annual Report, which provides detailed information on DTE Electric's residential and commercial and industrial (C&I) demand response programs and pilots.

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.

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, and
- Tariff R10 Interruptible Supply Rider
- Tariff R12 Capacity Release

The Company relies on these programs to avoid market purchases during emergency events whenever possible now or in the future. As such, in 2018, 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. The Company seeks to develop a portfolio of programs that balances affordability, flexibility, and reliability in anticipation of a future need.

The following sections provide an overview of DTE's current demand response programs, report on 2018 called events, and provide forecasted available demand response over the 2019-2023 period. 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 three demand response programs as part of its residential demand response portfolio: Interruptible Space Conditioning, Dynamic Peak Pricing, and Water Heating Service Rate. Together, these programs provide over 156 MW of load reduction capability, based on 2018 data. In 2018, DTE Electric initiated control of one event under the Interruptible Space-Conditioning Rate.

Programs encompassing Tariffs D1.1, D1.8 and D5 are available primarily to residential customers, while the remaining programs are restricted to Commercial and Industrial (C&I) customers.

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. Participating customers receive a reduced 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 prices in the Midcontinent Independent System Operator (MISO) market are high.

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. Beginning with the approval requested in General Rate Case U-17767, DTE Electric has been upgrading the existing one-way RCUs with the 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. The Company intends to replace the old switches with the new ones adding up to an estimated total of 275,000 replaced units by 2023. This replacement would translate into a total of 244 MW of load reduction capability for DTE Electric.

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 2018. As of December 31, 2018, the Company has installed a total of 87,501 units, and expects to add 45,000 more units by December 31, 2019. As of April 30, 2019, the Company has installed 12,155 units year-to-date in 2019, and is working with outside vendors to reach the annual year-end target of 45,000 by year-end 2019. Detail of the actual unit installations is as follows:

IAC	Actual 12/31/2017	Actual 12/31/2018	Actual 04/30/2019
Cumulative Number of Installations Completed	60,190	87,501	99,656
Cumulative Growth (Period Ending)	27,361	27,311	12,155

The Interruptible A/C program represents 135 MW of installed capacity (load reduction capability) for the 2018/2019 MISO Planning Year, which translates to approximately 150 Zonal Resource Credits (ZRCs). The Company ran one (1) 4-hour control event in 2018 specifically to evaluate DTE's process, equipment and methodology. The maximum reduction during the 4-hour test event in June 2018 was 110 MW and the average was 94 MW. The data from the event is shown below.

2018 IAC Test Event

Date	Event Hours	Peak MW Response
06-18-2018	3:00pm-6:00pm	110

Tariff D1.8 – Dynamic Peak Pricing (DPP)

The DPP tariff encourages residential customers, secondary commercial, and secondary industrial customers 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 the table 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 spikes 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 off-peak hours of the day or season, which keeps the utility's total annual revenue constant. 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 and must stay on the tariff for at least a year.

Tariff D1.8 - DPP Schedule

	Full Service Residential Customers	**Full Service Secondary Commercial and Industrial Customers**
Power Supply Charges - Energy Charges		
On-Peak	13.808₵ for all On-Peak kWh	14.580₵ for all On-Peak kWh
Mid-Peak	8.054₵ per kWh for all Mid-Peak kWh	8.180₵ per kWh for all Mid-Peak kWh
Off-Peak	4.603₵ per kWh for all Off-Peak kWh	5.080₵ per kWh for all Off-Peak kWh
Critical Peak Hour	95.0₵ per kWh for all kWh during Critical Peak Hours	95.0₵ per kWh for all kWh during Critical Peak Hours
Delivery Charges		
Service Charge	$7.50 per month	$11.25 per month
Distribution Charge	5.430₵ per kWh for all kWh	3.614₵ per kWh for all kWh

The DPP Tariff has 6,827 residential customers enrolled in the program as of April 30, 2019. The Company has been focused on increasing DPP enrollments in conjunction with its approved Programmable Communicating Thermostat (PCT) program.

During the summer of 2018, DTE Electric called four (4) DPP events, which increased the cost per kWh to $0.95 between 3 pm and 7 pm. The 2018 event data is shown below.

Date	**Peak MW Response**	**Avg. kW Reduction**
6/28/2018	2	.444
7/3/2018	2	.437
7/13/2018	2	.469
8/28/2018	2.75	.582

Programmable Communicating Thermostat Pilot Program

Concurrently, the Company is running the Programmable Controllable Thermostat (PCT) pilot program, which is only available to residential customers and requires those customers to enroll or be enrolled in the DPP tariff. The customer's enrollment allows the Company to send a pricing signal to a PCT unit, that has been installed in the customer's home, during a DPP critical peak event. Per the tariff D1.8, customers are notified by 6 PM the day prior to the initiation of the event. During the event, the PCT is sent a pricing signal and raises the thermostat temperature setting by 4 degrees. The PCT uses Wi-Fi to receive the signal from the utility during an event. The customer has the option to override the temperature set point. However, as part of participating on the tariff, such manual over-rides of the utility PCT unit signals could drive a customer's bill to be higher.

The purpose of the program is to lower peak-hour electric demand by residential customers. DTE Electric is using measurement and verification processes to establish the peak demand reduction of those customers enrolled in the PCT program. The Company separates those customers with DTE supplied PCT technology from those on the existing DPP rate and measures the relative load reductions at the meter for the critical peak events. The Company verifies and analyzes a customer's actual load profile before, during, and after an event with hourly data to determine reductions. Per the Commission reporting requirements in Case No. U-18441, this information is included as Internal Demand Response Programs that are applied as an adjustment to the peak forecast in the corresponding reporting requirements for future capacity demonstration filings.

The Michigan Public Service Commission (MPSC) approved the investment to support the enrollment of the initial 10,000 customers in Case U-18014. In Case U-18225, the MPSC denied additional capital spend to expand the program beyond the expenditures approved in Case U-18014. The Commission indicated that showing of initial success in the program is required to support increased funding. Therefore, the Company has been investing in the 10,000-unit enrollment effort since the fourth quarter of 2017 throughout 2018. The ongoing capital expenditures are covering hardware purchases of the PCTs, the DR resource management system software, IT integration and program implementation.

As of December 31, 2018, the Company has enrolled 4,118 customers, and 5,473 by April 30, 2019.

Detail of the actual customer enrollment is as follows:

PCT	Actual 1/1/2018	Actual 12/31/2018	Actual 4/30/2019
Number of Enrollments	--	4,118	5,473
Cumulative Growth (Period Ending)	--	4,118	1,355

The four (4) DPP events called in 2018 included the increasing activated customer PCT units ranging from 883 (6/28/18) to 1,597 (8/28/2018). Representative data showed that in a DPP event where the PCT program is called upon by the Company, the PCT customers show a decline in usage during the critical hours of the event when compared to DPP-only customers. The Company measured an average reduction of 1.03 kW per participating customer based on the analysis of two events in 2018. The data from those events is shown below.

Average kWh Reduction per SmartCurrents™ Customer (PCT)

Date	Hours	Avg. kW Reduction
6-28-18	16-19	.985
7-3-18	16-19	1.07

Bring Your Own Device (BYOD)

In the BYOD pilot program, the Company enrolls residential customers that already have a Wi-Fi enabled smart thermostat installed. Customers under the standard D1 Residential Service rate are targeted for this pilot. Any customer already enrolled in the Interruptible Air Conditioning (IAC) and (Programmable Controlled Thermostat (PCT) program is excluded from the BYOD pilot. The Company offers customers incentives (i.e., gift cards) for enrolling in the program. Customers' thermostats are then configured to allow the Company to send a control signal during BYOD events. BYOD events only occur on weekdays between the hours of 3 P.M. and 7 P.M. and are limited to 10 events per year. During such an event, the Company sends a communication signal to a customer's thermostat to raise the set-point by 4 degrees. In 2018, BYOD customers were notified a day prior to each scheduled event so the customers could make additional behavioral changes such as precooling their homes. Customers can also override the event if they choose to do so. Then, the Company measures and evaluates the peak demand reduction of those customers enrolled in the BYOD program.

The objectives of the BYOD pilot program:

- Assess customer behavior to understand the factors driving the initial customer enrollment and re-enrollment in subsequent years
- Evaluate customer engagement utilizing the sweepstakes approach as an incentive
- Evaluate program performance and the number of customers who override the Company's thermostat set-point changes
- Determine how much peak load reduction is effectively attainable during events under various circumstances

DTE Electric selected EnergyHub as the third-party integrator for the Company's BYOD efforts due to EnergyHub's industry leading expertise in BYOD management solutions, with a special focus on utility-driven programs. The Company's plan to develop the BYOD pilots incorporates the EnergyHub's technical and resource capabilities that are currently being applied to other similar programs in different utilities in North America.

Initially, the Company conducted an approximated 200-customer pilot in 2017, and expanded the cap to a 5,000-particpant limit in late 2018 through 2021. The analyzed data concluded that, in a peak event, where the BYOD program is called upon by the Company, the participating BYOD customers show a decline in usage during the critical hours of the event when compared to the Standard Residential D1 electric service rate. The Company conducted three (3) pilot tests that included a larger set of customers, up to 452 customers at the last called event on September 5, 2018. These recent pilot tests helped analyze how often customers override the thermostat set-point changes, and how much peak load reduction occurs during the BYOD events. It is important to note that the results of the 2018 pilot tests were compared against the behavior of customers in the Standard Residential D1 rate that do not participate in the BYOD program. The findings are as follows:

BYOD 2018 Events

2018 Event	**Targeted Devices (#)**	**Opt-Out (Override) (%)**	**Average Demand Reduction (kW)[1]**	**Average Peak Demand Reduction (kW)[2]**
July 13	234	21.8%	0.441	0.72
August 28	231	19.9%	0.519	0.79
September 5	452	33.4%	0.549	1.03

1 Average Demand Reduction (kW) is the average demand (kW) reduced during the full 4-hour event.
2 Average Peak Demand Reduction (kW) is the average highest peak demand reduced during the 4-hour event.

In August 2018, the Company started a marketing campaign with the goal to enroll 5,000 customers within the 2018-2021 period (three-year period). This enrollment campaign has an incentive consisting of a random sweepstakes raffle for a chance to win 1 of 10 $500 e-gift cards. EnergyHub, as a third-party implementation contractor, is facilitating all marketing efforts, with a special focus on email marketing. EnergyHub has specifically partnered with seven (7) thermostat vendors for coordination and equipment interconnection. The Company identified a positive customer response to this campaign. The Company has reached a significant enrollment rate and effectively enrolled 4,028 customers from August 28, 2018 to December 31, 2018, reaching the forecasted targets through 2021 in a matter of 4 months. Detail of the actual customer enrollment is as follows:

BYOD	Actual 01/01/2018	Actual 12/31/2018	Actual 4/30/2019
Number of Enrollments	228	4,028	4,772
Cumulative Growth (Period Ending)	228	3,800	744

Based on the results of the recent enrollment campaign and of the 2018 summer test events, the Company has identified key insights for the continuous development of the program. Those key insights can be summarized as follows:

- Regarding customer behavior, a well targeted marketing campaign yields significant customer enrollment within a relatively short period; thus, higher enrollment targets are achievable,
- Regarding customer action to events, customers' override rate appears to be higher than expected; thus, a different set of incentive mechanisms can be tested in future callable events to drive a more positive customer behavior

Regarding effective peak load reduction, average demand reduction is within the projected impact of 0.5 kW per customer and the average peak demand reduction is more positive at 0.85 kW on average per customer; thus, effective reduced demand is attainable once the program is expanded to more enrolled and participating customers.

Based on these insights, the Company is actively monitoring ongoing results, and aims at expanding enrollment, and increasing customer engagement that would result in effective peak demand reduction under various circumstances throughout the 2019 year and beyond. The Company is planning to use additional strategies in order to reach a higher event participation length and lower opt out rate; some of these strategies include the introduction to precooling before events and testing out shorter event lengths. A Firm Load Dispatch (FLD) strategy for some events may be utilized to show a smaller snap back as events end and thermostats reset to their original temperature setting.

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.

As of April 30, 2019, approximately 51,000 residential customers enrolled in the Water Heating Service Rate, representing 6 MW of potential load reduction capability. The number of enrolled customers is anticipated to remain relatively flat. This program was registered as a MISO Load Modifying Resource and credited with approximately 6 ZRCs. This tariff was not called on for interruption in 2018.

Other Potential Residential DR Pilot Programs

DR Pilot at Plug-in Electric Vehicle (PEV) platform at C&I customer location

DR in PEV charging. Electric Power Research Institute (EPRI)'s Transportation Program is engaged with leading global PEV manufacturers to develop a proof-of-concept for an open standard platform to streamline the management of PEV charging. DTE is partnering with specific Plug-In Electric (PEV) automotive manufacturers in its service territory in pilots so that DTE can assess the effectiveness of the open-standards-based platform concept to integrate PEV charging with grid objectives through DR and DSM mechanisms. More specifically, DTE is working with automotive manufacturers to gain insights from each DR event.

Pilot Overview

- Open Vehicle-Grid Integration Platform (OVGIP) based: DTE sends demand response (DR) event signals to OVGIP and OVGIP communicates events to each OEM's back end
- OEMs communicate DR curtailment events to pilot participants and gives them option to participate in each event
- DTE uses OpenADR standard messages for DR curtailment events
- DR curtailment windows are 3-4 hours long
- DR windows to study: 9am-11am; 11am-3pm; 3pm-7pm; 7pm-10pm
- Approximately 12 total events over the course of pilot (about 2 per month)
- DTE requires measurement and verification data from OVGIP after each event to confirm participation and compliance with the DR signal

Main Objectives

- Potential energy reduction (kW);
- Testing results from different time of events;
- PEV user behavior in response to different incentives;
- Override (Opt in / Opt out) approach by PEV user; and
- Deliverability of event (ensure communication signals functioned properly)

Participation incentives

- Testing both up-front enrollment incentive and pay-for-performance incentive based on event participation
- See Incentive Scenarios and Test Matrix PowerPoint for more details
- Payments are made to customers via Amazon e-gift card after the 12 events

The pilot is targeting employees of the automotive manufacturer as participating PEV users or customers. The pilot started in 2018, and is expected to extend through June 2021. The target of PEV users enrolled in the program is capped at 1,000 participants. Based on the communication from the original equipment manufacturers (OEMs), the Company only expects to reach 150-200 participants in the first quarter of 2019, and to consolidate effective results by the end of year 2019 after the DR events (mostly during the Summer months) are finalized. Based on the verified benefits (i.e., peak load reduction), the Company will evaluate if an expansion to a more fully developed program with significantly more customer engagement makes sense from a DR perspective.

Programs Restricted to Commercial & Industrial (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, and
- Tariff R10 Interruptible Supply Rider.
- Tariff R12 Capacity Release

Together, For the month of December 2018, these programs offered 464 MW of unadjusted load reduction capability. There were no interruptions under these tariffs in 2018. Refer to Attachment B in the Appendix for a list of customer data by rate class.

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. In December 2018, there were 128 customers participating in this rate offering, representing 25 MW of load reduction capability. This program was registered as a MISO Load Modifying Resource and credited with 21 ZRCs in the 2018/2019 Planning Resource Auction.

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. In December 2018, there were 166 customers are enrolled in Tariff D8 for a total of 101 MW of load reduction capability. This program was registered as a MISO Load Modifying Resource and credited with approximately 91 ZRCs in the 2018/2019 Planning Resource Auction

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 Rate Schedules D3, D4, D8 or D11 and consume electricity for holding operations. These customers are subject to immediate interruption on short-term notice to maintain system integrity, but will be provided advanced notice of probable interruption and the estimated duration whenever possible. In December 2018, there were 17 customers enrolled in Tariff R1.1, representing slightly under 8 MW of load reduction capability. This program was registered as a MISO Load Modifying Resource and credited with slightly over 7 ZRCs in the 2018/2019 Planning Resource Auction. The number of enrolled customers is anticipated to remain relatively flat.

Tariff R1.2 – Electric Process Heat
Rate Schedule R1.2 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 to maintain system integrity, but will be provided advanced notice of probable interruption and the estimated duration whenever possible. There were 196 customers enrolled in this program in December 2018 for a total of 83 MW of load reduction capability. This program was registered as a MISO Load Modifying Resource and credited with 82 ZRCs in the 2018/2019 Planning Resource Auction. The number of enrolled customers is anticipated to remain relatively flat.

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. In December 2018, there were 61 participants enrolled, representing 302 MW of load reduction capability. This program was registered as a MISO Load Modifying Resource and credited with 312 ZRCs in the 2018/2019 Planning Resource Auction. The number of enrolled customers is anticipated to remain relatively flat.

Tariff R12 – Capacity Release

Under this rate, the Company's customers receive a voluntary capacity release payment for reducing loads of not less than 250 kW at a single location. Currently no customers take service under this rate. The Company is in the initial stages to actively market this rate to C&I customers, and anticipates that it will start engaging customers by the second quarter of 2019.

<u>Other Potential Commercial & Industrial DR Pilot Programs</u>

Building Automation Pilot

In late 2017, the Company developed a building automation pilot targeted at commercial customers. This pilot was connected to a building management system and resources identified at NextEnergy to test the ability to curtail load based on price signals from the utility. This work is currently on-going. The Company partnered with NextEnergy and Enbala to implement a cost-effective DSM pilot encompassing multiple system assets at one specific customer facility. The Company had the ability to use a two-way communication tool and platform to select and manage specific customer assets for load controlling without a full facility shut-off or interruption. The pilot included various customer assets including chilled and chiller water pumps, air handler units (AHU), load bank (microgrid), generator, and an EV charger that were all interconnected with multiple control system protocols. The Company selected Enbala as the third-party integrator for the pilot due its expertise in aggregation, control optimization, and dispatchability of distributed energy assets in real time, working along with other utility companies in the country. The goal of the pilot was to specifically assess the performance of the technology, and the communication tool and platform during DR events. The findings are as follows:

2018 Event	Assets	**Demand Reduction (kW)
February 12	Generator	60
March 12	*AHU1, EV Charger	4.6
March 28	AHU1, AHU2, EV Charger	13.6
June 26	AHU1 and AHU2	31.3
July 25	AHU1 and AHU2	18
August 9	AHU2 and Generator	59.7
August 16	AHU1, AHU2 and Generator	82.4
August 24	Generator	83.5
August 28	AHU1, AHU2 and Generator	46.5
10-3-18	AHU1, AHU2, Generator	2.7
10-9-18	AHU1, Generator	12.4
11-27-18	Generator	5.8

**AHU: Air Handler Unit*
***Event length was 2 hours*

Some of the key learning insights are:

- The Company can use the Symphony platform to manage multiple technologies (assets) at one site. This approach is different from most DR programs that command only one piece of equipment or technology.
- The platform provides the utility with reliable capacity and real-time feedback of how the fleet of assets is performing.
- The platform is used to schedule DR events.
- The Company utilizes the platform to control assets through on-site gateways or cloud-to-cloud via application programming interfaces (APIs).
- Connecting a diverse range of assets with multiple control system protocols is technologically feasible, though it requires significant integration and implementation work.

The Company finalized this pilot in December 2018. The Company will use the key insights to investigate future potential pilots or programs of similar nature in other individual C&I customers in 2019 and 2020.

Battery storage solutions

The Company is considering other pilot opportunities in which a battery-based energy storage system could play an important role with potential benefits to customers. For instance, the Company is developing a behind-the-meter pilot consisting of the installation of a battery-based energy storage system (BESS) along with a solar photovoltaic (PV) system on the rooftop of the parking structure at a major automotive company's facility. This pilot is being developed together with the Company's Renewables team, who is sponsoring the solar PV system and integration. The BESS will be used and tested in conjunction with the solar PV system for several purposes that include testing actual performance and operation of batteries in the field, and testing the use of batteries for peak load reduction and/or energy abatement. The pilot will evaluate the technology impact of the battery-based energy storage operation on the overall system peak hours. The Company is using the battery-based energy storage system to evaluate the technology impact of the battery storage system on the overall system peak hours, which usually occurs between 3 pm and 7 pm. For example, the solar array produces maximum energy between 10 am and 2 pm, but the grid load might be highest at 6 pm. The battery portion of the solar PV plus storage pilot will be sized at approximately 100 kW/400 kWh. The Company completed a request for proposal process to determine the cost, timing and outside partners of the pilot development. The Company will proceed with planning, and contract engagements and eventually with advanced payments conditional to regulatory oversight throughout 2019. In addition, pilot opportunities in the energy battery storage space can include the use of a Non-Wires Solution or Alternative (NWA) approach. By identifying Company's substations with loading issues, the Company could manage and dispatch either a customer-sited or a utility-sited storage unit to mitigate substation loading, and, consequently, defer future investment in substation equipment. The DR organization is working collaboratively with the Distribution Operation given the interrelated need of pilot development and information sharing.

Forecasted Available Demand Response Capacity

Table 1 below summarizes projections for the Company's current demand reduction program, Planning Year (PY) 2019-2023.

Table 1: Existing Demand Response Program Levels and Forecasted Growth UCAP (MW)

Existing Demand Response Program Levels and Forecasted Growth UCAP (MW)*	PY 2019	PY 2020	PY 2021	PY 2022	PY 2023
D1.1 Interruptible A/C	207	224	245	245	245
D3.3 Interrupt. General Service	25	25	25	25	25
D5 Interrupt. Hot Water Heating	6	6	6	6	6
D8 Interrupt. Supply Rate	101	101	107	139	144
R1.1 Metal Melting	8	8	8	8	8
R1.2 Process Heat	83	83	83	83	83
R10 Interrupt. Supply Rider	302	302	302	315	348
Total	**732**	**748**	**776**	**821**	**858**

***Source U-18441 DTE Electric DR Program Resources. These numbers have since been updated in the recent DTE Electric's 2019 IRP case, shown in Attachment C.

Conclusion

DTE Electric's demand response portfolio is being 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.

ATTACHMENT A

2018 ANNUAL DEMAND RESPONSE REPORT

Tariff & Sheet No.	Total demand reduction available 1	Maximum demand reduction achieved (MW)2	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)	150	110	150	376	See Note 6	3,843,598	40	4-hour test to evaluate DTE's process, equipment and methodology. The max reduction during the 4-hour test in June 2018 was 110 MW and the average was 94 MW.
D1.8 (First Revised Sheet No. D-14.01)	N/A	2.75	N/A	32	See Note 6	4,669,690	N/A	4 DPP events ran in 2018, with the highest demand reduction (MW) achieved in August 2018
D5 (Third Revised Sheet No. D-26.00)	6	N/A	6	N/A	See Note 6	0	N/A	
COMMERCIAL AND INDUSTRIAL INTERRUPTIBLE AND PRICE RESPONSE								
D3.3 (Third Revised Sheet No. D-21.00)	25	N/A	25	N/A	See Note 6	0	N/A	
D8 (Second Revised Sheet No. D-40.00)	101	N/A	101	N/A	See Note 6	0	N/A	
R1.1 (Third Revised Sheet No. D-57.00	8	N/A	8	N/A	See Note 6	0	N/A	
R1.2 (Third Revised Sheet No. D-61.00)	83	N/A	83	N/A	See Note 6	0	N/A	
R10 (First Revised Sheet No. D-90.00)	302	N/A	302	N/A	See Note 6	0	N/A	

	On-Peak Energy Purchased (MWh) for Demand Response*	Average on-peak energy purchase price ($/MWh) for Demand Response*
Annual Total	--	--

* DTE Electric has processes in place to interrupt its two economic DR classes, D1.1 and D3.3, when the MISO energy market price (the LMP at the DECO.NEC load node) is higher than the respective DR price threshold for a sustained period of time. There were no occasions in 2018 in which DTE paid more in sustained purchased power expense rather than interrupt those DR classes economically.

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 <u>single event</u> 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.

6 Actual total O&M expenses in the calendar year 2018 incurred in the management and operation of the whole DR portfolio amounts to $542,846.

ATTACHMENT B
DEMAND RESPONSE TARIFFS

Tariff	Description	Service Accounts Enrolled*	Total MW enrolled (UCAP)**
RESIDENTIAL INTERRUPTIBLE AND PRICE RESPONSE PROGRAMS			
D1.1	Interruptible Air Conditioning (IAC)	274,492	150
D1.8	Dynamic Peak Pricing (DPP)	5,375	N/A
D5	Water Heating Service	51,031	6
Total		**330,898**	**156**
COMMERCIAL AND INDUSTRIAL INTERRUPTIBLE AND PRICE RESPONSE PROGRAMS			
D3.3	Interruptible General Service	128	25
D8	Interruptible Supply	166	101
D1.8	Dynamic Peak Pricing (DPP)	1	N/A
D1.1	Interruptible Air Conditioning (IAC)	895	N/A
D5	Water Heating Service	807	N/A
R1.1	Alternative Electric Metal Melting	17	8
R1.2	Electric Process Heat	196	83
R10	Interruptible Supply	61	302
R12	Capacity Release	0	N/A
Total		**2,271**	**519**
RESIDENTIAL AND C&I INTERRUPTIBLE AND PRICE RESPONSE PROGRAMS			
Total		**333,169**	**675**

* Number of customers taking service under tariff as of 12/31/2018
**UCAP values are used by MISO for their resource adequacy requirements. 2018/2019 MISO Planning Year.

ATTACHMENT C
Existing Demand Response Program Levels and Forecasted Growth UCAP (MW)

Existing Demand Response Program Levels and Forecasted Growth UCAP (MW)*	PY 2019	PY 2020	PY 2021	PY 2022	PY 2023
D1.1 Interruptible A/C	158	190	216	238	244
D3.3 Interrupt. General Service	23	23	23	23	23
D5 Interrupt. Hot Water Htg.	6	6	6	6	6
D8 Interrupt. Supply Rate	98	98	107	139	144
R1.1 Metal Melting	7	7	7	7	7
R1.2 Process Heat	81	81	81	81	81
R10 Interrupt. Supply Rider	336	336	336	337	347
R12 Capacity Release	0	6	6	6	6
Total	**709**	**746**	**782**	**836**	**858**

*****Source U-20154 DTE Electric DR Program Resources. Reflecting data provided in the recent DTE Electric's 2019 IRP case U-20471.

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of DTE	)	
Electric Company for reconciliation of its	)	
2017-2018 demand response program costs.	)	Case No. U-20521
___________________________________	)	

QUALIFICATIONS

AND

DIRECT TESTIMONY

OF

RODRIGO CEJAS GOYANES

DTE ELECTRIC COMPANY
QUALIFICATIONS OF RODRIGO CEJAS GOYANES

Line
No.

Q1. What is your name, business address and by whom are you employed?

A1. My name is Rodrigo Cejas Goyanes. My business address is: One Energy Plaza, Detroit, Michigan 48226. I am employed by DTE Electric Company (DTE Electric or Company) within the position of Strategy and Project Specialist in the Demand Response and Energy Waste Reduction Strategy area.

Q2. On whose behalf are you testifying?

A2. I am testifying on behalf of DTE Electric.

Q3. What is your educational background?

A3. I graduated from the University of Buenos Aires, City of Buenos Aires, Argentina, with a degree as a Certified Public Accountant in 1992. Concurrently, I graduated with a Specialization in Taxes. In addition, I received a Master of Business Administration with Major in Finance and Management and Strategy from the Kellogg School of Management, Northwestern University, Evanston, Illinois in 2003.

Q4. What work experience do you have?

A4. In 2003, I joined DTE Electric as a financial consultant in the graduate development program where I was responsible for evaluating and reporting electric sales and economic forecasts, implementing the systematization of tax credit requests, and assisting in the completion of bond offerings led by the treasury department. In [year], I accepted an internal position as Associate, and later Senior Associate, in DTE Energy's Power and Industrial group. In this role, I evaluated multiple investment opportunities in the competitive energy landscape from a financial and

Line
No.

strategic point of view, and performed budgeting and financial performance evaluation of the coal mine methane business unit. In 2014, I accepted a Senior Associate position on the Strategy team, focusing primarily on supporting the Business Planning and Development unit's testimonies in the Company's general rate cases before the Michigan Public Service Commission (MPSC or Commission). In addition, I performed long term financial feasibility of some of the Company's generation units under potential plant retirement scenarios, and concurrently, compiled and presented internal metrics and scorecard reports to senior management.

Q5. What was your work experience before DTE Energy?

A5. I held a position as manager in the Tax Department of PricewaterhouseCoopers (PwC) from 1993 to 1998, focusing on advising businesses and individuals on tax planning, and on tax matters in merger and acquisition transactions. Afterwards, I owned and managed an independent accounting service, advising individual clients on tax matters until 2001. I performed both roles in Buenos Aires, Argentina.

Q6. What are your current duties and responsibilities?

A6. Since 2018, I have been working as Strategy and Project Specialist in the Demand Response and Energy Waste Reduction Strategy group. With respect to Demand Response (DR), my responsibility is centered around the strategic evaluation and planning of demand response programs and pilots within DTE Electric. Specifically, my role focuses on evaluating, and informing the market and regulatory framework for DR and providing development, operational and financial analysis support of the existing demand response programs and future pilots.

Line
No.

Q7. Have you been involved in any prior regulatory proceedings?

A7. I have served as support in the preparation and execution in the witness testimonies representing the Business Planning and Development Organization for the following general rate cases:

- U-17767 DTE Electric 2014 General Rate Case
- U-18014 DTE Electric 2016 General Rate Case
- U-18255 DTE Electric 2017 General Rate Case
- U-20162 DTE Electric 2018 General Rate Case

Line
No.

Purpose of Testimony

Q8. What is the purpose of your testimony?

A8. The purpose of my testimony is:

- Describe the regulatory framework adopted by the Commission to approve, recover, and reconcile expenditures associated with the Company's DR portfolio;
- Provide a reconciliation of the expenditures incurred by the Company versus the expenditures authorized in general rate cases for the calendar years 2017 and 2018;
- Address the need to adopt a financial incentive related to the Company's investment in its DR portfolio.

Q9. Are you sponsoring any exhibits in this proceeding?

A9. Yes. I am sponsoring the following exhibits:

Exhibit	Description
A-3	Demand Response Reconciliation – Capital Expenditures
A-4	Demand Response Reconciliation – O&M Expense

Q10. Were these exhibits prepared by you or under your direction?

A10. Yes, they were.

Regulatory Framework for Demand Response Reconciliation

Q11. Is the Company operating and investing on a Demand Response (DR) portfolio?

Line
No.

A11. Yes. The Company is currently operating and investing on an established DR portfolio, which combines a diverse set of programs and pilots that are available to residential, commercial, and industrial customers. Company Witness Keegan Farrell describes the Company's DR portfolio and provides details regarding the status and performance of the programs and pilots for the calendar years of 2017 and 2018 that are subject to this reconciliation proceeding.

Q12. Can you describe the regulatory framework adopted by the Commission to approve, recover, and reconcile expenditures in the Company's DR portfolio?

A12. In the September 15, 2017 Order in Case No. U-18369, the Commission approved a 'three-phase' approach for approval, recovery, and reconciliation of DR expenditures. The three-phase approach is a multi-step process where DR proposals are evaluated in the context of Integrated Resource Planning ("IRP") in the first phase. Once DR plans are approved as part of the IRP, the DR program costs are considered approved, and are included in rates in the utility's next general rate case during the second phase. The utility can propose changes to DR programs or pilots that can be evaluated and approved in rate cases and later included in the following IRP. The third phase involves a reconciliation of the DR costs and participation rates and demand savings achieved on an annual basis. The Commission also stated that during the reconciliation proceedings, actual capital spending in the examination period will be reconciled against the amount approved in the IRP and recovered in the rate case, while Operation and Maintenance ("O&M") spending will be reconciled against the amount approved and recovered in the general rate case.

Line
No.

Q13. Has the Commission clarified how the reconciliation phase would proceed during the interim periods in which no IRP has been filed and approved?

A13. Yes. In its Order in Case U-18369, the Commission recognized that since the utilities were not required to file an IRP until 2019, an interim mechanism for reconciliation was necessary to bridge the gap between the prior rate case-centered and the future IRP-based DR regulatory framework. The Commission stated that until an IRP is approved, there shall be annual, stand-alone reconciliation cases that will match actual spending on DR programs with amounts approved in the previous general rate cases. This mechanism applies to all ongoing and future rate case applications.

Q14. Does the interim mechanism for reconciliation apply to the Company's current DR reconciliation proceeding?

A14. Yes. DTE Electric recently filed its first Integrated Resource Plan on March 29, 2019. No order in this IRP case has been issued at the time of the filing of this DR reconciliation proceeding.

Q15. Which referenced general rate case is then included for reconciliation in the Company's current DR reconciliation proceeding?

A15. The Commission stated in its Order in Case U-18369 that the interim mechanism applies to DR activities in ongoing rate cases. At the time the Order was issued (September 15, 2017), it would have applied only to the DTE Electric's ongoing general rate case at the time (U-18255). However, the final order for that general rate case was not issued until April 18, 2018. Therefore, DTE Electric proposed in its filed letter dated November 15, 2018 in Docket U-18369, that the Company's first reconciliation of its DR expenditures include the expenditures approved in the final order issued in U-18255, which would be filed at the same time the Company files its Energy Waste Reduction ("EWR") reconciliation for 2018 on May 31, 2019. The timing of the Company's first DR reconciliation is following the guidelines provided in the Staff's Regulatory Framework Recommendations (dated August 24, 2018), referenced by the Commission in its Order, that the DR reconciliation cases should match the timing of the utility's EWR annual reconciliation cases.

Q16. More specifically, which periods is the Company including in its first reconciliation proceeding?

A16. The Company is reconciling actual expenditures against authorized expenditures encompassed in the general rate case Order in Case No. U-18255. For the capital-related expenditures, DTE Electric is reporting actuals for the Company's DR portfolio from January 1, 2017 through December 31, 2018, compared to authorized spend for the same period. Although the projected test period in case U-18255 was November 1, 2017 through October 31, 2018, the projected "bridge" period of January 1, 2017 through October 31, 2017 is also important with respect to capital as these amounts were projected and included in authorized rate base. For O&M, the Company is reconciling authorized O&M to the 12-month period from January 1, 2018 through December 31, 2018.

<u>Reconciliation of the Company's Demand Response Expenditures</u>

Q17. Can you detail the expenditures authorized by the Commission for the Company's DR portfolio that fall within the reconciliation period?

Line No.

A17. In DTE Electric's general rate case (U-18255), the Commission authorized capital expenditures of $8,166,667 for the 12-month period ended December 31, 2017, and $5,583,333 for the 10-month period ended October 31, 2018. These authorized amounts correspond to amounts allocated to the bridge period from January 1, 2017 to October 31, 2017, and amounts allocated to the test year from November 1, 2017 to October 31, 2018. The authorized amount of $8,166,667 for the calendar year 2017 includes an amount of $2,800,000 for the Programmable Controllable Thermostat (PCT) pilot program that was originally approved by the Commission in general case U-18014, and then confirmed in general case U-18255 to reach the 10,000-PCT unit enrollment target. For the total authorized expenditures, no amounts are allocated for the last two months of the calendar year 2018, because the capital expenditures from November 1, 2018 to December 31, 2018 were beyond the test year included in general rate case No. U-18255.

As ordered in general rate case U-18255, the Commission also authorized $169,466 of annual O&M expenditures.

For a detailed breakdown of the authorized capital and O&M expenditures per program and pilot program, please refer to lines 9 to 13 in page 1 of 3 of Exhibit A-3 and to column c in Exhibit A-4, respectively.

Q18. How much has the Commission authorized in capital expenditures for the IAC program?

Line
No.

A18. The Commission authorized $5,083,333 for the calendar year ending on December 31, 2017, and $4,166,667 for the 10-month period ending on October 31, 2018, as shown in line 10 in page 1 of 3 of Exhibit A-3.

Q19. Which cost components do the capital expenditures for the IAC program represent?

A19. Starting with the Commission's approval of the IAC program in the general rate case U-17767, the Company has been working on the upgrade of the existing one-way radio control units to the new two-way ZigBee enabled switches. This effort represents a multi-year upgrade scheduled to end in 2023. It will better leverage the Company's AMI network infrastructure and allow the Company to reach customers more effectively and efficiently, call events and validate peak load reduction. The capital investment is focused on three main areas: a). the purchase of the equipment (switches), including warehousing and storage management, b). the equipment replacement and installation, which includes the support of both internal and contracted outside third-parties as appropriate, and c). internal labor dedicated to the planning, scheduling, and supervision of the upgrade.

Q20. How do the actual expenditures in the IAC program compare to the expenditures authorized by the Commission?

A20. The actual capital expenditures for the year 2017 were $4,303,822, which is $779,511 lower than the $5,083,333 amount authorized by the Commission. The actual capital expenditures for the calendar year 2018 were $3,843,598, which is $323,069 lower than the $4,166,667 authorized by the Commission. In total, the actual capital expenditures are $1,102,580 lower than the authorized amounts.

Line
No.

Q21. Why were the actual capital expenditures in the IAC program lower than the authorized amounts?

A21. For 2017, capital expenditures are lower mostly because the Company purchased a lower number of switches than those that were originally forecasted at the time of the filing of Case No. U-18255. The Company prudently assessed that it would be more efficient first to manage and install the then-existing inventory of switches that were purchased in 2016 before continuing with the new purchases in 2017. For 2018, the installation component of the costs was lower than the initial estimated costs because the Company installed and bound a lower number of switches than originally planned. The Company rearranged the scheduling plan for installation and bounding of the switches mid-year. Due to constraints in internal resources, the Company engaged external resources to continue the installation work. The updated scheduling plan required a contract and schedule renegotiation with DTE's third party vendor to perform installs during the remainder of the year.

Q22. How much has the Commission authorized in capital expenditures for the Programmable Controllable Thermostat ("PCT") pilot program?

A22. The Commission originally approved the PCT pilot program to fund an initial 10,000 PCT units in Case No. U-18014. The capital expenditure associated with the initial request and subsequent approvals is $2.8 million. In its Order in Case No. U-18255, the Commission observed, "Staff contends that the installation of 50 PCTs does not demonstrate success or justify the need for 25,000 more, and noting that the utility still has another 9,950 to install from the last rate case."[1] Following this logic in case U-18255, the Commission denied the Company's capital expenditure

[1] MPSC's Order on April 18, 2018 in Case U-18255. Page 22

Line No.

request of $6.133 million intended to expand the PCT program and cover increased costs on the original 10,000 units. This reconciliation is developed on the understanding that the Commission authorized the initial $2.8 million expenditures to fulfill the enrollment of the 10,000 units, and, in its subsequent Order in Case U-18255, denied the capital expenditure request for only additional units, and did not provide for additional expenditures on the original 10,000 units. Therefore, the authorized amount subject to this reconciliation proceeding is $2.8 million and is accounted as such in line 11, column b and d in page 1 of 3 in Exhibit A-3.

Q23. What is the level of capital expenditures that the Company has been incurring in the planning, and development of the PCT pilot program?

A23. The actual capital expenditures for PCT pilot program were $2,074,330 for the year 2017, and $4,669,690 for the year 2018.

Q24. How do the actual expenditures in the PCT pilot program compare to the expenditures authorized by the Commission?

A24. The total actual capital expenditures of $6,744,020, adding both expenditures for 2017 ($2,074,330) and for 2018 ($4,669,690), is higher by $3,944,020 than the amount of $2,800,000, which was originally authorized in the Commission's Order in Case No. U-18014.

Q25. Can you explain which activities and cost components the Company has been investing in as part of the planning and development of the PCT pilot program?

A25. It is important to note that the Company has been investing in the PCT pilot program since 2017. After the Commission's order in Case No. U-18014 was issued in

Line
No.

January 2017, the Company started requesting, evaluating, and negotiating proposals for program execution and implementation with third-party contractors. At that time, the Company implemented a small 50-unit technology test in the third quarter of 2017 to gauge customer interest and the ability to deliver signals to devices in the field. The initial large-scale purchase of the thermostats occurred in late fourth quarter 2017. At the beginning of 2018, the Company began the marketing of the program to recruit and enroll customers. Since then, the Company has consistently continued to invest in the program and demonstrate program success as the year 2018 progressed.

Throughout 2018, the Company's efforts have been focused primarily on launching and developing the program with the goal of creating a solid internal platform that could handle the increased customer enrollment and engagement over time. The associated spent capital expenditures cover mainly three areas: 1) the purchase and, if requested, installation of the PCT devices; 2) the DR resource management system software; and 3) IT integration and associated program implementation. In addition, spend on internal labor supported the necessary planning and scheduling of the installation, as well as validation of the resource management system that is planned to work as a platform to reach out to customers, call events, and track and measure results. The Company had 4,118 customers enrolled at December 31, 2018. Even though this level of enrollment is lower than the originally estimated level at that point in time, it still demonstrates an important level of customer engagement that could potentially be scaled over time. In fact, the Company has enrolled another 1,355 customers thus far through the end of April 2019. In addition, as a good indication of initial successful steps in the development of the program, the

Line
No.

Company called events during the summer of 2018, and registered a meaningful decline in electricity usage in the critical hours of the events. These tests of potential peak load reduction in several events during the year 2018 are further described by Witness Farrell, and they are also supported in DTE Electric's DR 2018 Report included as Exhibit A-2.

Q26. Why were the actual capital expenditures in the PCT pilot program higher than the authorized amounts?

A26. The original proposed $2.8 million in capital expenditure request was based on the information available at the time of the filing in the Case U-18014. At that time, the Company projected estimates based on initial and preliminary responses to a competitive bidding process in which the Company was essentially seeking referential information. The capital expenditure authorization in the Commission's Order in Case No. U-18014 provided certainty for the Company to proceed with specific determination of the scope, cost, and timing of the PCT pilot program through a full Request for Proposal ("RFP") process. The cost estimate was updated subsequent to the Order, when specific cost components and levels were determined and finalized by the responses and selection of implementers and vendors through the RFP process.

Q27. How much has the Commission authorized in capital expenditures for the remaining pilot programs, including the BYOD pilot?

A27. The Commission authorized $283,333 in capital spend for the calendar year 2017, more specifically for the last two months of 2017 (November and December) that fell into the test year in Case U-18255 spanning from November 1, 2017 to October

31, 2018. For the remaining period in the test year ending on October 31, 2018, the Commission authorized $1,416,667 for the year 2018 as shown in line 12, column c, in page 1 of 3 in Exhibit A-3.

Q28. How do the actual expenditures in the remaining pilot programs compare to the expenditures authorized by the Commission?

A28. No capital expenditures were incurred for the year 2017; therefore, the difference to authorized amounts is $283,333. The actual capital expenditures for the year 2018 were $1,049,207, which is $367,460 lower than the amounts authorized to the end of the test year on October 31, 2018.

Q29. Can you explain why the actual expenditures incurred by the Company in the other pilot programs were lower than the authorized amounts?

A29. The underspend in actual capital expenditures for other pilot programs amounts to $650,793 in total for the whole reconciliation period of years 2017 and 2018. This difference results primarily because the scope, timeframe and cost of the pilots were more definitively evaluated, internally approved and contracted after the time of the filing and proceedings of the rate case U-18255. The majority of the spend was allocated to fund: 1) Engagement and contracting for the marketing and integration of the first 5,000-BYOD devices within a 3-year contract with EnergyHub, which is a nationally recognized industry leader in BYOD management solutions with a focus on utility-driven programs ($602,000); 2) System and software access to the Electric Power Research Institute (EPRI)'s Transportation Program's platform to participate in the proof-of-concept pilot involving several car manufacturers to assess the management and integration of PEV charging with grid objectives such

Line No.

as DR ($110,000); and 3) Advanced payment to secure the timely supply of a battery-based energy storage system (BESS), which will form part of a combined project along with a solar photovoltaic (PV) system on the rooftop of the parking structure at a major automotive company's facility ($232,329, including evaluation and planning work). It should be noted that this last pilot (BESS) is being developed together with the Company's Renewables team, who is sponsoring small-scale combined pilots that include a solar PV system paired with battery storage in the Company's Amended Renewable Energy Plan in docket of case U-18232.

Q30. Has the Commission authorized expenditures in O&M as it relates to overall spend in the DR programs and pilots?

A30. Yes. The Commission has authorized an annual O&M expense amount of $169,466 in its Order in Case U-18255.

Q31. How do the actual O&M expenses compare to the expenses authorized by the Commission?

A31. The actual O&M expense for the calendar year 2018 were $542,846, which is $373,380 higher than the amount authorized by the Commission. This information is detailed in line 5 in page 1 of 2 of Exhibit A-4.

Q32. Can you explain why the actual O&M expenses incurred by the Company were higher than the authorized amount?

A32. The higher spent amount is mostly related to the following cost items: First, costs were incurred for targeted incentives (i.e., gift cards) to encourage customers to enroll and participate in the BYOD pilots ($15,000). The incentives are part of periodic marketing campaigns that the Company launched in the second half of 2018. Given the positive response in the first launch of the pilot, the Company has been testing different incentive structures to further increase customer participation.

Second, added costs were incurred for the NextEnergy/Enbala building automation pilot, which was conducted to assess building connectivity and operation while responding to tests that include load curtailment based on signals from the utility ($281,660). The expense primarily covered the two-way communication tool and platform needed to manage the customer's assets for load controlling. Enbala is a third-party integrator with nation-wide expertise in aggregation, control optimization, and dispatchability of distributed energy assets.

Third, expenses were incurred for incentives for the Plug-in Electric Vehicle pilot. There is an incentive structure in place to reward participating vehicles for their participation during DR events ($30,000).

Q33. In summary, how much is the total overspend or underspend in expenditures that the Company incurred in the development and operation of its whole DR portfolio during the period under reconciliation?

A33. As shown on line 21 column d in page 1 of 3 on Exhibit A-1, the Company has spent $2,190,647 million in capital expenditures above the originally authorized levels in prior general rate cases. As shown on line 5 column d in page 1 of 2 on Exhibit A-2, the Company spent $373,380 in O&M expenses above the authorized levels in Case U-18255.

Line
No.

Q34. Has the Commission determined how to recover the actual spend above the authorized amounts resulting from the reconciliation proceedings?

A34. Yes. In its Order in Case U-18369, the Commission adopted the three-phase approach as the approved regulatory framework regarding the investment and associated expenditures for DR programs and pilots. The Commission asserted that "…capital spending in the examination period will be reconciled against the amount approved in the IRP and recovered in rate case, while O&M spending will be reconciled against the amount both approved and recovered in the general rate case." Following this argument, the Commission further agreed with Consumers Energy's suggestion that costs associated with DR should follow deferred regulatory accounting with return.

Q35. How is the Company proposing to recover the additional capital and O&M expenditures approved by the Commission in this proceeding?

A35. As provided by the Commission's Order in Case U-18369, the Company could request regulatory asset treatment for the total $2,190,647 million overspend in capital and $373,380 overspend in O&M. This treatment assumes that the Commission approves the actual capital expenditures as supported in this case. The deferred regulatory asset, plus return, would then be included as rate base in the following general rate case. However, given the low dollar amount for O&M in this first reconciliation, the Company is not requesting recovery or deferral treatment in this case.

In addition, the Company plans to seek recovery of the actual capital expenditures in DTE Electric's general rate case, expected to be filed in the third quarter of 2019.

Line No.

Alternatively, if the Commission does not allow the added capital expenditures to be considered in the upcoming rate case, or the instant case is resolved before the costs are reviewed in the rate case, the Company requests Commission approval to record the costs as a regulatory asset as part of the instant case. (As a practical matter, depending on timing, approval of a regulatory asset for the excess capital expenditures in this reconciliation case could occur after their inclusion and approval as utility plant in the Company's next general rate case.)

Financial Incentive Mechanism

Q36. In Case No. U-18369, what was the Commission's direction related to a performance financial incentive for a DR portfolio?

A36. The Commission agreed with Advanced Energy Management Alliance (AEMA) that a financial incentive for DR is reasonable. The Commission further indicated that providers and other interested parties may propose appropriate incentives as part of the reconciliation proceeding.

Q37. Is the Company proposing a specific financial incentive structure in this proceeding?

A37. No. The Company is not submitting a specific proposal for consideration as a financial incentive structure in this proceeding. However, the Company is proposing that a joint work group, including the Commission's Staff, create a proposal for a future financial incentive that would be approved as part of the final order in this case, or in the Company's next annual DR reconciliation filling. It would be expected that, if approved, the financial incentive structure would

Line No.

determine the incentive calculation in all future reconciliation cases, as well as in future general rate cases and IRP cases as appropriate.

Q38. From which period is the Company proposing that the financial incentive structure be applicable?

A38. The Company is proposing that an established incentive mechanism should apply to the expenditures in the DR portfolio incurred in the calendar year 2019, which will be under consideration in the reconciliation case to be filed on May 31, 2019. This approach will provide certainty and consistency regarding the Company's future investment decisions and allocation of personnel, asset, and financial resources to manage and enlarge the DR portfolio on a looking forward basis.

Q39. If an incentive structure is established, how is the Company proposing to recover the annual financial incentive amounts approved in future DR reconciliation case proceedings?

A39. The Company is proposing that the financial incentive amounts resulting from each annual reconciliation case be recovered fully in the revenue requirement of the immediately following general rate case. The Company believes that this cadence is consistent with both the timing of recovery used in the EWR reconciliation cases (added to the EWR surcharge upon approval) and the intent of the DR regulatory framework recommendations leading to the Order in Case U-18369.

Q40. Why is a financial incentive essential for the investment in a DR portfolio?

A40. The Company believes that having a clear regulatory framework is a necessary condition for the implementation and development of the appropriate level of a DR portfolio. Within the regulatory construct, it is also necessary to encourage utilities in the finding and the use of DR programs and pilots to maximize, to the extent possible, the benefits for their customers. By drawing on the discussions in the workgroup leading to the Order in Case U-18369, the Company believes that to place investments in DR at equal footing with respect to alternative generation resources within the IRP planning process, it is necessary to add a financial incentive that goes beyond the general rate of return on the capital portion of the investment. The financial incentive is intended to compensate the Company for the added risk, which are identified below, to invest in a new set of measures to generate a potential peak load reduction. The Company has today an established set of programs, mostly comprised of interruptible rates and tariffs that deliver 675 MWs of peak load reduction as indicated by Witness Farrell in his testimony for the 2018/2019 MISO Planning Year.

However, as the energy landscape evolves, and more DR alternatives are being investigated and called for, the Company is aiming at going further and developing DR programs over time. In essence, there exist three significant considerations that are making today's investment in DR riskier than the investment in more traditional generation resources such as fossil-fuel fired power plants. First, new DR resources involve new, and initially untested, technologies that require a more in-depth research and development stage. Second, the new DR resources are unique, and need to be tested and adjusted for differing locations. Third, and more importantly, DR resources rely very much on customer-centered technologies that, if they are to be successful, need to account for significant outreach, engagement or enrollment and continued participation from the customer. On a comparative basis with more

Line
No.

traditional resources, the performance financial incentive compensates for the added risk that utilities are facing in the development and eventual management of a DR portfolio.

Q41. Are there incentive mechanisms with a financial component for a resource within the regulatory framework in the State of Michigan?

A41. Yes. Section 75 of Act 342 of the State of Michigan has set out a revised incentive for EWR programs. The goal of this incentive mechanism is to encourage the Company or utilities to effectively achieve annual incremental energy savings greater than specified thresholds by developing and operating EWR programs. As those thresholds are achieved in increasing percentages, the incentive is based on a percentage of the lesser of 30% (previously 25%) of the net present value of life-cycle cost reductions experienced by the provider's customers, or 20% (previously 15%) of the provider's program expenditures for the year.

With the same logic, investment in renewable energy resources, including wind and solar resources as encompassed by the regulatory framework in Michigan, has a direct incentive as a form of a higher rate of return on equity of 11% than the rate of return applicable to capital investment in the more traditional generation resources.

Q42. What is the legal and regulatory framework that it is the foundation for the financial incentive advocated for a DR portfolio?

A42. Section 6x of PA 341 and Section 75 of PA 342 are the foundation for the financial incentive structure that is both used for EWR programs and is advocated for in DR programs. However, unlike the incentive related to EWR programs that is well

Line
No.

established and has been used in different structures since 2009, the new incentives for DR will be established for the first time as utilities file their DR reconciliations.

Q43. Do you identify similarities and differences between the existing incentive for EWR programs and the future incentive for DR programs?

A43. The financial incentive for EWR programs is devised to encourage programs that will achieve increasing annual energy savings; it is essentially focused on making sure that appropriate planning, execution and measuring processes are in place to achieve reduced energy consumption. On the other side, DR programs aim at achieving peak load reduction, that is, the ability of the program to generate sufficient customer action to reduce energy demand (not essentially consumption) at specific point in time (energy demand peaks). As a common issue, it is important to note that by achieving their goals of energy savings and peak demand reduction, both EWR and DR programs can result in lost revenues impacting all utility customers. Therefore, an incentive mechanism also intends to partially compensate the Company for a loss which benefits the whole customer base.

For EWR, the value of the program is essentially the ability to save in the energy consumption on a continuous basis; while for DR, the value of the program is the ability to reduce the need of alternative investment in other resources that would satisfy the energy demand at specific peak times. Therefore, for EWR, performance incentive is measured based on life-cycle energy savings, and for DR, performance incentive should be measured based on reduced demand at peak times.

Line No.

As part of the equation, EWR and DR programs share in common the expenditures needed to obtain those benefits. Because of the nature of the characteristics of nascent and not-yet-proved technologies, the DR programs require a higher capital investment at the beginning of the development stages rather than expenses focused on operation and maintenance, which are more common in established programs. Therefore, a performance incentive mechanism should also be measured based on cost allocation and actual expenditures for the overall portfolio to achieve the claimed reduced demand at peak times.

Q44. Is the Company recommending that some guidelines be considered for a financial incentive structure to encourage investment in a DR portfolio?

A44. Yes. The Company is recommending that a financial incentive structure reflect similarities with the existing structure supporting EWR, in line with the spirit of the Public Acts 341 and 342, plus account for the differentiated benefits that DR programs are achieving. In this line of thought, the financial incentive structure must consider both the expenditure side of the equation and the benefits to customers. On the expenditure side, the determination of the financial incentive should include both the capital expenditures and the O&M expenses associated with the running and growth of the overall DR portfolio. On the benefit side, a financial incentive mechanism will encourage the Company to reach and maintain increasing levels of peak demand reduction over time. The Company's commitment will be consistent with a periodic IRP planning process that will incorporate the DR portfolio to provide reliable and affordable energy to all the Company's customers.

Line
No.

Also, the Company is recommending additional general guidelines for a financial incentive structure including:

- The ability to invest at different development stages of pilots with innovative technologies or methods, with different levels of success, and for which expenditures vary from time to time depending how the results of those pilots unfold. It is essential to note that a well-planned, executed, and tested pilot is the best foundation for an accepted program. In most of the cases, such a pilot requires varying levels of investments over periods that usually go beyond one year;
- The inclusion of metrics or parameters that are readily quantified using reasonably available data; are reasonably objective and independent of factors beyond utility control and can be easily interpreted and verified.

Q45. Could you please summarize the Company's request in this current DR reconciliation proceeding?

A45. In this reconciliation proceeding, the Company is specifically requesting:

- That the Commission approve the Company's 2017-2018 DR reconciliation capital and O&M expenditures incurred above the amounts authorized in the Commission's Order in Case No. U-18255;
- That, given the timing of this first annual reconciliation case (2017-2018), relative to the expected filing in 2019 of the Company's next rate case, the Commission approve that the actual additional capital expenditures will be deferred as a regulatory asset if the Commission declines to include the costs as plant in a 2019 DTE Electric general rate case filing;

Line
No.

- That the Commission confirm deferred regulatory asset treatment is available for additional operating costs and capital expenditures that are reconciled in future annual reconciliation cases, regardless of whether regulatory asset treatment is ordered in the instant case; and
- That the Commission approve a defined financial incentive structure as recommended by the parties to this case for the Company's future investment in the DR portfolio subject to future reconciliation cases resulting from a proposal of a joint work group, including the Commission's Staff.

Q46. Does this conclude your testimony?

A46. Yes, it does.

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of DTE	)	
Electric Company for reconciliation of its	)	
2017-2018 demand response program costs.	)	Case No. U-20521
________________________________	)	

EXHIBITS
OF
RODRIGO CEJAS GOYANES

DTE Electric Company
Demand Response Capital Expenditures
Reconciliation of Actuals to U-18255 Authorized
For Historical Periods 2017 and 2018

Case No.: U-20521
Exhibit: A-3
Witness: R. Cejas Goyanes

Line No.	(a) Description	(b) 12 mo. ended 12/31/2017	(c) 12 mo. ended 12/31/2018	(d) Total =(b)+(c)
1	**Actuals (1/1/17 - 12/31/18)**			
2	Interruptible Air Conditioning (IAC)	4,303,822	3,843,598	8,147,420
3	Programmable Communicating Thermostats (PCT's)	2,074,330	4,669,690	6,744,020
4	Pilot Programs	-	1,049,207	1,049,207
5	Total Demand Response (DR) - Actuals	6,378,152	9,562,495	15,940,647
6				
7				
8				
9	**U-18255 Authorized 1/**			
10	Interruptible Air Conditioning (IAC)	5,083,333	4,166,667	9,250,000
11	Programmable Communicating Thermostats (PCT's)	2,800,000	-	2,800,000
12	Pilot Programs	283,333	1,416,667	1,700,000
13	Total Demand Response (DR) - Authorized	8,166,667	5,583,333	13,750,000
14				
15				
16				
17	**Actuals Higher/(Lower)**			
18	Interruptible Air Conditioning (IAC)	(779,511)	(323,069)	(1,102,580)
19	Programmable Communicating Thermostats (PCT's)	(725,670)	4,669,690	3,944,020
20	Pilot Programs	(283,333)	(367,460)	(650,793)
21	Total DR Actuals Higher/(Lower)	(1,788,515)	3,979,162	2,190,647

1/ U-18255 Order dated 4/18/2018. (Bridge period 1/1/17-10/31/17. Projected test period 11/1/17-10/31/18.)

DTE Electric Company
Demand Response Capital Expenditures
Reconciliation of Actuals to U-18255 Authorized
For Historical Periods 2017 and 2018

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
Line No.	**Description**	**Bridge Jan-17**	**Bridge Feb-17**	**Bridge Mar-17**	**Bridge Apr-17**	**Bridge May-17**	**Bridge Jun-17**	**Bridge Jul-17**	**Bridge Aug-17**	**Bridge Sep-17**	**Bridge Oct-17**	**Test Nov-17**	**Test Dec-17**	**CY Total 2017**
1	**Actuals**													
2	Interruptible Air Conditioning (IAC)	216,873	402,861	353,472	228,675	595,952	693,956	233,478	127,253	214,086	134,394	395,914	706,908	4,303,822
3	Programmable Communicating Thermostats (PCT's)	-	-	-	4,954	10,950	23,003	19,761	25,216	22,228	27,852	23,019	1,917,346	2,074,330
4	Pilot Programs	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Total Demand Response (DR) - Actuals	216,873	402,861	353,472	233,629	606,902	716,959	253,239	152,469	236,314	162,246	418,934	2,624,254	6,378,152
6	10 Months Ended 10/31/17													
7	12 Months Ended 10/31/18													
8	2 Months Ended 12/31/18													
9	**Authorized**													
10	Interruptible Air Conditioning (IAC)	425,000	425,000	425,000	425,000	425,000	425,000	425,000	425,000	425,000	425,000	416,667	416,667	5,083,333
11	Programmable Communicating Thermostats (PCT's)	400,000	400,000	400,000	400,000	400,000	400,000	400,000	-	-	-	-	-	2,800,000
12	Pilot Programs	-	-	-	-	-	-	-	-	-	-	141,667	141,667	283,333
13	Total Demand Response (DR) - Authorized	825,000	825,000	825,000	825,000	825,000	825,000	825,000	425,000	425,000	425,000	558,333	558,333	8,166,667
14	10 Months Ended 10/31/17													
15	12 Months Ended 10/31/18													
16														
17	**Actuals Higher/(Lower)**													
18	Interruptible Air Conditioning (IAC)	(208,127)	(22,139)	(71,528)	(196,325)	170,952	268,956	(191,522)	(297,747)	(210,914)	(290,606)	(20,753)	290,241	(779,511)
19	Programmable Communicating Thermostats (PCT's)	(400,000)	(400,000)	(400,000)	(395,046)	(389,050)	(376,997)	(380,239)	25,216	22,228	27,852	23,019	1,917,346	(725,670)
20	Pilot Programs	-	-	-	-	-	-	-	-	-	-	(141,667)	(141,667)	(283,333)
21	Total DR Actuals Higher/(Lower)	(608,127)	(422,139)	(471,528)	(591,372)	(218,098)	(108,041)	(571,761)	(272,531)	(188,686)	(262,754)	(139,400)	2,065,921	(1,788,515)

DTE Electric Company
Demand Response Capital Expenditures
Reconciliation of Actuals to U-18255 Authorized
For Historical Periods 2017 and 2018

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
Line No.	**Description**	**Test Jan-18**	**Test Feb-18**	**Test Mar-18**	**Test Apr-18**	**Test May-18**	**Test Jun-18**	**Test Jul-18**	**Test Aug-18**	**Test Sep-18**	**Test Oct-18**	**Fcst Nov-18**	**Fcst Dec-18**	**CY Total 2018**
1	**Actuals**													
2	Interruptible Air Conditioning (IAC)	60,356	252,901	901,994	785,526	145,820	32,783	192,337	152,170	326,953	329,892	261,488	401,378	3,843,598
3	Programmable Communicating Thermostats (PCT's)	489,288	239,897	284,434	305,125	479,534	627,668	302,682	553,433	77,704	398,839	632,362	278,725	4,669,690
4	Pilot Programs	-	-	-	-	-	630,469	13,139	11,005	129,613	10,650	11,472	242,858	1,049,207
5	Total Demand Response (DR) - Actuals	549,644	492,798	1,186,429	1,090,652	625,353	1,290,920	508,157	716,608	534,270	739,381	905,323	922,961	9,562,495
6	10 Months Ended 10/31/17													
7	12 Months Ended 10/31/18													
8	2 Months Ended 12/31/18													
9	**Authorized**													
10	Interruptible Air Conditioning (IAC)	416,667	416,667	416,667	416,667	416,667	416,667	416,667	416,667	416,667	416,667	-	-	4,166,667
11	Programmable Communicating Thermostats (PCT's)	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Pilot Programs	141,667	141,667	141,667	141,667	141,667	141,667	141,667	141,667	141,667	141,667	-	-	1,416,667
13	Total Demand Response (DR) - Authorized	558,333	558,333	558,333	558,333	558,333	558,333	558,333	558,333	558,333	558,333	-	-	5,583,333
14	10 Months Ended 10/31/17													
15	12 Months Ended 10/31/18													
16														
17	**Actuals Higher/(Lower)**													
18	Interruptible Air Conditioning (IAC)	(356,311)	(163,766)	485,328	368,860	(270,847)	(383,884)	(224,330)	(264,497)	(89,714)	(86,774)	261,488	401,378	(323,069)
19	Programmable Communicating Thermostats (PCT's)	489,288	239,897	284,434	305,125	479,534	627,668	302,682	553,433	77,704	398,839	632,362	278,725	4,669,690
20	Pilot Programs	(141,667)	(141,667)	(141,667)	(141,667)	(141,667)	488,803	(128,528)	(130,661)	(12,053)	(131,017)	11,472	242,858	(367,460)
21	Total DR Actuals Higher/(Lower)	(8,689)	(65,536)	628,095	532,318	67,020	732,587	(50,176)	158,275	(24,063)	181,048	905,323	922,961	3,979,162

DTE Electric Company
Demand Response O&M Expense
Reconciliation of Actuals to U-18255 Authorized
For Historical Periods 12 Months Ended Dec. 31, 2018

	(a)	(b)	(c)	(d)
Line No.	**Description**	**Actuals**	**Authorized 1/**	**Actuals Higher/(Lower)**
1	**Demonstrating & Selling Expenses (Account 912)**			
2	Labor	$ 170,545	$ 169,466	$ 1,080
3	Contractors/Outside Services	-	-	-
4	Other Non-Labor	372,300	-	372,300
5	**Total Demand Response O&M**	**$ 542,846**	**$ 169,466**	**$ 373,380**

1/ O&M Authorized in U-18255 Rates

2016 Actual O&M		*$ 162,767*
Inflation (per Order)		
2017	*2.40%*	*3,906*
2018 (2.01% pro-rated 10 months)	*1.68%*	*2,792*
Authorized Demand Response O&M		***$ 169,466***

DTE Electric Company
Demand Response O&M Expense
Reconciliation of Actuals to U-18255 Authorized
For Historical Periods 12 Months Ended Dec. 31, 2018

Case No.: U-20521
Exhibit: A-4
Witness: R. Cejas Goyanes

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
Line No.	**Description**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**	**Jul-18**	**Aug-18**	**Sep-18**	**Oct-18**	**Nov-18**	**Dec-18**	**12 Months Ended Dec-18**
1	**Demonstrating & Selling Expenses (Account 912)**													
2	**Actuals**													
3	Labor	$ 15,703	$ 16,548	$ 15,978	$ 16,403	$ 15,834	$ 18,090	$ 9,705	$ 9,534	$ 7,052	$ 13,054	$ 25,744	$ 6,901	$ 170,545
4	Contractors/Outside Services	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Other Non-Labor	(634)	2,456	6,935	669	2,326	128,391	9,712	4,244	170,117	4,791	7,721	35,573	372,300
6	**Total Demand Response O&M - Actual**	$ 15,068	$ 19,004	$ 22,913	$ 17,072	$ 18,160	$ 146,481	$ 19,418	$ 13,778	$ 177,169	$ 17,844	$ 33,464	$ 42,474	$ 542,846
7	**Authorized 1/**													
8	Labor	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 169,466
9	Contractors/Outside Services	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Other Non-Labor	-	-	-	-	-	-	-	-	-	-	-	-	-
11	**Total Demand Response O&M - Authorized**	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 14,122	$ 169,466
12	**Actuals Higher/(Lower)**													
13	Labor	$ 1,581	$ 2,426	$ 1,856	$ 2,281	$ 1,712	$ 3,968	$ (4,417)	$ (4,588)	$ (7,070)	$ (1,069)	$ 11,622	$ (7,222)	$ 1,080
14	Contractors/Outside Services	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Other Non-Labor	(634)	2,456	6,935	669	2,326	128,391	9,712	4,244	170,117	4,791	7,721	35,573	372,300
16	Total DR Actual O&M Higher/(Lower)	$ 946	$ 4,882	$ 8,791	$ 2,950	$ 4,038	$ 132,359	$ 5,296	$ (344)	$ 163,047	$ 3,722	$ 19,342	$ 28,352	$ 373,380

1/ Authorized O&M for Demand Response in U-18255 Rates is based on 2016 actuals plus inflation (amount was not explicit in the Order).

2016 Actual O&M		162,767
Inflation (per Order)		
2017	*2.40%*	3,906
2018 (2.01% pro-rated 10 months)	*1.68%*	2,792
12-Months Ending Oct. 31, 2018 - Authorized		**169,466**

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of DTE)
Electric Company for reconciliation of its)
2017-2018 demand response program costs.) Case No. U-20521
____________________________________)

PROOF OF SERVICE

STATE OF MICHIGAN)
) ss.
COUNTY OF WAYNE)

ESTELLA BRANSON, being duly sworn, deposes and says that on the 30th day of May, 2019, she served a copy of DTE Electric Company's Application, and Testimony and Exhibits of Witnesses, Keegan O. Farrell and Rodrigo Cejas Goyanes, via electronic mail upon the persons referred to in the attached service list.

Estella R. Branson Digitally signed by Estella R. Branson Date: 2019.05.30 15:02:37 -04'00'

ESTELLA BRANSON

Subscribed and sworn to before
me this 30th day of May, 2019.

Lorri A. Hanner Digitally signed by Lorri A. Hanner Date: 2019.05.30 16:18:46 -04'00'

Lorri A. Hanner, Notary Public
Wayne County, MI (Acting in Wayne County)
My Commission Expires: 4-20-2020

U-20521
SERVICE LIST

MPSC STAFF
Steven D. Hughey
Michigan Public Service Commission
7109 W. Saginaw Hwy, Fl 3
Lansing, MI 48917-1120
hugheys@michigan.gov