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May 31, 2019

Barbara Kunkel
Executive Secretary
Michigan Public Service Commission
7109 West Saginaw Highway
Lansing, MI 48917

RE: In the matter, on the Commission's own motion, regarding the regulatory reviews, revisions, determinations, and/or approvals necessary for DTE Electric Company to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016.
MPSC Case No. U-20366

Dear Ms. Kunkel:

Attached for electronic filing in the above referenced matter is DTE Electric Company's Application for Approval of the Reconciliation of its Energy Waste Reduction Plan Expenses for the Plan Year 2018, and Testimony and Exhibits of Witnesses, Reema A. Biel, John R. Boladian, Debbie Brannan, James L. Chubb, Jason Kupser, and Thomas W. Lacey. Also attached is the Proof of Service.

Very truly yours,

David S. Maquera

DSM/lah
Encl.

cc: Service list

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission’s own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for) Case No. U-20366
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008)
as amended by Public Act 342 of 2016._____)

DTE ELECTRIC COMPANY’S APPLICATION FOR APPROVAL OF
THE RECONCILIATION OF ITS ENERGY WASTE REDUCTION PLAN
EXPENSES FOR THE PLAN YEAR 2018

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”) as amended by Public Act 342 of 2016 (“Act 342”), MCL 460.1001 *et seq*, requesting approval of the reconciliation of DTE Electric’s Energy Waste Reduction (“EWR”) plan, for the plan year 2018, and authority to implement EWR surcharges, and other related relief. In support of the relief requested in this Application, DTE Electric respectfully states as follows:

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 Michigan Public Service Commission (“Commission” or “MPSC”) 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. Act 295 as amended by Act 342 requires certain electric providers and natural gas providers to file proposed EWR plans with the Commission for its review and approval. Act 295

as amended by Act 342 states that the overall goal of the EWR plan is to help a provider's customers reduce energy waste and to reduce the future costs of provider service to customers.

3. On June 29, 2017, DTE Electric filed its application in MPSC Case No. U-18262 with supporting testimony and exhibits requesting approval of its 2018-2019 EWR Plan pursuant to the provisions of Act 295 as amended by Act 342.

4. On April 12, 2018, the Commission issued its order in MPSC Case No. U-18262 approving DTE Electric's 2018-2019 EWR Plan pursuant to a settlement agreement attached as Exhibit A to such order, and the approved surcharges were implemented in May 2018. Prior to May, the surcharges approved in Case No. U-17762 were billed, as approved by Commission order on September 15, 2017.

5. On February 7, 2019, the Commission issued an Order in MPSC Case No. U-20365 ("U-20365 Order") directing DTE Electric to file the Company's 2018 EWR reconciliation by July 15, 2019.

6. Section 97 of Act 295 as amended by Act 342; MCL 460.1097 states that each provider whose rates are regulated by the Commission, ". . . shall submit to the Commission an annual report that provides information relating to the actions taken by the provider to comply with the energy waste reduction standards."

7. Section 74 of Act 295 as amended by Act 342; MCL 460.1074 provides that "Concurrent with the submission of each report under section 97, the Commission shall commence an annual proceeding, to be known as an energy waste reduction cost reconciliation, for each provider whose rates are regulated by the Commission."

8. In Case No. U-18262, the Commission's March 28, 2017 Order instructed utilities to include complete annual evaluation, measurement and valuation ("EM&V") reports for the provider's entire portfolio of programs. DTE Electric will file its EM&V reports by July 15, 2019.

9. Consistent with the Commission's U-20365 Order and statutory requirements referenced above, DTE Electric has set forth in the testimony and exhibits attached to this Application the details of the reconciliation of its 2018 EWR performance and expenses.

10. During 2018, DTE Electric implemented and operated its approved 2018 EWR plan which includes: (1) energy savings targets established by Act 295 as amended by Act 342; (2) offerings for each customer class, including low income residential; (3) specific funding levels; (4) cost recovery mechanisms allowing recovery of EWR plan costs; (5) EWR programs, excluding program offerings to low income residential customers, that are cost-effective; and (6) practical and effective administration of the programs.

11. DTE Electric's reconciliation shows that during 2018 its Commission-approved EWR plan achieved compliance with the requirements of Act 295 as amended by Act 342 of a utility system resource cost test ("USRCT") score of greater than one and the legislated energy savings of 1.00% of 2017 annual retail sales equating to 471 GWh. DTE Electric considerably exceeded these requirements by accomplishing a USRCT score of 4.78 and by achieving 728 GWh of verified net energy savings.

12. The performance incentive is calculated following the method approved by the Commission in its order issued April 12, 2018 in case No. U-18262. DTE Electric earned the performance incentive approved by the Commission in its Order in Case No. U-18262, and earned the performance incentive for 2018 by exceeding or meeting the legislated minimum first year savings, lifetime savings targets Multi-Family assessments, and Residential Low Income spend as

outlined in case No. U-18262 (and the accompanying settlement agreement). The details of these energy savings figures and the computations of the performance incentive are discussed in the accompanying testimony.

13. In 2018, the planned EWR program spend was \$105.2 million and the actual EWR program spend was \$106.6 million.

14. Based on the operation of the surcharge during 2017, DTE Electric has calculated a net under recovery of \$12.5 million. DTE Electric is proposing that the calculated cumulative under recovery for 2018 will be carried forward into 2019 on a customer class basis and used as beginning balances for the 2019 reconciliation.

15. DTE Electric maintains that the testimony and exhibits filed with this Application demonstrate that the reconciliation was conducted in a reasonable and prudent manner and consistent with the requirements of Act 295 as amended by Act 342, thus warranting Commission approval of the requested relief.

16. In support of its Application, DTE Electric is filing the direct testimony and exhibits of seven witnesses (Reema A. Biel, John R. Boladian, Debbie Brannan, James L. Chubb, Alison J. Jaworowski, Jason R. Kupser, and Thomas W. Lacey) concurrently with this Application. 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.

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

- A. Determine that DTE Electric's reconciliation for its 2018 EWR plan year is just and reasonable, and that it meets all relevant requirements of Act 295 as amended by Act 342;

- B. Approve DTE Electric's reconciliation for the 2018 EWR plan year, the performance incentives, and the associated proposed tariffs;
- C. Approve the necessary accounting authority described in DTE Electric's testimony; and
- D. Grant such other and further relief as is just and reasonable.

Submitted by,

DTE ELECTRIC COMPANY

By:

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

Dated: May 31, 2019

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
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Case No. U-20366
(Paperless e-file)

QUALIFICATIONS

AND

DIRECT TESTIMONY

OF

JOHN R. BOLADIAN

DTE ELECTRIC COMPANY
QUALIFICATIONS OF JOHN R. BOLADIAN

Line
No.

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

2 A. My name is John R. Boladian. My business address is: One Energy Plaza, Detroit,
3 MI 48226. I am employed by DTE Electric Company (DTE Electric or Company),
4 within the Business Planning and Development department as Director of Energy
5 Efficiency, which includes Energy Waste Reduction (EWR) and Energy Partnership
6 & Services.

7

8 **Q. On whose behalf are you testifying?**

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

10

11 **Q. What is your educational background?**

12 A. I have a Bachelor of Business Administration degree with a Major in Marketing from
13 Michigan State University.

14

15 **Q. What is your work experience?**

16 A. I started my career with DTE Energy (DTE) in the Marketing & Sales Organization
17 in 1992. Most of my career has been spent in various leadership positions in
18 marketing, customer service and information technology organizations including
19 billing, meter reading, collections and customer care, new customer facing systems,
20 and major accounts, focusing on relationship management for DTE's largest electric
21 customers. Before joining DTE Energy, I held positions at various advertising and
22 sales agencies such as Ross Roy Advertising and NBC/Mutual Broadcasting
23 Company. I became Director of Energy Efficiency in November 2015.

24

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1 **Q. What are your current job responsibilities?**

2 A. As Director of Energy Efficiency, I am responsible for the development,
3 implementation, tracking, and evaluation and measurement of Energy Waste
4 Reduction (EWR) programs for DTE Electric and DTE Gas. In addition, I also have
5 responsibility for the Energy Partnership & Services group, Demand Response and
6 implementing the Company's Time of Use (TOU) rate initiative.

7

8 **Q. Are you a member of any professional organizations?**

9 A. I am currently the Elected First Vice Chair and an active Board Member of the
10 Consortium of Energy Efficiency (CEE). I am also on the board of directors of the
11 Midwest Energy Efficiency Alliance (MEEA), and a member of the Association of
12 Energy Service Professionals (AESP).

13

14 **Q. Have you previously testified before the Michigan Public Service Commission**
15 **(MPSC or Commission)?**

16 A. Yes. I provided testimony in the following cases:

17 U-18023 DTE Electric 2015 EWR Reconciliation

18 U-18024 DTE Gas 2015 EWR Reconciliation

19 U-18332 DTE Electric 2016 EWR Reconciliation

20 U-18338 DTE Gas 2016 EWR Reconciliation

21 U-17762 DTE Electric 2017 EWR Plan Amendment

22 U-17763 DTE Gas 2017 EWR Plan Amendment

23 U-18262 DTE Electric 2018-2019 EWR Plan

24 U-18268 DTE Gas 2018-2019 EWR Plan

25 U-20029 DTE Electric 2017 EWR Reconciliation

26 U-20035 DTE Gas 2017 EWR Reconciliation

DTE ELECTRIC COMPANY
DIRECT TESTIMONY OF JOHN R. BOLADIAN

Line
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1 **Q. What is the purpose of your testimony in this proceeding?**

2 A. The purpose of my testimony is to support the general results of DTE Electric's 2018
3 EWR program and provide policy overview and confirmation of the various critical
4 reporting requirements for the reconciliation process. Specifically, I address the
5 following matters related to the 2018 EWR program year:

6 1) The reconciliation process required by Public Act 342 of 2016 (PA 342) and the
7 steps that were performed to assure DTE Electric's 2018 energy savings and
8 spending met the law's requirements. I also provide a review of the goals for the
9 2018 EWR program year including energy savings, program spend, and cost
10 effectiveness.

11 2) A high-level review of program implementation and how the implemented
12 programs compare to the Company's EWR Plan in Case No. U-18262 approved
13 by the Commission on April 12, 2018. This plan covers the time period through
14 the end of 2019 and will be referred to throughout my testimony as the approved
15 2018 EWR Plan. In addition, I provide a summary of the differences from the
16 2018 EWR plan. I also summarize the savings and objectives of the programs
17 and demonstrate that, for the 2018 program year, the programs were effective and
18 met the overall EWR goals.

19 3) The description and evolution of the pilot programs. I specifically provide
20 examples of the types of actions and projects undertaken in this area. I also detail
21 the method for determining the energy savings attributed to the pilot program and
22 the resulting calculated savings.

23 4) Results of the program including billed revenue, program spend, and energy
24 savings as compared with the approved 2018 EWR Plan amounts. In addition, I

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1 will provide results for lifetime energy savings resulting from the Company's
2 EWR programs.

3 5) The approach to determining cost effectiveness including details concerning the
4 method used to determine cost effectiveness and the tools used for its calculation.
5 I also provide the calculation results showing the 2018 EWR program was cost
6 effective.

7 6) The EWR credits schedule, which shows how many EWR credits are generated
8 and how many excess credits will be applied towards the performance incentive.

9 7) The performance incentive calculations by customer class based on actual EWR
10 program spend and other items.

11 8) The Company's proposal to roll the 2018 over/(under) recovery of EWR program
12 costs into the 2019 over/(under) cost recovery balance, by customer class.

13 9) The 2016 performance incentive collected in 2018 compared to the amount
14 awarded.

15 10) The 2018 EWR Annual Report.

16

17 **Q. Are you sponsoring any exhibits in this proceeding?**

18 A. Yes, I am sponsoring the following exhibits:

19	<u>Exhibit</u>	<u>Description</u>
20	A-1	Pilot and EM&V Program Costs and Energy Savings
21	A-2	Pilot Program Savings Calculation
22	A-3	Program Reallocation Limit Calculation
23	A-4	Cost Effectiveness Test Summary
24	A-5	Energy Credits
25	A-6	Performance Incentive

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1 A-7 2018 EWR Annual Report

2

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

4 A. Yes, they were.

5

6 **Q. How did DTE Electric implement its EWR program in 2018?**

7 A. DTE Electric implemented its EWR program as outlined in the approved 2018 EWR
8 Plan. The Company utilized implementation contractors and has built strong
9 networks to deliver energy efficiency programs throughout the State of Michigan.

10

11 Detailed descriptions of the ongoing implementation of EWR programs are provided
12 by Company Witnesses Kupser and Jaworowski. Witness Kupser provides detail for
13 residential, low income, and education programs. Witness Jaworowski provides
14 detail for the Commercial & Industrial (C&I) programs.

15

16 In addition to overall portfolio savings and spend, I will provide an overview of all
17 other programs within the approved 2018 EWR Plan.

18

19 **Q. What reconciliation process did you use for the 2018 EWR program year?**

20 A. The process DTE Electric used is as follows:

- 21 1) Compile actual 2018 EWR surcharge revenue billed by customer class;
22 2) Compile all relevant program costs related to the approved 2018 EWR Plan;
23 3) Reconcile actual billed base surcharge revenue with actual cost for the 2018 EWR
24 program year;

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- 1 4) Compile the results of the 2018 EWR programs including first year and lifetime
- 2 energy savings;
- 3 5) Obtain third party validation and verification of the resulting savings and other
- 4 results related to achievement of the performance incentive mechanism;
- 5 6) Calculate the Utility System Resource Cost Test (USRCT) for the 2018 EWR
- 6 program portfolio;
- 7 7) Determine the level of 2018 performance incentive to be collected; and
- 8 8) Assemble the 2018 EWR Annual Report.

9

10 **Q. What were the goals of DTE Electric's 2018 EWR program?**

11 A. The overall goal of the 2018 EWR program was to promote participation in EWR
12 programs and maintain the momentum that the EWR program achieved since its
13 launch in 2009. The 2018 goals were to: (1) achieve legislated energy savings of 1%
14 of 2017 planned retail sales, or 471 GWh, and (2) meet the minimum required
15 USRCT score of 1.0. Specifically, the projected savings for 2018, outlined in the
16 approved EWR Plan, was 707 GWh, which would exceed the required minimum
17 savings for the year. The planned spend outlined in the approved 2018 EWR Plan
18 was \$105.2 million. Spend, as used in this testimony, refers to the cash expenditures
19 or commitments by DTE Electric in implementing its EWR program. Spend does
20 not contemplate the eventual treatment of costs such as operations and maintenance
21 or capitalization.

22

23 **Q. Did DTE Electric meet its goals?**

24 A. Yes. DTE Electric achieved 728 GWh in verified net energy savings equating to
25 1.55% of 2017 planned retail sales. A USRCT score of 4.78 was achieved based on

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1 the 728 GWh verified net energy savings. The details of these accomplishments will
2 be discussed throughout my testimony.

3

4 **Q. What do you mean by verified net energy savings?**

5 A. Verified net energy savings are DTE Electric's reported savings after they have been
6 adjusted based on a review by our independent evaluation contractor, Navigant
7 Consulting Inc. (Navigant), the application of an Installation Rate Adjustment Factor
8 (IRAF), and Net-to-Gross Ratios (NTGR). The determination of the verified net
9 energy savings is further discussed in Company Witness Brannan's testimony.
10 Unless otherwise indicated by a witness, all savings values presented in the
11 Company's testimony are verified net savings values.

12

13 **Q. What Installation Rate Adjustment Factor (IRAF) was utilized to calculate**
14 **achieved verified net energy savings?**

15 A. The IRAFs primarily used were program, measure, and fuel-specific based on
16 historical results. Company Witness Brannan explains the determination and
17 application of the IRAFs in her testimony.

18

19 **Q. What Net-to-Gross Ratio (NTGR) was utilized to calculate achieved verified net**
20 **energy savings?**

21 A. As required by the Commission's EWR Plan Order in Case No. U-18262, the
22 Company applied a 0.92 NTGR to most programs. The Company applied a NTGR
23 of 1.00 for low income, pilots, and education and a 0.90 for standard and reflector
24 Light Emitting Diodes ("LED") bulbs within the Residential Energy Star Products
25 Program as approved by the Commission on April 12, 2018 for the Company's EWR

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1 Plan Case No. U-18262. A NTGR is not applied to: (1) Tier 1 Thermostats delivered
2 by Commercial & Industrial programs; (2) Tier 2 and Tier 3 Thermostats delivered
3 by Residential programs; (3) the Residential Home Energy Report program; (4)
4 Smartphone Behavior Application program (DTE Insight); and (5) Real Time Data
5 Add-on to Smartphone Behavior Application program; as savings represent verified
6 net savings. The testimony of Company Witness Brannan explains the determination
7 and application of the NTGRs that were applied.

8
9 **Q. Were there any deviations to the program execution compared to the EWR Plan**
10 **approved for 2018?**

11 A. Yes. The 2018 EWR program year was executed as originally designed except for a
12 few minor adjustments that were made along the way. Witnesses Kupser and
13 Jaworowski outline more specific results at the program level in their testimonies.

14
15 **Pilot Program**

16 **Q. What was the objective of DTE Electric's EWR pilot program in 2018?**

17 A. The purpose of the pilot program was to explore technologies and approaches not
18 included in the commercialized programs described in the approved 2018 EWR Plan.
19 The pilot program also enabled the Company to measure energy savings and test cost
20 effectiveness of emerging technologies. This program also tested customer adoption
21 of new technologies and market adoption of existing technologies using new
22 approaches. As designed, this program supported both Residential and C&I
23 programs.

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1 **Q. What pilot projects were performed under the pilot program in 2018?**

2 A. The Pilot team targeted a variety of projects across the portfolio in 2018. The
3 following are examples of Residential and C&I pilot projects implemented.

4

5 **HVAC Tune-Up:** Developed as a joint effort between DTE Electric and SEMCO
6 ENERGY Gas Company to test the impact of energy efficiency-specific
7 technologies and procedures on heating and cooling tune-up services. The Pilot
8 leveraged proprietary applications and tune-up procedures not currently adopted in
9 the DTE Electric service territory. The Pilot aimed to serve customers, train
10 contractors on a new approach and enhance HVAC system efficiencies. The Pilot
11 was concluded in 2018.

12

13 **Heat Pump Dryers:** Pilot sought to drive market transformation by educating and
14 incentivizing customers to purchase Heat Pump Clothes Dryer technologies. The
15 pilot incentivized and promoted a variety of ENERGY STAR Electric Heat Pump
16 Dryer models through an assortment of marketing channels, supplement to DTE
17 Electric's ENERGY STAR program. The pilot concluded in 2018 with several
18 qualified ENERGY STAR Heat Pump dryer models that are now incentivized with
19 rebates as part of the DTE Electric's Residential ENERGY STAR appliances
20 program.

21

22 **ENERGY STAR Retail Product Platform (ESRPP):** A National scale,
23 midstream collaboration between energy efficiency program sponsors, retailers,
24 program partners, and stakeholders facilitated by the U.S. Environmental
25 Protection Agency. ESRPP enabled DTE Electric to engage national retailers to

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1 increase availability and accelerate adoption of select ENERGY STAR certified
2 products. ESRPP influenced retailers to stock and promote more energy efficient
3 models through a combination of mid-stream incentives and engagements that
4 included retailer agreements, marketing, and field services. The Pilot was
5 concluded in 2018.

6

7 **Manufactured Homes:** Pilot objective was to develop a cost-effective solution to
8 achieve energy savings for residential customers who reside in a manufactured
9 home. The pilot field-tested a broad range of measures including the installation of
10 duct sealing, roof insulation, belly insulation, pipe wrap, furnace tune-ups,
11 bathroom, kitchen and showerhead aerators, and a variety of LED lighting options.
12 The pilot continues into 2019.

13

14 **Multifamily Low-Income:** This pilot was developed to encourage low income
15 property owners to upgrade their building envelope, mechanical equipment and
16 appliances that save tenants energy and money. The pilot employed a “Concierge
17 Model” that includes an Energy Advisor performing a Level 1 audit assessment,
18 which comprises gathering billing history, visually inspecting the property for
19 energy efficiency opportunities, energy modeling and presenting opportunities for
20 the customer to save on their energy bill. The pilot encompasses the gathering of
21 bids from contractors for the project(s) and supervising installation of the
22 measure(s). The pilot will continue in 2019.

23

24 **Non-Wire Alternative:** The non-wire alternatives pilot will continue in 2019 with
25 ongoing collaboration with MPSC Staff and stakeholders to explore the potential

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1 for geographically targeted energy efficiency measures to cost-effectively defer
2 distribution system upgrades. The focus includes both Residential and C&I
3 customer segments. Field testing launched in 2018 and continues in 2019.

4

5 **New Homes Construction:** This pilot program launched in the fourth quarter of
6 2018 with the objective of increasing builders' adoption of high efficiency building
7 practices and methods. Partnering with Home Energy Rating System (HERS)
8 raters and builders, the pilot will evaluate training, field support, marketing and
9 incentives to ensure cost-effective packages are designed to maximize the energy
10 efficiency of new homes. These measures include appliances, HVAC equipment
11 and insulation. This pilot will continue in 2019.

12

13 **Home Energy Management (HEM) with DTE Insight:** This is a multi-year pilot
14 designed to understand customers' willingness to adopt smart home products and
15 smart home functionalities that save energy. In the pilot, market research,
16 benchmarking, competitive analysis, and various pricing scenarios were explored.

17

18 **DTE Insight's:** platform was enhanced with new features that leveraged smart
19 home connected devices, including voice integration via Amazon Alexa, smart
20 lightbulbs and smart thermostats, and many other connected devices. The pilot is
21 ongoing.

22

23 **Strategic Energy Management:** This pilot provides technical support and
24 financial incentives for customers interested in moving beyond project-by-project
25 energy savings to managing energy continuously in a holistic approach through

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1 Strategic Energy Management (SEM). This program offers up to 24 months of
2 technical support, plus unique incentives. The incentives are paid on verified
3 operational changes primarily involving HVAC systems that result in energy use
4 reductions. The objective is to advance energy management capabilities and
5 establish a continuous energy management process for enrolled customers. The
6 pilot is currently serving hospitals and is ongoing.

7
8 **E-Challenge 3:** This is a pilot where DTE has partnered with the Engineering
9 Society of Detroit (ESD) to develop a collegiate challenge to test and validate new
10 measures and approaches for C&I customers, including lighting, HVAC controls
11 and humidification. The pilot produced three finalists and has concluded.

12
13 **Rooftop Unit Market Assessment:** This assessment was performed to support a
14 future midstream HVAC pilot. The assessment characterized the roof-top units
15 (RTU) market in the DTE Energy service territory and will define potential pilot
16 energy efficiency program approaches that can help transform those RTU
17 customers to higher efficiency levels. The pilot has concluded.

18
19 **Mid-Stream HVAC:** The pilot was designed to increase the market share of
20 efficient HVAC systems, accelerating the adoption of rooftop air-conditioning by
21 providing streamlined incentives to distributors, which in turn leverage their sales
22 and outreach capabilities. The program is designed to test and expedite a simple
23 solution for C&I customers, providing an instant discount at the point of sale with
24 the distributor. Paperwork is virtually eliminated for both the end use customer and
25 the utility. This pilot continues into 2019.

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1 **Retro-Commissioning:** This pilot offers an onsite energy analysis for customers
2 to determine operational energy efficient measures, with simple payback periods of
3 less than 1.5 years. The focus of the analysis is on controls and HVAC systems
4 and is on-going.

5
6 **New Commercial Energy Codes:** This pilot supports the development of training
7 materials for building code officials, builders, designers, contractors, architects,
8 engineers, state code agencies and commercial trade allies. This activity has
9 concluded.

10

11 **Q. Did some of the DTE Electric pilots have shared budgets with DTE Gas?**

12 A. Yes. Each project is recorded appropriately in the relevant electric and/or gas case
13 testimony.

14

15 **Q. What amount did DTE Electric spend on pilot programs and how did this**
16 **compare against the approved EWR Plan?**

17 A. As shown in Exhibit A-1, line 1, column (e), DTE Electric spent \$5.3 million on the
18 entire EWR pilot program. As approved in Case No. U-18262, Pilot spending is
19 calculated as five percent of the overall EWR program costs. Pilot program funds
20 were primarily spent on contracted services and incentives for the projects outlined
21 above, as well as on the cost of internal administration to manage the portfolio of
22 projects.

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1 **Q. How were pilot program energy savings determined?**

A. Pilot program energy savings were determined based on the method prescribed by the Commission's December 4, 2008 Temporary Order in Case No. U-15800. In that order the Commission determined utilities may designate up to five percent of their EWR budget for pilot programs, future EWR program development or assessment of emerging technologies and that the pilot funds will be deemed to generate proportionate energy savings per dollar of spend to that of the overall portfolio up to five percent during each program year. Given the spending completed on Pilot projects and campaigns in 2018, energy savings per Exhibit A-2 were determined based on the above methodology to be 35.3 GWh.

Revenue

13 Q. What surcharges were billed for the EWR program for 2018?

A. The base surcharges billed from January 2018 through April 2018 were originally approved by the Commission on June 3, 2015 in Case No. U-17762 to bill through the end of 2017. On September 15, 2017, the Commission issued an Order in the Company's Amended EWR Plan approving the continuation of the 2017 surcharge until revised surcharges were approved in the Company's 2018-2019 Plan, Case No. U-18262. The base rates subsequently approved in Case No. U-18262 on April 12, 2018, were implemented for billing from May 1, 2018 through December 2018. In addition, the Commission's December 20, 2017 Order in Case No. U-18332, the 2016 DTE Electric EWR Reconciliation, authorized an incremental surcharge to recover the 2016 EWR plan performance incentive. From January 1, 2018 through December 31, 2018, this surcharge was added to the base surcharge and billed to customers as

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one combined EWR surcharge. The detail of the billing components is provided on
Witness Lacey's Exhibit A-27.

Q. Did actual base surcharge revenue meet the projection in the EWR Plan approved for 2018?

A. The table below compares the planned revenue as per U-18262 Exhibit A-22, page 2, versus the actual base surcharge revenue:

Revenue Class (\$Million)	Plan	Actual	Over / (Under)
Residential	\$57.8	\$57.0	\$(0.8)
C&I Secondary	35.9	31.1	(4.8)
C&I Primary	11.4	13.9	2.6
Total Revenue	\$105.1	\$102.1	\$(3.0)

Note: Totals may not match due to rounding.

The actual revenue from the residential class is slightly lower than plan due to the variance between actual and forecasted sales. C&I revenue variances are due to fluctuation within the consumption level break points for the surcharge in the C&I classes, and variances in forecasted meter counts. In addition, as described earlier, the surcharges approved in Case No. U-17762 were billed for a portion of the year, and the surcharges approved in U-18262 were not implemented until May 2018.

Q. How did the actual program spend compare to the planned expenditures identified in the EWR Plan approved for 2018?

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- 1 A. For 2018, the approved EWR planned spend was \$105.2 million per U-18262,
2 Exhibit A-4, line 35, column (f) and the actual spend was \$106.6 million, Below is a
3 table outlining EWR Spend by program categories:

4

<u>Total Program Spend</u>			
Category (\$Million)	Plan Spend	Actual Spend	Over / (Under)
Residential Programs	\$39.6	\$39.7	\$0.1
C&I Programs	\$40.1	\$39.3	\$(0.8)
Low Income	\$11.8	\$13.8	\$1.9
Pilot	\$4.5	\$5.3	\$0.1
Education	\$2.7	\$3.2	\$0.1
EM&V	\$4.5	\$5.4	\$0.1
Total Spend	\$105.2	\$106.6	\$1.4

5 Note: Totals may not match due to rounding.

6

7 Witness Kupser describes the details of the residential program spend and Witness
8 Jaworowski describes the details of the C&I program spend.

9

10 **Q. Did the Company seek approval to spend above the planned spend amount?**

11 A. In the order for Case No. U-18262, the Commission established plan amendment
12 threshold requirements allowing that an amendment would not be necessary unless
13 the Company exceeded the approved planned spend by more than 5%. The 2018
14 excess spend of approximately 1% was within this threshold so no additional
15 approval was required.

16

17 **Q. Were the spending revisions among programs within the allowed reallocation**
18 **limits?**

Line
No.

1 A. Yes. Per the Commission's June 3, 2010 Order in the Amended EWR Plan Case No.
2 U-15806, on pages 16-17, the Commission stated that it agreed that the 20% limit on
3 spending revisions did not provide sufficient flexibility for the Company and found
4 that the cap should be raised to 30%. Exhibit A-3 provides a calculation showing
5 reallocation limits. Exhibit A-3, pages 3 and 5, provide the method for allocating
6 planned administrative costs to residential and C&I programs respectively for
7 purpose of determining program level reallocation of costs. Exhibit A-3, pages 2 and
8 4, calculate the amount of actual spend that was reallocated for the residential and
9 C&I programs. Page 1 of Exhibit A-3 calculates the allowable reallocation by
10 customer class and compares the actual reallocation to the maximum allowed,
11 calculated at 30%. Exhibit A-3, page 1, lines 5 and 14, column (c) shows that the
12 amount of available reallocation remaining was \$11.1 million for the residential class
13 and \$9.2 million for the C&I customer classes. Thus, DTE Electric remained within
14 the 30% reallocation limit as ordered by the Commission.

15

16 **Q. To the extent feasible, were dollars collected from a customer class spent on**
17 **EWR programs for that customer class?**

18 A. Yes. DTE Electric separated spending and revenue between residential and C&I
19 programs. Company Witness Lacey performs the over/(under) cost recovery
20 calculations by class, based on the class expenses and revenue provided to him by
21 Company Witness Chubb.

22

23 **Energy Savings**

24 **Q. Did the savings from the EWR programs exceed the required energy savings?**

Line
No.

1 A. Yes. Collectively, the residential and low income programs provided 301 GWh of
2 verified net energy savings as shown in Witness Kupser’s Exhibit A-8. C&I
3 programs, including self-direct, provided 371 GWh as shown in Witness
4 Jaworowski’s Exhibit A-10. DTE Electric had five customers sign up to self-direct
5 their own EWR program, and those companies’ plans provided approximately 5 GWh
6 of savings that were added to DTE Electric’s verified net energy savings for 2018 as
7 shown in Exhibit A-11. DTE Electric achieved 35.3 GWh savings from the pilot
8 programs and 21.4 GWh savings from the education programs as shown in Exhibit
9 A-1 and Exhibit A-9, respectively. In total, the verified net energy savings DTE
10 Electric achieved from the 2018 EWR program was 728 GWh as compared to the
11 minimum requirement of 471 GWh.

12

13 **Q. Did the energy savings achieved in 2018 exceed the planned verified net savings**
14 **from the approved 2018 EWR plan?**

15 A. Yes. The approved EWR plan included verified net energy savings of 707 GWh and
16 the Company achieved verified net energy savings of 728 GWh. The table below
17 compares planned savings to 2018 verified net savings by program.

18

Category (GWh)	Plan Savings Net	2018 Verified Net Savings	Over / (Under)
Residential Programs	269	274	5
C&I Programs	351	366	15
Low Income	23	27	3
Self-Direct Plan	7	5	(2)
Pilot	35	35	0
Education	21	21	0
Total Savings	707	728	21

19 Note: Totals may not match due to rounding.

Line
No.

1 **Q. How were the energy savings resulting from customers' self-directed plans**
2 **determined?**

3 A. The energy savings for customers' self-directed plans were based on the customers'
4 reported planned savings, in accordance with PA 342. Per Section 93 (7) of PA 342,
5 "Projected energy savings from measures implemented under a self-directed plan
6 shall be attributed to the relevant provider's energy waste reduction programs for the
7 purposes of determining annual incremental energy savings achieved by the
8 provider." Therefore, in the table above, the "Actual" Savings for the self-direct plan
9 reflect the known self-direct plans at the beginning of 2018. The Company maintains
10 in its current EWR Plan that the planned savings provided by self-direct customers
11 will be used in annual reconciliation proceedings.

12

13 Thus, included in the overall energy savings for the 2018 program year are the
14 planned self-direct energy savings. Accordingly, Witness Jaworowski has included
15 the energy savings projected by self-direct customer plans into the actual energy
16 savings achieved by C&I customers for 2018.

17

18 **Q. Were the EWR program savings validated by a third party?**

19 A. Yes. In 2018, DTE Electric worked with third party EM&V firm, Navigant, to review
20 the EWR program results. Navigant validated and verified the energy savings
21 associated with DTE Electric's Residential and C&I programs. Witness Brannan
22 describes the process Navigant underwent to validate and verify program savings in
23 her testimony.

24

Line
No.

1 **Q. Were other EWR program results validated by a third party?**

2 A. Yes. In addition to the validation of energy savings, Navigant was engaged to
3 validate the results of the EWR program pertaining to the performance incentive
4 goals approved by the Commission in its April 12, 2018 Order in Case No. U-18262
5 (2018-19 EWR Plan). Specifically, Navigant validated both first year and lifetime
6 energy savings.

7

8

Cost Effectiveness Tests

9 **Q. What is the purpose of the cost effectiveness tests?**

10 A. Cost effectiveness tests (CETs) are performed to ensure that energy savings are
11 achieved in a cost-effective manner for the utility and its customers. DTE Electric
12 uses the USRCT (Utility System Resource Cost Test) and the Total Resource Cost
13 (TRC) Test to measure the cost effectiveness of its EWR programs.

14

15 **Q. How was cost effectiveness of the 2018 EWR programs determined?**

16 A. The DSMore cost analysis tool was used to calculate and report the cost effectiveness
17 of the 2018 EWR programs using the USRCT. Consistent with PA 342, the USRCT
18 is defined as the total net present value of life cycle avoided costs, divided by the sum
19 of program costs.

20

21 Additionally, a TRC Test was calculated for the DTE Electric EWR programs. The
22 TRC Test is defined as the total avoided costs, divided by the sum of program costs,
23 plus the participant's costs. Incentives paid to the customer are included in both the
24 cost and the benefits sides of the equation.

25

Line
No.

1 **Q. What inputs are used in running DSMore?**

2 A. There are two major groups of inputs that are used in DSMore. These include the
3 utility input assumptions and the program inputs. Utility input assumptions contain
4 information that is specific to the utility and include items such as load shape, the
5 commodity and non-commodity cost of electricity, customer energy rates, line losses,
6 weather, and discount rates. The utility input assumptions used in this reconciliation
7 analysis are the same as those that were used in developing DTE Electric's approved
8 2018-19 EWR Plan. Program inputs are detailed and contain specific information
9 about individual energy efficiency measures that were installed as a result of the
10 EWR programs. The major program inputs consist of the measure type, measure
11 unit, measure size, deemed savings from the Michigan Energy Measures Database
12 (MEMD), the operations/implementation costs, incentive costs, participant costs,
13 participation levels, measure life, assumed hours, and applicable time of day or
14 seasonal impact.

15

16 **Q. Where did you obtain the measure installation, measure life, and energy savings**
17 **data used in DSMore?**

18 A. Navigant provided the number of measure units that were installed for each measure
19 that was used in DSMore. They also provided the measure life information, total
20 kWh and kW savings per measure, IRAF, NTGR, and incremental cost information.

21

22 **Q. Where did you obtain the cost data used in DSMore?**

23 A. All DTE Electric's EWR-related costs are separately identified and recorded in the
24 Company's accounting systems. Company Witness Chubb discusses the detailed
25 financial data in his testimony.

Line
No.

1 **Q. What cost data was used in the CETs?**

2 A. CET measures are calculated using participant costs, customer incentive costs,
3 implementation/administrative costs, performance incentive costs, education costs,
4 and pilot costs. Customer incentive costs are the amounts that were paid to the
5 customer in the form of a discount or rebate. Program costs are administrative and
6 implementation costs incurred by DTE Electric and third parties in order to execute
7 the EWR programs. Performance incentive costs are the incentive earned by the
8 utility for over-achieving energy savings legislative goals and achieving other targets
9 that make up the incentive determination. The education and pilot costs were also
10 provided and factored into the entire DTE Electric program portfolio level of the
11 USRCT and TRC Test results.

12

13 **Q. At what level of detail were the CETs calculated?**

14 A. CETs were performed at the entire DTE Electric EWR portfolio level and at the
15 program levels. The portfolio level includes all EWR programs except for low
16 income program. Other levels tested include the aggregation of: 1) residential
17 programs (without low income), 2) C&I programs, 3) pilot programs, and 4)
18 education programs. The low income programs were excluded from the aggregations
19 as Section 71(4)(G) of PA 342 specifically excludes low income in the requirement
20 for cost-effectiveness.

21

22 As indicated above, the CETs were also calculated at program levels, including the
23 low income programs, ten residential program groups, and nine C&I program groups.
24 The ten residential program groups include: 1) ENERGY STAR products, 2)
25 Appliance Recycling, 3) Heating, ventilation, and air conditioning (HVAC), 4)

Line
No.

1 Multifamily, 5) Home Energy Consultation, 6) Schools Program, 7) On-line Energy
2 Audit, 8) Behavior Programs, 9) Audit and Weatherization, and 10) Emerging
3 Measures and Approaches. The nine C&I groups include: 1) Prescriptive, 2) Non-
4 prescriptive, 3) Emerging Measures and Approaches, 4) Energy Star Retail Lighting,
5 5) Multifamily Common Areas, 6) Self Direct, 7) Retro-Commissioning, 8) Business
6 Energy Consultation, and 9) Mid-Stream Lighting.

8 **Q. Was the 2018 DTE Electric EWR program cost effective?**

9 A. Yes. DTE Electric's approved 2018 EWR Plan was designed to exceed legislated
10 energy savings minimums at a specific cost. As I described earlier in my testimony,
11 DTE Electric exceeded the projected spend in the approved 2018 EWR Plan by 1%
12 or \$1.4M and exceeded the legislated energy savings minimums by 55% or 257 GWh
13 (728 GWh less the legislated minimum of 471 GWh). Even before performing any
14 cost effectiveness tests, these two facts indicate that the program portfolio was very
15 cost effective.

16
17 Based on the analysis performed using DSMore, the DTE Electric EWR portfolio of
18 programs passed the CETs in accordance with the guidelines outlined by Attachment
19 E, Section 2f of the MPSC's December 4, 2008 Temporary Order, in Case No. U-
20 15800.

21
22 As shown in Exhibit A-4, line 2, column (b), the USRCT score for the portfolio
23 without low income was 4.78. The CETs results are: (1) aggregated by the entire
24 portfolio of DTE Electric EWR programs (without low income); (2) aggregated by
25 customer classes residential and C&I, pilot, and education; and (3) aggregated by

Line
No.

1 programs specific to the customer classes. The low income program's cost
2 effectiveness results are provided individually.

3
4 **Energy Credits**

5 **Q. What information is shown on Exhibit A-5 entitled "Energy Credits"?**

6 A. Exhibit A-5 displays the summary of EWR credits for 2018 that DTE Electric earned
7 through its EWR program. The calculation provides the number of EWR credits
8 measured in MWh that were utilized towards the 2018 EWR standard compliance
9 and performance incentive. As shown on line 6 of Exhibit A-5, excess credits beyond
10 the requirement and the incentive of 21 GWh are to be transferred to DTE Electric's
11 renewable portfolio requirement per PA 342 Section 28 (5).

12
13 **Performance Incentive**

14 **Q. How is the performance incentive calculated?**

15 A. The performance incentive is calculated following the method approved by the
16 Commission in its order issued April 12, 2018 in case No. U-18262.

17
18 **Q. Did DTE Electric earn a performance incentive in 2018?**

19 A. Yes. Exhibit A-6 outlines the resulting performance incentive earned. As shown in
20 Exhibit A-6, the Company earned the maximum performance incentive of 20% by
21 meeting or exceeding legislated minimum first year savings, lifetime savings, Multi-
22 Family assessments, Multi-Family spend, and Residential Low Income spend as
23 outlined in case No. U-18262 (and the accompanying settlement agreement).

Line
No.

1 **Q. What is the performance incentive amount?**

2 A. The performance incentive is calculated based on multiplying EWR program spend
3 by 20%. The table below shows the associated incentive by customer class:

4

Customer Class (\$000,000)	Actual Spend	Performance Incentive
Residential	\$55.0	\$11.0
C&I Secondary	\$20.5	\$4.1
C&I Primary	\$31.1	\$6.2
Total	\$106.6	\$21.3

5

6 **Net Under-recovery of EWR Program Costs**

7 **Q. Are you proposing an adjustment to the EWR base surcharge for the cumulative**
8 **under-recovery of \$12.5 million calculated by Witness Lacey on Exhibit A-18?**

9 A. No.

10

11 **Q. Why are you not recommending any adjustment to the EWR base surcharge for**
12 **the net under-recovery for the 2018 EWR program that was calculated by**
13 **Witness Lacey?**

14 A. On April 12, 2018, the Commission issued an Order in Case No. U-18262 approving
15 the Company's 2018/2019 EWR Plan and the proposed EWR base surcharges. The
16 surcharges approved in this Order were implemented beginning with bills rendered
17 in May 2018. For each customer class, the anticipated net over or under recovery
18 through 2017 was included as a factor in the program costs used in the derivation of
19 the 2018/2019 EWR base surcharge, so there is no need to adjust the base surcharges
20 at this time.

21

Line
No.

1 **Q. How will DTE Electric handle the \$12.5 million net under-recovery?**

2 A. The calculated under-recovery for 2018 will be carried forward into 2019 on a
3 customer class basis and used as beginning balances for the 2019 EWR
4 reconciliation. As stated above, the anticipated balance for each customer class was
5 included in the preparation of the 2018/2019 EWR plan (Case No. U-18262) and
6 reflected in the program costs used to derive the 2018/2019 EWR base surcharge.

7
8 **Q. What is the status of the 2016 performance incentive?**

9 A. DTE Electric began collecting the 2016 performance incentive in January 2018. As
10 shown on Witness Lacey's Exhibit A-25, as of December 31, 2018 the Company had
11 collected a total of \$13.8 million: \$7.4 million from the residential class, \$3.4 million
12 from the C&I Secondary and \$3.0 million from C&I Primary. The total amount
13 awarded was \$13.3 million. As shown in Witness Lacey's Exhibit A-26, the
14 Company is proposing to subtract the \$0.5 million net over collection from the \$21.3
15 million 2018 performance incentive earned by the Company.

16

17 **Settlement Agreement Case No. U-18262**

18 **Q. What is the status of the activities agreed to by all parties in the Settlement**
19 **Agreement in case No. U-18262?**

20 A. DTE Electric and DTE Gas have performed several functions and actions regarding
21 the settlement for the 2018-19 EWR Plan Filing including, but not limited to;

22 1) In 2018, DTE Electric increased its investment in the Energy Efficiency Assistance
23 program by \$875,000 for the purposes of targeting low-income customers in arrears.
24 The Company used the methodology detailed in the Settlement Agreement
25 Attachment A to target these customers. In total, DTE Electric and DTE Gas will

Line
No.

- 1 spend \$5,000,000 over two-year, collectively spending at least \$1,000,000 in 2018
2 with the remaining investment being spent during 2019 program year. Case No. U-
3 20369, the DTE Gas 2018 EWR reconciliation for DTE Gas, details additional
4 related spending.
- 5 2) DTE Electric displayed its Multi-Family low-income investments as individual line
6 items in the Company's 2018 EWR reconciliation and implemented the Multi-
7 Family Low-Income Program pilot enhancements as set forth in the Settlement
8 Agreement Attachment C. In total, DTE Electric increased its Multi-Family low-
9 income spend by \$125,000 in 2018, exclusive of pilot funding. Case No. U-20369,
10 the DTE Gas 2018 EWR reconciliation for DTE Gas, details additional related
11 spending.
- 12 3) The Company's performance incentive mechanism targets for 2018 are based on
13 lifetime savings targets, low-income spend, and low-income multi-family
14 assessments.
- 15 4) As outlined in the settlement agreement and referenced in the Pilots section of my
16 testimony, DTE Electric implemented a Non-Wires Alternative Pilot. EWR Pilot
17 funding was used to facilitate an evaluation of the cost-effectiveness impact of EWR
18 on the scope of the Company's distribution system capital investment project. Field
19 testing launched in 2018 and continues in 2019.
- 20 5) DTE Electric included all annual, recurring evaluation expenditures for behavior-
21 based programs in its benefit/cost calculations. Additionally, the Company started
22 gradually reducing its behavior savings as a percentage of the residential portfolio.
23 For 2018, Electric Behavior savings represented 25.7% of the total residential
24 portfolio, a reduction of 3.6% (29.4% for 2017) year over year.

Line
No.

6) DTE Electric reduced the standard and reflector Light Emitting Diodes (“LED”) Net-to-Gross (“NTG”) factors in the Residential Energy Star Products Program from 0.92 to 0.90. The Company assessed the standard and reflector LED NTG for 2019 based on the judgement of DTE’s evaluators.

7) Beginning in 2018, the Company implemented a cost tracker for its education program. The cost tracker will inform the allocation of education program expenses between residential and commercial & industrial in the Company's 2020-2021 EWR Plan Filing.

10 **2018 EWR Annual Report**

11 Q. What is Exhibit A-7 entitled “2018 Annual Report on Energy Waste
12 Reduction”?

13 A. PA 295, as amended by PA 342 requires that EWR providers publish an annual report
14 for the energy waste reduction programs offered. Exhibit A-7 contains a combined
15 report including results for DTE Electric and DTE Gas.

17 **Q. Does this conclude your direct testimony?**

18 A. Yes, it does.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission’s own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

EXHIBITS

OF

JOHN R. BOLADIAN

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Pilot & EM&V Program Costs and Energy Savings

Case No.: U-20366
Exhibit: A-1
Witness: J. Boladian
Page: 1 of 1

Line No.	(a) Program	(b) 2018 Planned		(d) 2018 Actual		(f) Over / (Under)	
		(c) MWh Savings	(c) Cost (\$000)	(d) MWh Savings	(e) Cost (\$000)	(f) MWh Savings	(g) Cost (\$000)
		(1)	(1)	(2)	(3)		
1	Pilot	35,327	\$5,260	35,297	\$5,326	(30)	\$66
2	EM&V	-	\$5,260	-	5,362	-	102
3	Total	35,327	\$10,519	35,297	\$10,687	(30)	\$168

Notes:

- (1) U-18262, DTE Electric 2018-19 EWR Plan Exhibit A-5, Col. (d) and Col. (e)
- (2) Line 1: Exhibit A-2 Line 5
- (3) Line 1: Exhibit A-3 p2 Line 33, Column (d) + Exhibit A-3 p4 Line 19, Column (d)
- (3) Line 2: Exhibit A-3 p2 Line 35, Column (d) + Exhibit A-3 p4 Line 21, Column (d)

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Pilot Program Savings Calculation

Case No.: U-20366
Exhibit: A-2
Witness: J. Boladian
Page: 1 of 1

	(a)	(b)	(c)
Line No.	Source	Item	Amount
1	U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (e), Line 35	Program Plan in MWh	706,721
2	Exhibit A-16, p.1, Column (f) Line 9 + Line 12	Program Spend	\$ 106,629,458
3	Line 1 / Line 2	MWh/\$ of Spend	0.006628
4	Exhibit A-1, Column (e), Line 1	Pilot Spend	\$ 5,325,505
5	Line 3 * Line 4	Pilot Savings MWh	<u><u>35,297</u></u>

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Program Reallocation Limit Calculation

Case No.: U-20366
Exhibit: A-3
Witness: J. Boladian
Page: 1 of 5

Line No.	(a) Description	(b) As Filed (1)	(b) Source	(c) Limits Details	(d) Source
1	Residential - O&M (plus Low Income in Primary & Secondary)	\$ 59,634,996	(1)	\$ 17,890,499	30% of Column (b)
2	Capital	-		-	30% of Column (b)
3	Total Residential	<u>\$ 59,634,996</u>		<u>17,890,499</u>	Line 1 + Line 2
4	Spend defined as Reallocation			<u>6,796,763</u>	Exh A-3 P2, Col. (e), Line 37
5	Remaining Allocation - Residential			<u>\$ 11,093,736</u>	Line 3 - Line 4
6	Commercial & Industrial (C&I) Secondary O&M (less Low Income)	\$ 17,251,128	(2)	\$ 5,175,338	30% of Column (b)
7	Capital	8,397,899	(3)	2,519,370	30% of Column (b)
8	Total Secondary	<u>\$ 25,649,028</u>		<u>\$ 7,694,708</u>	Line 6 + Line 7
9	C&I Primary O&M (less Low Income)	\$ 13,390,307	(4)	\$ 4,017,092	30% of Column (b)
10	Capital	6,518,441	(5)	1,955,532	30% of Column (b)
11	Total Primary	<u>\$ 19,908,748</u>		<u>\$ 5,972,624</u>	Line 9 + Line 10
12	Total C&I (excludes Low Income in Secondary & Primary)	<u>\$ 45,557,776</u>		\$ 13,667,333	Line 8 + Line 11
13	Spend defined as Reallocation			<u>4,447,044</u>	Exh A-3 P4, Col. (e), Line 33
14	Remaining Allocation - C&I			<u>\$ 9,220,289</u>	Line 12 - Line 13
15	Total	<u>\$ 105,192,772</u>			Line 3 + Line 12

Note:

- (1) U-18262, DTE Electric EWR Plan, Exhibit No. A-11, Col. (d), Line 8, Plus Exhibit No. A-14 p1, Col.(d), Line 5, Plus Exhibit No. A-14 p2, Col.(d), Line 5
- (2) U-18262, DTE Electric EWR Plan, Exhibit No. A-14 p.1, Col. (d), Line 8, Minus Line 5
- (3) U-18262, DTE Electric EWR Plan, Exhibit No. A-14 p.1, Col. (d), Line 1
- (4) U-18262, DTE Electric EWR Plan, Exhibit No. A-14 p.2, Col. (d), Line 8, Minus Line 5
- (5) U-18262, DTE Electric EWR Plan, Exhibit No. A-14 p.2, Col. (d), Line 1

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Program Reallocation Limit Calculation

Case No.: U-20366
Exhibit: A-3
Witness: J. Boladian
Page: 2 of 5

Line No.	(a) Residential - Capital and O&M	(b) Source	(c) As Filed	(d) Actuals (1)	(e) Col (d) - Col (c)
1	Energy Star	A-3, Pg 3, Line 1	\$ 15,097,335	\$ 12,531,341	\$ (2,565,994)
2	Adminstration & Infrastructure	A-3, Pg 3, Line 26	1,391,672	1,902,093	510,421
3	Total		<u>\$ 16,489,007</u>	<u>\$ 14,433,434</u>	<u>\$ (2,055,573)</u>
4	Appliance Recycling	A-3, Pg 3, Line 2	\$ 6,035,288	\$ 6,070,744	\$ 35,456
5	Adminstration & Infrastructure	A-3, Pg 3, Line 27	556,333	916,809	360,476
6	Total		<u>\$ 6,591,620</u>	<u>\$ 6,987,553</u>	<u>\$ 395,933</u>
7	HVAC	A-3, Pg 3, Line 3	\$ 4,034,390	\$ 4,329,359	\$ 294,970
8	Adminstration & Infrastructure	A-3, Pg 3, Line 28	371,890	653,823	281,933
9	Total		<u>\$ 4,406,280</u>	<u>\$ 4,983,183</u>	<u>\$ 576,903</u>
10	Multifamily (MF) Standard	A-3, Pg 3, Line 4	\$ 1,671,638	\$ 242,551	\$ (1,429,088)
11	Adminstration & Infrastructure	A-3, Pg 3, Line 29	154,092	36,630	(117,461)
12	Total		<u>\$ 1,825,730</u>	<u>\$ 279,181</u>	<u>\$ (1,546,549)</u>
13	Home Energy Consultation (HEC)	A-3, Pg 3, Line 5	\$ 2,797,674	\$ 3,969,614	\$ 1,171,940
14	Administration & Infrastructure	A-3, Pg 3, Line 30	257,890	599,991	342,102
15	Total		<u>\$ 3,055,563</u>	<u>\$ 4,569,605</u>	<u>\$ 1,514,042</u>
16	Audit & Weatherization	A-3, Pg 3, Line 6	\$ 673,188	\$ 731,957	\$ 58,769
17	Adminstration & Infrastructure	A-3, Pg 3, Line 31	62,054	110,541	48,486
18	Total		<u>\$ 735,242</u>	<u>\$ 842,497</u>	<u>\$ 107,255</u>
19	School Program	A-3, Pg 3, Line 7	\$ 1,156,167	\$ 825,604	\$ (330,563)
20	Administration & Infrastructure	A-3, Pg 3, Line 33	106,575	124,683	18,108
21	Total		<u>\$ 1,262,742</u>	<u>\$ 950,287</u>	<u>\$ (312,455)</u>
22	On-Line Energy Audit	A-3, Pg 3, Line 8	\$ 1,026,911	\$ 375,603	\$ (651,307)
23	Administration & Infrastructure	A-3, Pg 3, Line 34	94,661	836,110	741,450
24	Total		<u>\$ 1,121,571</u>	<u>\$ 1,211,713</u>	<u>\$ 90,142</u>
25	Behavior Programs	A-3, Pg 3, Line 9	\$ 2,972,066	\$ 4,045,514	\$ 1,073,448
26	Administration & Infrastructure	A-3, Pg 3, Line 34	273,965	1,157,176	883,211
27	Total		<u>\$ 3,246,031</u>	<u>\$ 5,202,690</u>	<u>\$ 1,956,659</u>
28	Emerging Measures and Approaches	A-3, Pg 3, Line 10	\$ 791,975	\$ 225,000	\$ (566,975)
29	Administration & Infrastructure	A-3, Pg 3, Line 35	73,004	14,946	(58,058)
30	Total		<u>\$ 864,980</u>	<u>\$ 239,946</u>	<u>\$ (625,033)</u>
31	Low Income (includes A&G and Low Income Multifamily & Low Income Audit-Wx)	(2)	<u>\$ 11,834,187</u>	<u>\$ 13,752,866</u>	<u>\$ 1,918,679</u>
32	Total Residential before Pilot, Education and EM&V	L3 + L6 + L9 +L12 + L15 + L18 + L21 +L24 + L27 + L30 + L31	\$ 51,432,954	\$ 53,452,957	\$ 2,020,003
33	Pilot (includes A&G)	(3)	2,680,919	2,760,286	79,367
34	Education (includes A&G)	(4)	2,840,205	2,899,844	59,639
35	EM&V (includes A&G)	(5)	<u>2,680,919</u>	<u>2,779,063</u>	<u>98,144</u>
36	Total Residential	Sum of Lines 32 through 35	<u>\$ 59,634,996</u>	<u>\$ 61,892,149</u>	<u>\$ 2,257,153</u>
37	Reallocated Value Residential (Sum of positives, lines 6,9,15,21,27,30,33,35)				<u>\$ 6,796,763</u>

Source:

- (1) Company Records
(2) U-18262, DTE Electric EWR Plan, Exhibit No: A-10, Col. (g), Line 20
(3) U-18262, DTE Electric EWR Plan, Exhibit No: A-11, Col. (d), Line 3
(4) U-18262, DTE Electric EWR Plan, Exhibit No: A-11, Col. (d), Line 4
(5) U-18262, DTE Electric EWR Plan, Exhibit No: A-11, Col. (d), Line 7

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Program Reallocation Limit Calculation

Case No.: U-20366
Exhibit: A-3
Witness: J. Boladian
Page: 3 of 5

	(a)	(b)	(c)
Line No.	Program Cost As Filed	Amount	Source
1	Energy Star	\$ 15,097,335	(1)
2	Appliance Recycling	\$ 6,035,288	(2)
3	HVAC	\$ 4,034,390	(3)
4	Multifamily (Standard)	\$ 1,671,638	(4)
5	Home Energy Consultation (HEC)	\$ 2,797,674	(5)
6	Audit & Weatherization	\$ 673,188	(6)
7	School Program	\$ 1,156,167	(7)
8	On-Line Energy Audit	\$ 1,026,911	(8)
9	Behavior Programs	\$ 2,972,066	(9)
10	Emerging Measures and Approaches	\$ 791,975	(10)
11	Total	<u>\$ 36,256,631</u>	Sum Lines 1 thru 10
12	Allocation Percentage - Filed		
13	Energy Star	42%	Line 1 / Line 11
14	Appliance Recycling	17%	Line 2 / Line 11
15	HVAC	11%	Line 3 / Line 11
16	Multifamily (Standard)	5%	Line 4 / Line 11
17	Home Energy Consultation (HEC)	8%	Line 5 / Line 11
18	Audit & Weatherization	2%	Line 6 / Line 11
19	School Program	3%	Line 7 / Line 11
20	On-Line Energy Audit	3%	Line 8 / Line 11
21	Behavior Programs	8%	Line 9 / Line 11
22	Emerging Measures and Approaches	2%	Line 10 / Line 11
23	Total	<u>100%</u>	Sum Lines 13 thru 22
24	Administrative & Infrastructure costs (as filed)	\$ 3,342,136	(11)
25	Admin & Infrastructure Allocation		
26	Energy Star	\$ 1,391,672	Line 13 * Line 24
27	Appliance Recycling	556,333	Line 14 * Line 24
28	HVAC	371,890	Line 15 * Line 24
29	Multifamily (Standard)	154,092	Line 16 * Line 24
30	Home Energy Consultation (HEC)	257,890	Line 17 * Line 24
31	Audit & Weatherization	62,054	Line 18 * Line 24
32	School Program	106,575	Line 19 * Line 24
33	On-Line Energy Audit	94,661	Line 20 * Line 24
34	Behavior Programs	273,965	Line 21 * Line 24
35	Emerging Measures and Approaches	73,004	Line 22 * Line 24
36	Total Admin & Infrastructure Allocated	<u>\$ 3,342,136</u>	Sum Lines 26 thru 35

Source:

- (1) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 1
- (2) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 2
- (3) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 3
- (4) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 4
- (5) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 5
- (6) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 6
- (7) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 7
- (8) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 8
- (9) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 9
- (10) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 10
- (11) U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (f), Line 11

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Program Reallocation Limit Calculation

Case No.: U-20366
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Line No.	(a) Commercial and Industrial - Capital & O&M	(b) Source	(c) As Filed	(d) Actuals (1)	(e) Col (d) - Col (c)
1	Prescriptive	A-3, Pg 5, Line 1	\$ 13,341,952	\$ 14,528,007	\$ 1,186,055
2	Adminstration & Infrastructure	A-3, Pg 5, Line 22	1,003,815	1,283,287	279,472
3	Total		<u>\$ 14,345,766</u>	<u>\$ 15,811,294</u>	<u>\$ 1,465,527</u>
4	Non-Prescriptive	A-3, Pg 5, Line 2	\$ 17,653,890	\$ 15,161,493	\$ (2,492,397)
5	Adminstration & Infrastructure	A-3, Pg 5, Line 23	1,328,234	1,339,551	11,316
6	Total		<u>\$ 18,982,124</u>	<u>\$ 16,501,043</u>	<u>\$ (2,481,080)</u>
7	Emerging Measures and Approaches	A-3, Pg 5, Line 3	\$ 1,202,543	\$ 319,000	\$ (883,543)
8	Administration & Infrastructure	A-3, Pg 5, Line 24	90,476	28,164	(62,312)
9	Total		<u>\$ 1,293,019</u>	<u>\$ 347,164</u>	<u>\$ (945,855)</u>
10	Energy Star Retail Lighting	A-3, Pg 5, Line 4	\$ 661,081	\$ 328,961	\$ (332,120)
11	Administration & Infrastructure	A-3, Pg 5, Line 25	49,738	23,852	(25,886)
12	Total		<u>\$ 710,819</u>	<u>\$ 352,813</u>	<u>\$ (358,006)</u>
13	Multifamily Common Areas	A-3, Pg 5, Line 5	\$ 502,123	\$ 244,466	\$ (257,657)
14	Administration & Infrastructure	A-3, Pg 5, Line 26	37,778	24,545	(13,233)
15	Total		<u>\$ 539,901</u>	<u>\$ 269,011</u>	<u>\$ (270,890)</u>
16	Retro-Commissioning	A-3, Pg 5, Line 6	\$ 1,061,240	\$ (700)	\$ (1,061,940)
17	Administration & Infrastructure	A-3, Pg 5, Line 27	79,845	(62)	(79,907)
18	Total		<u>\$ 1,141,085</u>	<u>\$ (762)</u>	<u>\$ (1,141,847)</u>
19	Business Energy Consultation	A-3, Pg 5, Line 7	\$ 580,254	\$ 1,723,724	\$ 1,143,470
20	Administration & Infrastructure	A-3, Pg 5, Line 28	43,657	152,345	\$ 108,688
21	Total		<u>\$ 623,911</u>	<u>\$ 1,876,069</u>	<u>\$ 1,252,158</u>
22	Mid-Stream Lighting	A-3, Pg 5, Line 8	\$ 2,131,438	\$ 3,685,220	\$ 1,553,783
23	Administration & Infrastructure	A-3, Pg 5, Line 29	160,364	325,365	\$ 165,001
24	Total		<u>\$ 2,291,801</u>	<u>\$ 4,010,585</u>	<u>\$ 1,718,784</u>
25	Self Direct	(2)	\$ 156,331	\$ 100,000	\$ (56,331)
26	Administration & Infrastructure		-	-	\$ -
27	Total		<u>\$ 156,331</u>	<u>\$ 100,000</u>	<u>\$ (56,331)</u>
28	Total C&I before Pilot, Education and EM&V	L3 + L6 + L9 + L12 + L15 + L16	\$ 40,084,758	\$ 39,267,218	\$ (817,540)
29	Pilot (includes A&G)	(3)	2,578,720	2,565,219	(13,501)
30	Education (includes A&G)	(4)	315,578	322,205	6,627
31	EM&V (includes A&G)	(5)	2,578,720	2,582,668	3,948
32	Total C&I	L17 + L18 + L19 + L20	<u>\$ 45,557,776</u>	<u>\$ 44,737,309</u>	<u>\$ (820,466)</u>
33	Reallocated Value C&I (Sum of positives, lines 3, 15, 21, 29, 30, 31)				<u>\$ 4,447,044</u>

Source:

- (1) Company Records
- (2) Estimate of administering the Self Direct Program
- (3) Sum of U-18262, DTE Electric EWR Plan, Exhibit No: A-14 p1, Col. (d), Line 3 and Exhibit No: A-14 p2, Col. (d), Line 3
- (4) Sum of U-18262, DTE Electric EWR Plan, Exhibit No: A-14 p1, Col. (d), Line 4 and Exhibit No: A-14 p2, Col. (d), Line 4
- (5) Sum of U-18262, DTE Electric EWR Plan, Exhibit No: A-14 p1, Col. (d), Line 7 and Exhibit No: A-14 p2, Col. (d), Line 7

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Program Reallocation Limit Calculation

Case No.: U-20366
 Exhibit: A-3
 Witness: J. Boladian
 Page: 5 of 5

	(a)	(b)	(c)
Line No.	Program Cost As Filed	Amount	Source
1	C&I Prescriptive	\$ 13,341,952	(1)
2	C&I Non-Prescriptive	\$ 17,653,890	(2)
3	Emerging Measures and Approaches	\$ 1,202,543	(3)
4	Energy Star Retail Lighting	\$ 661,081	(4)
5	Multifamily Common Areas	\$ 502,123	(5)
6	Retro-Commissioning	\$ 1,061,240	(6)
7	Business Energy Consultation	\$ 580,254	(7)
8	Mid-Stream Lighting	\$ 2,131,438	(8)
9	Total	<u>\$ 37,134,520</u>	Sum Lines 1 thru 8
10	Allocation Percentage		
11	C&I Prescriptive	36%	Line 1 / Line 9
12	C&I Non-Prescriptive	48%	Line 2 / Line 9
13	Emerging Measures and Approaches	3%	Line 3 / Line 9
14	Energy Star Retail Lighting	2%	Line 4 / Line 9
15	Multifamily Common Areas	1%	Line 5 / Line 9
16	Retro-Commissioning	3%	Line 6 / Line 9
17	Business Energy Consultation	2%	Line 7 / Line 9
18	Mid-Stream Lighting	6%	Line 8 / Line 9
19	Total	<u>100%</u>	Sum Lines 11 thru 18
20	Administrative & Infrastructure costs	\$ 2,793,908	(9)
21	Admin & Infrastructure Allocation		
22	C&I Prescriptive	\$ 1,003,815	Line 11 * Line 20
23	C&I Non-Prescriptive	1,328,234	Line 12 * Line 20
24	Emerging Measures and Approaches	90,476	Line 13 * Line 20
25	Energy Star Retail Lighting	49,738	Line 14 * Line 20
26	Multifamily Common Areas	37,778	Line 15 * Line 20
27	Retro-Commissioning	79,845	Line 16 * Line 20
28	Business Energy Consultation	43,657	Line 17 * Line 20
29	Mid-Stream Lighting	160,364	Line 18 * Line 20
30	Total Admin & Infrastructure Allocated	<u>\$ 2,793,908</u>	Sum Lines 22 thru 29

Source:

- (1) U-18262, DTE Electric EO Plan, Exhibit No: A-4, Col. (f), Line 19
- (2) U-18262, DTE Electric EO Plan, Exhibit No: A-4, Col. (f), Line 20
- (3) U-18262, DTE Electric EO Plan, Exhibit No: A-4, Col. (f), Line 26
- (4) U-18262, DTE Electric EO Plan, Exhibit No: A-4, Col. (f), Line 24
- (5) U-18262, DTE Electric EO Plan, Exhibit No: A-4, Col. (f), Line 25
- (6) U-18262, DTE Electric EO Plan, Exhibit No: A-4, Col. (f), Line 21
- (7) U-18262, DTE Electric EO Plan, Exhibit No: A-4, Col. (f), Line 22
- (8) U-18262, DTE Electric EO Plan, Exhibit No: A-4, Col. (f), Line 23
- (9) U-18262, DTE Electric EO Plan, Exhibit No: A-4, Col. (f), Line 28

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Cost Effectiveness Test Summary

Case No.: U-20366
Exhibit: A-4
Witness: J. Boladian
Page: 1 of 1

Line	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
No.	Description	Portfolio - No Low Income Include Incentive	Residential - ALL No Low Income	C&I Programs - ALL	Pilot - ALL	Education - ALL					
1	<u>All Programs</u>										
2	USRCT	4.78	3.99	5.67	5.30	5.38					
3	TRC Test	2.44	2.34	2.53	5.30	5.38					
4	<u>Residential</u>	<u>Res Appliance Recycling</u>	<u>Res Energy Star Products</u>	<u>Res HVAC</u>	<u>Res Audit & Weatherization (A&W)</u>	<u>Res Multifamily (MFR)</u>	<u>Res HEC</u>	<u>Res School Programs</u>	<u>Res On-Line Energy Audit (OEA/HES)</u>	<u>Res Behavior Programs (HER/INS)</u>	<u>Res Emerging Measures and Approaches (EP)</u>
5	USRCT	2.30	11.30	1.93	1.14	3.57	1.89	2.83	2.23	1.10	0.00
6	TRC Test	2.30	3.20	0.90	1.09	3.57	1.89	2.83	2.23	1.06	0.00
7	<u>Commercial & Industrial Programs</u>	<u>C&I Prescriptive (CIP)</u>	<u>C&I Non Prescriptive (CUSTOM)</u>	<u>Business Energy Consultation</u>	<u>Midstream Lighting</u>	<u>Retro- Commissioning</u>	<u>C&I Emerging Measures and Approaches (EPC)</u>	<u>C&I Energy Star Retail Lighting (ESL)</u>	<u>C&I Multifamily Common Areas (MFC)</u>	<u>C&I Self Direct (SD)</u>	
8	USRCT	9.17	6.16	2.06	7.45	0.00	1.91	18.64	3.76	3.14	
9	TRC Test	2.54	3.62	2.06	1.92	0.00	1.14	3.47	1.84	3.14	
10	<u>Low Income Programs</u>	<u>LI Electric ALL</u>	<u>MFLI</u>	<u>EEAP</u>	<u>HEC LI</u>	<u>HER LI</u>					
11	USRCT	0.98	0.44	1.07	0.91	5.83					
12	TRC Test	0.98	0.44	1.07	0.91	5.83					

Source: Company Records (Todays Value DSMore)

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Energy Credits

Case No.: U-20366
Exhibit: A-5
Witness: J. Boladian
Page: 1 of 1

(a)		(b)	(c)
Line No.	Description	Source	EWR Credits (1 EWR Credit = 1 MWh saved)
1	EWR Credit Beginning year balance	(1)	-
2	Credits earned in current year	(2)	727,907
3	Credits needed for EWR standard compliance	(3)	<u>471,024</u>
4	EWR Credit Excess (deficiency) relative to standard	L1 + L 2 - L 3	<u>256,883</u>
5	Credits used for Performance Incentive	(4)	235,697
6	Credits substituted for Renewable Energy Credits	L4 - L5	<u>21,185</u>
7	EWR Ending year Credit Balance	L4 - L5 - L6	<u>-</u>

Source:

- (1) U-20029, Exhibit A-6, Line 7, Column (c)
- (2) Exhibit A-15, Column (c), Line 36
- (3) U-18262, Exhibit A-4, line 37, Column (e)

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Performance Incentive

Case No.: U-20366
Exhibit: A-6
Witness: J. Boladian
Page No.: 1 of 1

Line No.		(a)		Source:
First Year Savings				
1	Legislated Minimum First Year Savings	471,024	MWh	(1)
2	First Year Savings at 1.5%	706,721	MWh	(2)
3	Verified First Year Savings	727,907	MWh	(3)
4	Performance Incentive Earned	20%		(4)
Lifetime Savings				
5	Verified First Year Savings	727,907	MWh	
6	Weighted Average Measure Life	14.14	Years	(5)
7	Verified Lifetime Savings	10,294,787	MWh	(6)
8	Lifetime Energy Savings required for Maximum Performance Incentive	9,993,040	MWh	(7)
9	Performance Incentive Earned	16%		(8)
Low-Income Spend				
10	Low Income Spend Target required for Maximum Performance Incentive	\$ 11,834,187		(9)
11	Low Income Spend	13,752,866		(10)
12	Performance Incentive Earned	3%		(11)
Low-Income Multi-family Assessments				
13	Low Income Multifamily Spend Target for Maximum Performance Incentive	\$ 1,438,759		(12)
14	Low Income Multifamily Spend	\$ 2,671,059		(13)
15	Low Income Multifamily Assessments Target for Maximum Performance Incentive	30%		(14)
16	Low Income Multifamily Assessments	32%		(15)
17	Performance Incentive Earned	2%		(16)
18	Total Performance Incentive Earned	20.0%		(17)

Source:

- (1) U-18262, Exhibit A-4, line 37, Column (e)
- (2) U-18262, Exhibit A-4, line 35, Column (e)
- (3) Exhibit A-15, line 36, Column (c)
- (4) Attachment D of settlement for case U-18262
- (5) Exhibit A-15, line 38, Column (c)
- (6) Exhibit A-15, line 39, Column (c)
- (7) U-18262, Exhibit A-4, line 39, Column (e)
- (8) Attachment D of settlement for case U-18262
- (9) Attachment D of settlement for case U-18262
- (10) Exhibit A-9, line 19, Column (e)
- (11) Attachment D of settlement for case U-18262
- (12) Exhibit A-9, line 15, Column (c)
- (13) Exhibit A-9, line 15, Column (e)
- (14) Attachment D of settlement for case U-18262
- (15) Company Records
- (16) Attachment D of settlement for case U-18262
- (17) Attachment D of settlement for case U-18262; Lesser of L4 or (L9+L12+L17)

Energy Waste Reduction

2018 Annual Report

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Executive Summary

The purpose of this annual report is to highlight the general results of DTE Energy's (DTE) 2018 Energy Waste Reduction (EWR) Program, communicate program changes, and provide policy overview.

DTE's EWR Program launched in June 2009 as a result of the Clean, Renewable and Efficient Energy Act, also known as Public Act 295 (PA 295), as amended by Public Act 342 of 2016 (PA 342). DTE continued to build on its momentum from the 2009 launch by enhancing the scope of existing programs and adding new program options to the portfolio. Since its inception in 2009, more than 3.8 million electric customers and 2.7 million gas customers have directly participated in DTE's energy efficiency programs.

Customers have upgraded equipment in their homes and their businesses, helping them to become more energy efficient, and they have been provided with education, tips, strategies and tools to help them save money on their energy bills. As a result, DTE has saved approximately 5096 gigawatt hours (GWh) or 10.8 percent of planned retail sales for electric customers, and over 11,248 million cubic feet (MMcf) or about 6.6 percent of planned retail sales for gas customers since the program started. The savings achieved so far will continue for years into the future.

During 2018, DTE implemented its EWR Program as outlined in the approved 2018 EWR plan. The Company utilizes implementation contractors and has built strong networks to deliver energy efficiency programs throughout the State of Michigan. The Company has continued to provide energy efficiency education and raise awareness of EWR offerings by enhancing the communications and messaging while leveraging new trends in digital and social media communication channels. In 2018, while the Company continued to utilize targeted marketing to meet segment specific needs for energy efficiency information, traditional mass media was also used focused on non-energy benefits of energy efficiency improvements. The Pilot Program process worked well in 2018, increasing the Company's Pilot Program productivity. The Company's ability to run the programs effectively has continued to improve through further maturity of systems and back-office processes.

Goals and Targets

The main operational goal of the 2018 EWR Program was to maintain the momentum that the program achieved since the launch in 2009 by continuing to grow customer acceptance and adoption of EWR measures. The 2018 goals were to:

1. Achieve legislated electric energy savings of 1 percent of 2017 planned retail sales or 471 gigawatt hours (GWh) and achieve legislated gas energy savings of 0.75 percent of 2017 planned retail sales or 1,286 million cubic feet (MMcf).
2. Ensure that EWR Programs are cost effective. Cost Effectiveness Tests (CETs) are performed to ensure that the overall goal of reducing energy use in a cost-effective manner for the utility and its customers is being achieved. DTE uses the Utility System Resource Cost Test (USRCT) and the Total Resource Cost (TRC) test to measure the effectiveness of the various EWR Programs. Specifically, the goal of the EWR portfolio (not including low-income) is to meet the minimum required USRCT score of 1.0. The low-income programs were excluded from

the calculations because Section 71(4) (g) of PA 295, as amended specifically excludes low income in the requirement for cost-effectiveness.

Spending and Savings

Verified net energy savings are DTE's reported savings after they have been adjusted based on the results of a review by our independent evaluation contractor, Navigant Consulting Inc. (Navigant), and the application of Installation Rate Adjustment Factors (IRAF) and Net-to-Gross Ratios (NTGR).

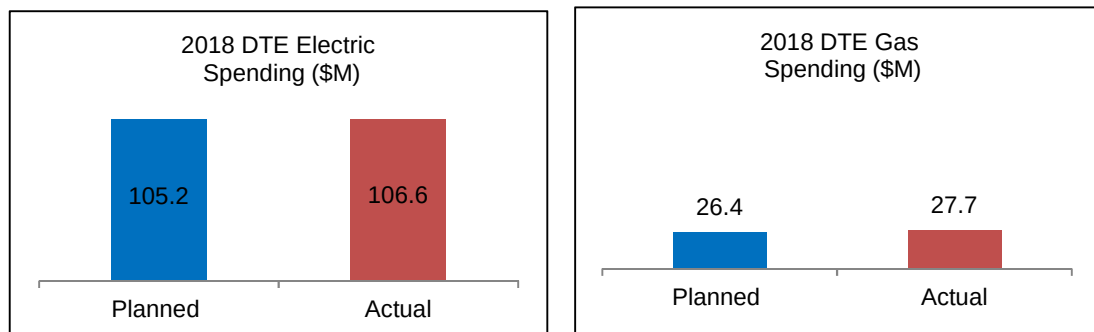
In 2018, DTE applied a 0.92 NTGR to most programs. The company applied a NTGR of 1.00 for low income, pilots, and education and a 0.90 for standard and reflector Light Emitting Diodes ("LED") bulbs within the Residential Energy Star Products Program, as approved by the Commission on April 12, 2018 for the Company's EWR Plan Case No. U-18262. A NTGR is not applied to: (1) Tier 1 Thermostats delivered by Commercial & Industrial programs; (2) Tier 2 and Tier 3 Thermostats delivered by Residential programs; (3) the Residential Home Energy Report program; (4) Smartphone Behavior Application program (DTE Insight); and (5) Real Time Data Add-on to Smartphone Behavior Application program; as savings represent verified net savings.

Spend, as used in this annual report, refers to the cash expenditures or commitments made by DTE in implementing the EWR Program. Spend does not contemplate the eventual treatment of such costs as operations and maintenance or capitalization.

DTE has adopted verified net savings for reporting of energy savings in 2018 as agreed to in the EWR Collaborative. DTE's EWR Program resulted in total verified net electric savings of 728 GWh, or 1.55 percent of 2017 planned retail sales, as compared to the minimum legislative requirement of 471 GWh. For DTE Gas, the total verified net gas energy savings was 1,750 MMcf, or 1.02 percent of 2017 planned retail sales, as compared to the minimum legislative requirement of 1286MMcf.

In 2018, DTE Electric spent \$106.6 million compared to the planned \$105.2 million, whereas DTE Gas spent \$27.7 million compared to the planned \$26.4 million.

Chart 1 summarizes the overall EWR Program 2018 spending and verified net savings for DTE Electric and DTE Gas.



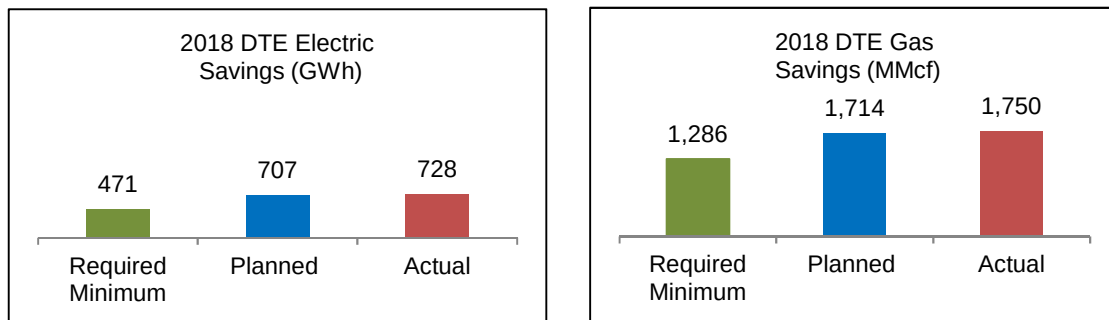


Chart 1 – 2018 EWR Program Spending and Verified Net Savings

Each EWR Program has its own spending and verified net saving requirements. For DTE Electric, collectively, the Residential and Low-income programs provided 300 GWh of verified net energy savings, and C&I Programs; including self-direct, provided 371 GWh. DTE Electric achieved 57 GWh savings from the Education and Pilot programs. For DTE Gas, collectively, the Residential and Low-income programs provided 895 MMcf of verified net energy savings and C&I Programs provided 722 MMcf. DTE Gas achieved 132 MMcf savings from the education and pilot programs.

Chart 2 displays program spending and verified net savings for the various EWR Programs in 2018.

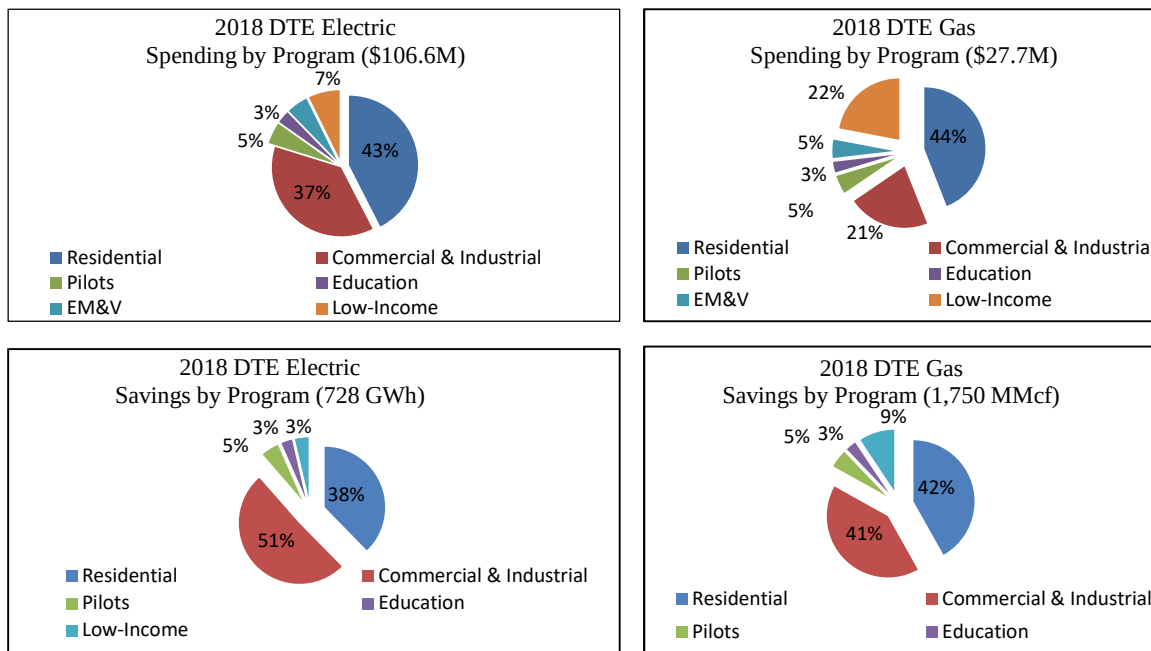


Chart 2 – 2018 EWR Spending and Verified Net Energy Savings by Program

Long-term EWR Impacts

Even though Michigan's EWR Programs are only nine years old, they have matured quickly and regulators and other participants are looking beyond the first-year energy savings goals set out in PA 295 toward longer-term goals, such as overall lifecycle savings, both in dollars and energy; the average life of measures being installed; and reduction in future peak. This section provides definitions and the 2018 EWR Program results for a number of these measures of long-term interest.

- I. **Lifecycle Dollar Savings:** This represents the dollar savings resulting from the current and future energy costs avoided as a result of an energy efficiency action over the effective life of that action. Lifecycle dollar savings may be presented for a collection of measures, a program or a portfolio of programs. As presented for DTE Energy's programs the lifecycle dollar savings are based on verified net savings, which have been adjusted for free riders. Lifecycle dollar savings are presented as the present value of those savings. This is not net of the program expenses and includes line losses.

Table 1 displays that DTE's 2018 EWR Programs produced very significant dollar savings for its customers for future years

DTE 2018 EWR Programs — Lifecycle Dollar Savings (All Values in Dollars) TABLE #1		
Program	DTE Electric Present Value	DTE Gas Present Value
<i>Residential</i>		
Residential and Small Business ENERGY STAR Products	163,136,813.45	1,718,889.88
Residential Appliance Recycling	16,077,175.16	-
Residential HVAC	9,633,262.50	11,821,198.24
Multifamily — Standard (MFR)	995,303.23	283,206.73
Residential Audit and Weatherization	959,208.17	1,364,256.48
Residential HEC	8,634,885.14	4,205,688.77
Residential Schools	2,688,997.00	1,934,790.40
Residential On-Line Energy Audit (OEA/HES)	2,696,793.46	989,057.75
Residential Behavior Programs (HER/INS)	6,007,226.33	860,933.52
Residential Emerging Programs (EP)	-	-
<i>Residential Subtotal</i>	\$210,829,664.44	\$23,178,021.76
<i>C&I</i>		
C&I Prescriptive (CIP)	145,054,210.56	29,751,848.15
C&I Non-Prescriptive (C&I Custom/RFP)	101,668,283.98	1,846,517.90
Business Energy Consultation (BEC)	386,259.518	927,598.70
Midstream Commercial Lighting (MSL)	298,887.79.8	0.00
C&I Retro-Commissioning (RCx)	217,308.1431	3,043.79
C&I Emerging (MSFS)	662,527.86	171,348.71
C&I ENERGY STAR Retail Lighting (ESL)	6,575,484.65	0.00
C&I Multifamily Common Areas (MFC)	1,012,790.29	437,481.89
C&I Self-Direct	313,558.86	0.00
<i>C&I Subtotal</i>	\$289,255,543.66	\$33,137,839.15
<i>Pilot</i>	28,200,960.46	3,956,353.86
<i>Education</i>	17,319,799.70	2,343,139.01
<i>Low-Income — All (includes EEAP, LI Multifamily, LI HEC, LI HER)</i>	13,528,714.58	4,309,140.30
Portfolio	\$559,134,682.83	\$66,924,494.09

Table 1- Lifecycle Dollar Savings

- II. **Lifecycle Energy Savings:** This represents the total cumulative program energy savings (GWh or MMcf) produced by the energy-saving actions taken for all of the years in the particular actions' effective lives. Again, as presented here these represent net energy savings with free-riders removed.

Table 2 displays the long-term energy savings associated with the cost savings in Table 1.

DTE 2018 EWR Programs — Lifecycle Energy Savings - TABLE #2		
Program	DTE Electric MWh - Impact and Savings Cumulative (Losses Included)	DTE Gas Mcf - Impact and Savings Cumulative (Losses Included)
<i>Residential</i>		
Residential and Small Business ENERGY STAR Products	2,407,510,643.26	5,017,456.34
Residential Appliance Recycling	257,194,765.76	-
Residential HVAC	151,526,278.74	39,133,332.08
Multifamily — Standard (MFR)	14,814,795.27	831,413.81
Residential Audit and Weatherization	16,681,169.71	5,436,485.72
Residential HEC	129,303,360.28	12,638,175.04
Residential Schools	45,595,684.48	5,879,802.75
Residential On-Line Energy Audit (OEA/HES)	44,894,602.65	3,079,384.28
Residential Behavior Programs (HER/INS)	66,984,301.01	1,928,376.20
Residential Emerging Programs (EP)	-	-
Residential Subtotal	3,134,505,601.17	73,944,426.22
<i>C&I</i>		
C&I Prescriptive (CIP)	2,724,874,452.49	107,204,522.07
C&I Non-Prescriptive (C&I Custom/RFP)	2,040,160,285.12	7,424,707.79
Business Energy Consultation (BEC)	59,534,571.65	2,803,108.19
Midstream Commercial Lighting (MSL)	559,630,495.84	-
C&I Retro-Commissioning (RCx)	3,917,372.08	7,452.03
C&I Emerging (MSFS)	11,583,112.84	551,300.49
C&I ENERGY STAR Retail Lighting (ESL)	96,852,277.80	-
C&I Multifamily Common Areas (MFC)	22,791,880.54	1,540,079.66
Self-Direct	5,407,206.48	-
C&I Subtotal	5,524,751,654.84	119,531,170.24
<i>Pilot</i>	568,459,442.17	13,509,286.69
<i>Education</i>	342,487,829.11	7,976,204.71
Low-Income — All (includes EEAP, LI Multifamily, LI HEC, LI HER)	205,997,874.11	13,327,087.90
Portfolio	9,776,202,401.40	228,288,175.75

Table 2 – Lifecycle Energy Savings

- III. **Peak Demand Reduction (kW):** One particular concern for electric EWR Programs is to deliver peak demand reductions to minimize the need for future power plants. This represents the aggregate reduction in DTE Electric's service area load at the time of the Michigan zone of the Midwest Independent System Operator (MISO) market's expected peak demand that is estimated to result from the measures installed and actions taken by customers participating in the EWR Program.

Table 3 shows that the DTE Electric 2018 EWR Programs achieved significant demand reductions, as well as energy savings. All values shown as measured at the customers' meters. Line losses are not included.

DTE 2018 EWR Programs — DTE Electric Peak Demand Savings - Table #3	2018 Verified Net Peak Demand Savings MW
Residential	
Residential ENERGY STAR® Products	16.76
Residential Appliance Recycling Program	3.61
Residential HVAC Program	2.39
Multifamily — Standard (MFR)	0.10
Residential HEC Program	0.84
Residential Audit and Weatherization Program	0.32
Residential School Program	0.29
Residential On-Line Energy Audit (OEA)	0.26
Residential Behavior Programs (HER/INS)	23.61
Residential Emerging Programs (EP)	0.00
Residential Subtotal	48.19
C&I	
C&I Prescriptive	25.26
C&I Non-Prescriptive (C&I Custom/NC/RFP)	13.05
Retro-Commissioning	0.00
Business Energy Consultation	1.26
Mid-Stream Lighting	8.02
Energy Star Retail Lighting	2.78
Multifamily Common Areas	0.08
C&I Emerging (MSFS)	0.17
Self-Direct	0.69
C&I Subtotal	51.31
Low-Income — All (includes EEAP, LI Multifamily, LI HEC, LI HER)	6.68

Pilot	5.58
Education	3.38
Portfolio	115.14

- IV. **Cost of Conserved Energy:** The Cost of Conserved Energy expresses the measure, program, or portfolio costs in per unit terms based on the total energy savings over the effective lifecycles of the specific measures or actions taken. In this calculation, the future years energy savings volumes are discounted by the appropriate discount rate to reflect time value of money. The starting point is, once again, net energy savings with free riders removed.

Table 4 demonstrates how cost effective the 2018 EWR Programs were in terms of the costs per unit of the energy savings achieved.

DTE 2018 EWR Programs — DTE Cost of Conserved Energy (CCE) Table #4		
Program	DTE Electric	DTE Gas
Residential	\$/Lifetime Savings kWh	\$/Savings CCF
Residential and Small Business ENERGY STAR® Products	\$0.01	\$0.11
Residential Appliance Recycling	\$0.03	\$0.00
Residential HVAC	\$0.03	\$0.13
Multifamily — Standard (MFR)	\$0.02	\$0.48
Residential Audit and Weatherization	\$0.05	\$0.22
Residential HEC	\$0.04	\$0.23
Residential Schools	\$0.02	\$0.09
Residential On-Line Energy Audit (OEA/HES)	\$0.03	\$0.23
Residential Behavior Programs (HER/INS)	\$0.08	\$0.46
Residential Emerging Programs (EP)	\$0.00	\$0.00
Residential ALL	\$0.02	\$0.21
C&I		
C&I Prescriptive	\$0.01	\$0.03
C&I Non-Prescriptive (C&I Custom/RFP)	\$0.01	\$0.21
Business Energy Consultation (BEC)	\$0.03	\$0.30
Midstream Commercial Lighting (MSL)	\$0.01	\$0.00
C&I Retro-Commissioning (RCx)	\$0.00	\$0.10
C&I Emerging (MSFS)	\$0.03	\$0.73
C&I ENERGY STAR Retail Lighting (ESL)	\$0.00	\$0.00
C&I Multifamily Common Areas (MFC)	\$0.01	\$0.17
Self-Direct	\$0.02	\$0.00
C&I ALL	\$0.01	\$0.07
Pilot	\$0.01	\$0.10
Education	\$0.01	\$0.10

Low-Income — All (includes EEAP, LI Multifamily, LI HEC, LI HER)	\$0.07	\$0.46
Portfolio (No LI Include Incentive)	\$0.01	\$0.13

Table 4 – DTE Cost of Conserved Energy

- V. **Weighted Average Measure Life:** The average life, in years, of all the various measures installed or actions taken in a program or the entire portfolio when each measure's life is weighted by the energy savings it produces relative to all the energy savings in the program or portfolio.

Through 2018, more than 3.8 million electric customers and 2.7 million gas customers have directly participated in DTE's energy efficiency programs and benefited from the savings provided.

Table 5 summarizes the average measure life for the various 2018 EWR Programs at the individual program level and for the program as a whole.

DTE 2018 EWR Programs — DTE Weighted Average Measure Life - Table #5		
Program	DTE Electric (KWh)	DTE Gas (CCF)
Residential	Program Weighted Life	Program Weighted Life
Residential and Small Business ENERGY STAR® Products	14.90	9.86
Residential Appliance Recycling	8.00	-
Residential HVAC	11.13	15.36
Multifamily — Standard (MFR)	14.73	9.98
Residential Audit and Weatherization	24.39	23.89
Residential HEC	14.71	11.00
Residential Schools	13.10	11.23
Residential On-Line Energy Audit (OEA/HES)	14.02	12.29
Residential Behavior Programs (HER/INS)	1.00	1.00
Residential Emerging Programs (EP)	-	-
Residential Subtotal	13.86	13.98
C&I		
C&I Prescriptive	15.15	18.30
C&I Non-Prescriptive (C&I Custom/RFP)	18.20	22.95
Business Energy Consultation (BEC)	7.94	10.58
Midstream Commercial Lighting (MSL)	12.76	-
C&I Retro-Commissioning (RCx)	3.00	3.00
C&I Emerging (MSFS)	12.87	13.15
C&I ENERGY STAR Retail Lighting (ESL)	6.00	0.00
C&I Multifamily Common Areas (MFC)	14.18	17.84
Self-Direct	1.00	-
C&I Subtotal	15.78	18.38
Pilot	15.00	16.00
Education	15.00	16.00

Low-Income — All (includes EEAP, LI Multifamily, LI HEC, LI HER)	14.02	12.67
Portfolio	15.05	16.44

Table 5 – Weighted Average Measure Life

Cost Effectiveness

Cost Effectiveness Tests (CETs) are performed to ensure that the overall goal of reducing costs in a cost-effective manner for the utility and its customers is being achieved. DTE uses the Utility System Resource Cost Test (USRCT) and the Total Resource Cost (TRC) test to measure the effectiveness of the EWR Program. The DSMore cost analysis tool was used to calculate and report cost effectiveness for the 2018 programs using the USRCT. Additionally, a TRC test was calculated for the DTE EWR Programs. The TRC test is defined as the total avoided costs divided by the sum of program costs plus the participant's costs.

There are two major groups of inputs that are used in DSMore. These include the utility input assumptions and the program inputs.

Utility input assumptions contain information that is specific to the utility and include items such as load shape, the commodity and non-commodity cost of energy, customer energy rates, line losses, weather and discount rates. The utility input assumptions used in this reconciliation analysis are the same as those that were used in developing DTE Electric's and DTE Gas's approved 2018 EWR Plan.

Program inputs include: Measure level electric and gas energy savings, measure level coincident peak demand reductions, the number of measures that have been adopted by participants, incremental participant costs, customer incentive costs, program costs, performance incentive costs, education costs and pilot costs. As indicated above, the CETs were calculated at program levels and for groups of programs, including the low-income programs, ten residential program groups and six C&I Program groups.

The ten residential program groups include: 1) Appliance Recycling, 2) ENERGY STAR® products, 3) HVAC, 4) Multifamily, 5) Home Energy Consultation, 6) School Program, 7) Online Energy Audit, 8) Behavior, 9) Audit and Weatherization and 10) Emerging Measures and Approaches. The six C&I groups include: 1) Prescriptive, 2) Non-prescriptive, 3) Emerging Measures and Approaches, 4) ENERGY STAR® Retail Lighting, 5) Multifamily Common Areas and 6) Self-Direct.

DTE's Current EWR Plan resulted in meeting legislated energy savings minimums at a specific cost. As mentioned earlier, DTE Electric met its projected EWR Plan spend and exceeded the legislated energy savings minimums by 257 GWh or 55 percent (728 GWh versus the legislated minimum of 471 GWh) in response to achieving the performance objectives stated in the legislation (PA 342). While DTE Gas overspent its EWR Plan spend by \$1.3 million, legislated energy savings minimums were exceeded by 464 MMcf or 36 percent (1,750 MMcf versus the legislated minimum of 1,286 MMcf) in response to achieving the performance objectives stated in the legislation (PA 342). Even before performing any cost tests, these two facts in combination show that the program was cost effective. Based on the analysis performed using DSMore, DTE's EWR portfolio of programs passed the CETs. For DTE Electric, a USRCT score of 4.78

was achieved based on the 728 GWh verified net energy savings. For DTE Gas, a USRCT score of 2.30 was achieved based on the 1,750 MMcf verified net energy savings. In 2018, DTE Electric and DTE Gas collected \$102.1 million and \$23.9 million, respectively, in base EWR surcharge revenue. “Base” surcharge revenue reflects EWR actual revenue realized excluding the revenue recovery for authorized performance incentives. Revenues identified in the chart below are the actual amounts that were billed to DTE customers (excluding Performance Incentive) in 2018 through the EWR surcharges approved by MPSC. These surcharges appear as a line item on the customer’s monthly bill statement.

Chart 3 below displays the 2018 revenues collected. Most of the variance in Chart 3 is due to changes in the weather forecast throughout the year.

Chart 4 displays revenue collected for EWR Programs in 2018 by customer type.

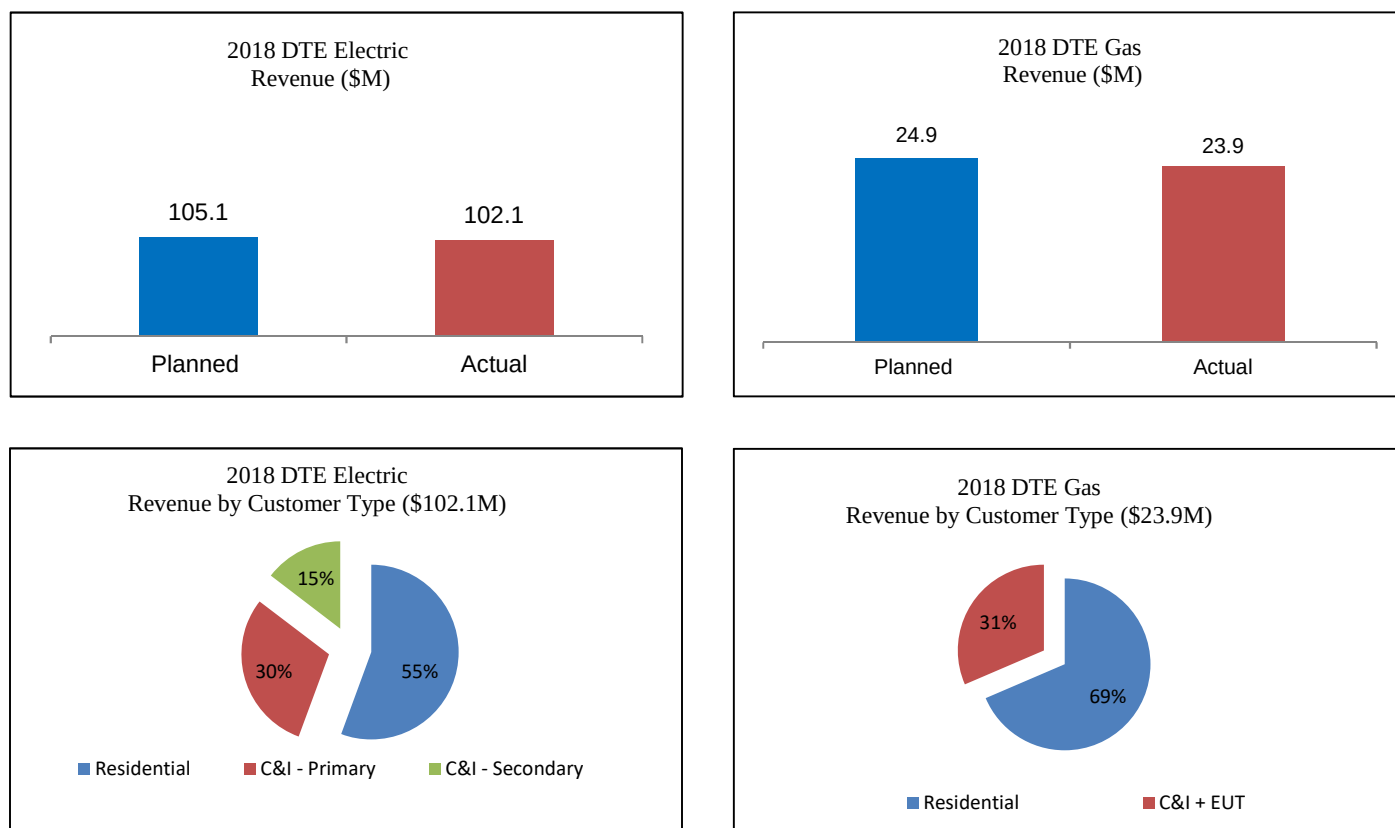


Chart 3 – 2018 EWR Programs Revenues (Surcharges)

Chart 4 – Revenue collected for EWR Programs in 2018

Surcharges

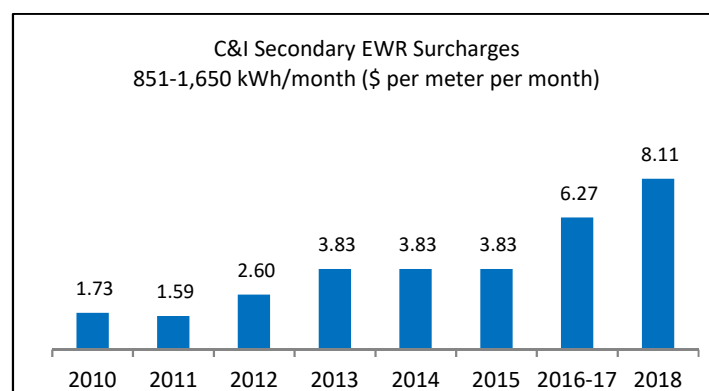
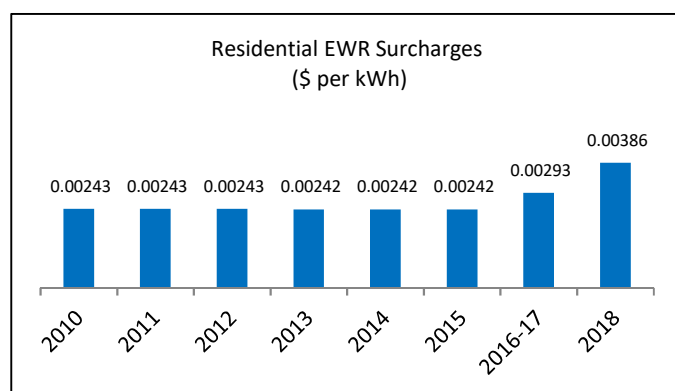
Initial surcharges were established, approved by the Commission, and billed starting in June 2009 and continued through the first five months in 2010. Upon approval of the Amended EWR Plan on June 3, 2010, revised surcharges were billed to DTE electric and gas customers beginning in June 2010. These surcharges continued to be billed in 2011. In addition, on February 8, 2011, the Commission authorized DTE to begin billing an incremental surcharge to recover the 2009 EWR Plan performance incentive that was approved by the Commission in the 2009 DTE Electric EWR Reconciliation. Beginning March 1, 2011, and ending

on February 29, 2012, this surcharge was added to the base surcharge and billed to customers as one combined EWR surcharge. On November 10, 2011, the Commission authorized DTE Electric and Gas to include an incremental surcharge, beginning January 1, 2012 and ending on December 31, 2012, to recover the 2010 EWR Plan performance incentive as approved by the Commission in the 2010 DTE Electric and DTE Gas EWR Reconciliations. On November 6, 2014, the Commission authorized DTE Gas to include an incremental surcharge, beginning January 1, 2015 and ending on December 31, 2015, as approved by the Commission in the 2013 DTE Gas EWR Reconciliation. Also, on December 4, 2014, the Commission authorized DTE Electric to include an incremental surcharge for the period January 1, 2015 and ending December 31, 2015. The incremental electric surcharge with an effective period from January 1, 2016 through December 31, 2016 was approved by the Commission on November 5, 2015. The incremental gas surcharge with an effective period from January 1, 2016 through December 31, 2016 was approved by the Commission on October 27, 2015 in the 2014 Gas EWR Reconciliation filing. On November 22, 2016, the Commission authorized both DTE Electric and DTE Gas to include an incremental surcharge, beginning January 1, 2017 and ending on December 31, 2017, to recover the performance incentive as approved by the Commission in the 2015 DTE Electric and DTE Gas EWR Reconciliations. On September 15, 2017, the Commission issued an Order in the Company's Amended EWR Plans approving the continuation of the 2017 surcharges until revised surcharges were approved in the Company's 2018-2019 DTE Electric and DTE Gas Plans. The DTE Electric and DTE Gas base rates subsequently approved on April 12, 2018 were implemented for billing from May 1, 2018 through December 31, 2018. In addition, the Commission's December 20, 2017 Order authorized both DTE Electric and DTE Gas to include incremental surcharges, beginning January 1, 2018 and ending on December 31, 2018, to recover the performance incentive as approved by the Commission in the 2016 DTE Electric and DTE Gas EWR Reconciliations.

Electric and Gas Surcharge

As discussed above, the EWR base electric and gas surcharges approved in Case No. U-18262 and U-18268, respectively, were implemented for billing from May 1, 2018 through December 31, 2018. During the preceding months of January through April 2018, the rates from the prior EWR plan remained constant for Residential and Commercial and Industrial (C&I) customers, as approved by the Commission in the Company's Amended EWR Plan. **Charts 5 and 6** outline the 2018 EWR base surcharges compared to the previous years. These charts exclude the performance incentive.

Chart 5 – DTE Electric Surcharges



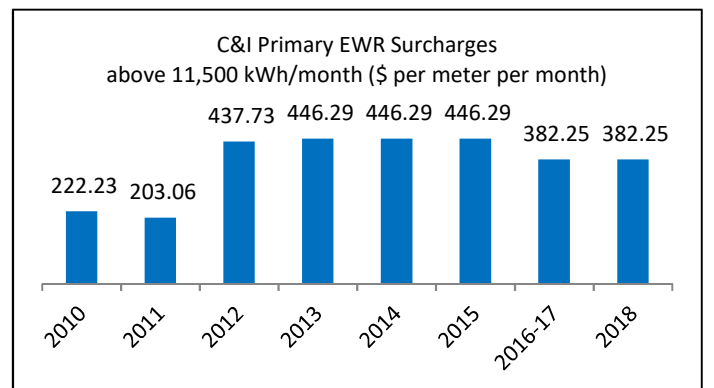
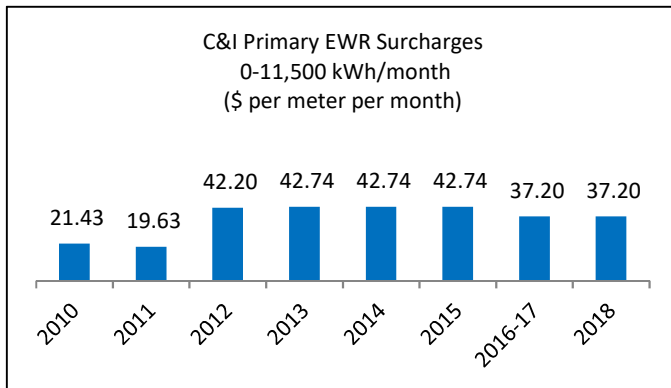
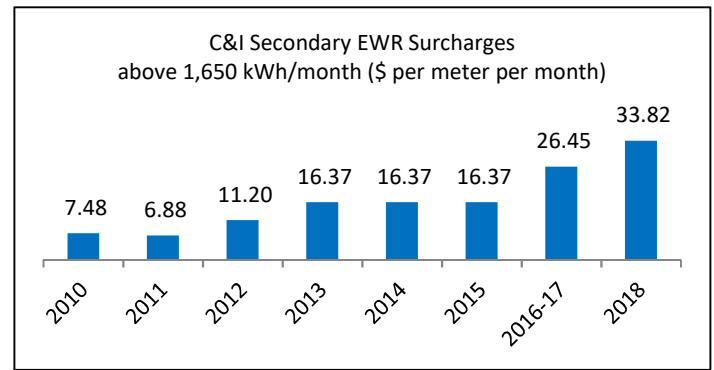
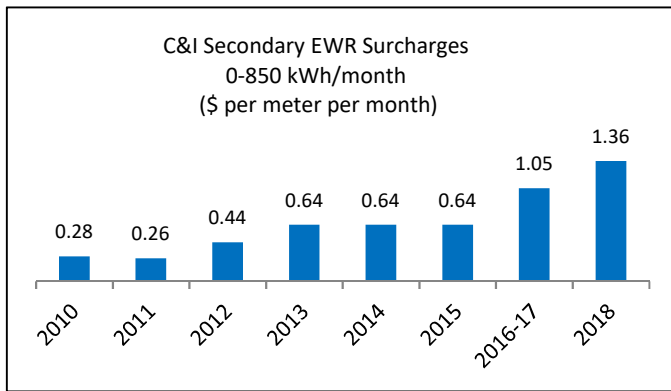
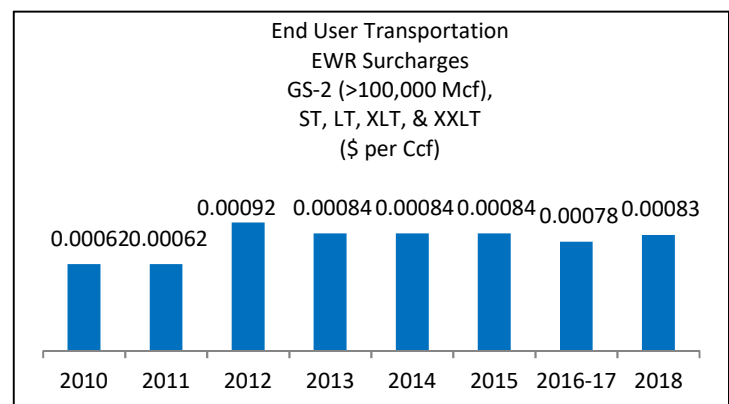
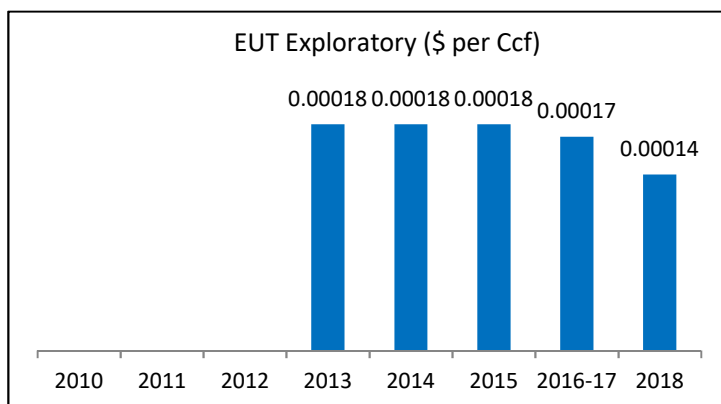
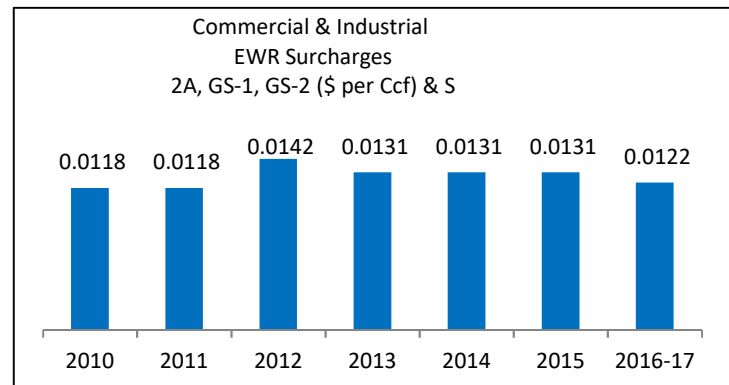
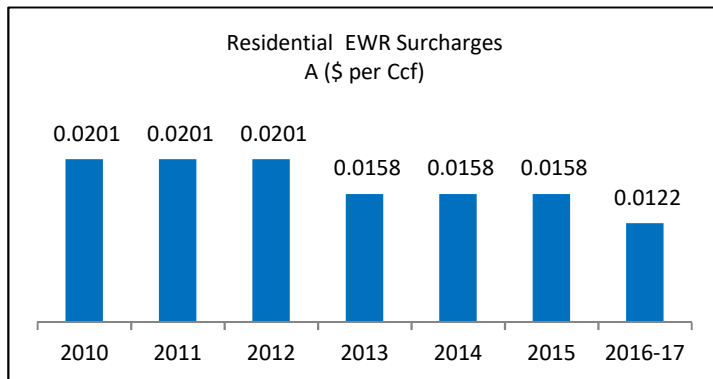


Chart 5 – DTE Gas Surcharges



Program Participation

The number of customers participating in EWR Programs has increased steadily each year since 2009 resulting in over 3.8 million electric and 2.7 million gas customers in Residential and Commercial and Industrial Programs. In 2018, 774,321 electric and 676,767 gas customers participated in the EWR Program.

Charts 7 & 8 summarizes the number of customers participating in the EWR Program by year.

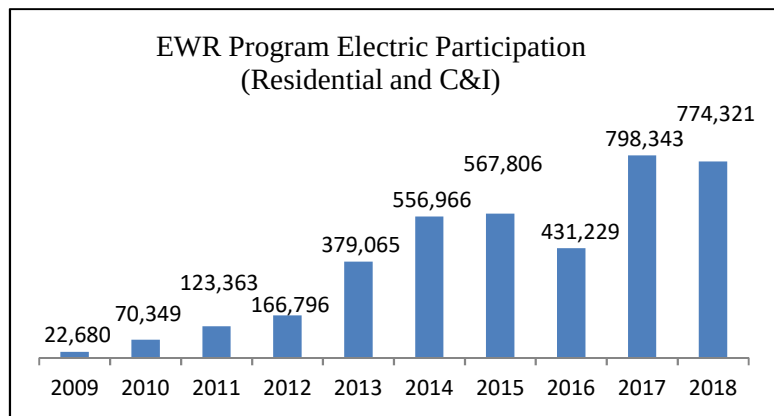


Chart 7 – EWR Program Electric Participation

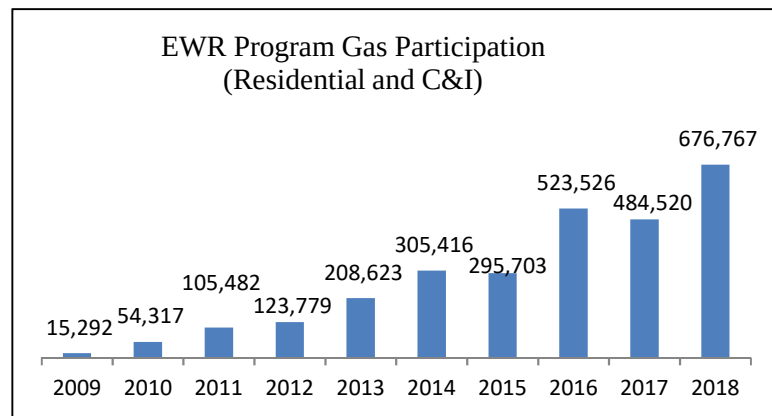


Chart 8 – EWR Chart Program Gas Participation

Legislative Requirements

Michigan's Energy Waste Reduction (EWR) standard, created under Public Act 295 of 2008 (PA 295 or the Act) as amended by PA 342 of 2016 (PA 342), requires all gas and electric utilities in the state to implement programs to reduce overall energy usage by specified targets, in order to reduce the future costs of gas and electric service to customers. This report complies with Section 97(1) of the Act; summaries of the report's major findings are below. Key elements of this legislation include the following:

Energy Savings Targets

- Electric utilities were required to achieve 0.3 percent savings in 2009; 0.5 percent in 2010; 0.75 percent in 2011; and 1.0 percent in 2012 and each year thereafter until the end of 2021. Beyond 2021, the level of electric energy efficiency savings will be determined by the utility's Integrated Resource Plan.
- Natural gas utilities must achieve 0.1 percent savings in 2009; 0.25 percent in 2010; 0.5 percent in 2011; and 0.75 percent in 2012 and each year thereafter.

Compliance

- Electric and Gas utility providers must offer a cost effective EWR portfolio to customers, excluding low-income programs, per PA 342
- Providers can operate their own EWR compliance programs or fund a state program.
- EWR plans must be filed, reviewed and approved or rejected by the MPSC

Funding

- Providers must demonstrate the EWR programs, excluding offerings to low-income customers, meet the Utility Systems Resource Cost Test (USRCT) and is reasonable and prudent.

- Funds received from a customer class — Residential, Commercial and Industrial (C&I) Secondary, and C&I Primary — must be spent on EWR programs that benefit that rate class. All classes will contribute toward Low-Income Residential Programs.

Utility (Performance) Incentives

- A financial incentive for utility providers can be earned for exceeding the EWR performance standards.
- PA 342 states that the earned performance incentive financial award be calculated as a function of the net present value of life-cycle cost reductions generated during the annual period or based on total program spending, tiered based on annual incremental savings.
- The basis for the performance incentive was 20 percent of the provider's actual EWR Program expenditures.

EWR Surcharges

The EWR Programs are paid for by all customers via a surcharge placed on their electric and natural gas bills.

The amount of the surcharge depends on the Rate Class — Residential, Commercial and Industrial (C&I) Secondary and C&I Primary. Residential customers pay a volumetric rate, so a customer's individual surcharge depends on how much energy they use. For C&I electric customers, the total amount paid is also based on the number of meters, as they pay a monthly per meter charge determined by their monthly consumption.

EWR Program Portfolio

DTE's EWR Programs are designed to help reduce customers' energy use by increasing customer awareness and use of energy saving technologies, and providing products and services such as rebates, tips, tools, strategies and energy efficiency education to help customers make informed energy saving decisions. Many of the programs in 2018 were continuations of programs launched in prior years, with a number of new programs subsequently implemented. DTE continually works to offer EWR Programs that assure all customer segments are encouraged to participate. Programs are designed to capture both electric and natural gas savings. For those DTE customers with only electric or only natural gas service, efforts were made to coordinate and align with other utilities so that these customers could easily take advantage of energy efficiency program offerings across both fuel types.

Program Offerings

EWR Programs include offerings available to residential customers, commercial and industrial customers, pilot programs, and general education and awareness programs. In addition, the Evaluation, Measurement & Verification (EM&V) function verifies net energy savings reported by the EWR Programs. The programs are managed by DTE Energy program managers and operated by expert implementation contractors, primarily utilizing local labor and products.

Each program offers a combination of energy efficiency products, customer incentives or rebates, and education. Following is an overview of each program category:

- Residential Programs offer homeowners products, services and rebates encompassing appliance recycling; lighting; heating, ventilating and air conditioning (HVAC); weatherization; home energy assessments; low-income; energy education; and behavioral programs.
- Commercial and Industrial Programs offer businesses products; services; prescriptive rebates for specific equipment replacement such as lighting, boilers, pumps, compressors, etc.; custom programs providing rebates per kilowatt hour (kWh) of electricity savings or per thousand cubic feet (Mcf) of natural gas savings for a comprehensive system or industrial process improvement; and energy education and pilot programs.
- Pilot Programs focus on new and emerging experimental programs to fit longer-term program portfolio needs, test the cost-effectiveness of emerging technologies, and assess customer adoption of new technologies and market acceptance of existing technologies using new approaches.
- Education and Awareness Programs are designed to raise customer energy efficiency awareness in an effort to help save energy and to reduce energy costs. A secondary objective is to raise awareness of the DTE website and other social media, which provide channels for customers to engage in specific EWR Programs offered.
- EWR Programs require independent verification of the utilities' claimed energy savings. This work is performed by an independent Evaluation, Measurement & Verification (EM&V) contractor and must be performed to industry standards and guidelines developed by the Evaluation Workgroup of the MPSC EWR Collaborative. Currently Navigant Consulting, Inc. fills this role for DTE.

Each year new program options continue to be added to the EWR portfolio.

Refer to **Figure 1** below for a list of programs offered in 2018.

Residential Programs	C&I Programs	Education & Awareness Programs	Pilot Programs
Appliance Recycling	Prescriptive	Residential	Residential
ESTAR Lighting	Non-Prescriptive	Commercial & Industrial	Commercial & Industrial
HVAC	Emerging Measures		
Audit + Weatherization	ESTAR Residential Lighting		
Schools	Multifamily Common Area		
Online Energy Audit	Retro-Commissioning		
Behavior	BEC		
HEC	Midstream Lighting		
Multifamily	Self-Direct		
Low-Income			
Emerging			

The following pages include a summary of each EWR Program providing a description, highlights, achievements, challenges and overall program results from 2018.

Residential Programs

The objective of the Residential EWR Programs is to increase customer awareness and demand for energy efficient products and services. In 2018, the Residential EWR Programs used various marketing tactics and community outreach events to promote and inform customers of program offerings. These marketing tactics included specific program information conveyed through DTE's website, email, social media (Facebook and Twitter), direct mail, bill inserts, newsletters, radio and television ads, billboards, advertisements in local newspapers, in-store events and home shows. Furnace testing/replacement program options were continued in the low-income space. Rebate amounts were adjusted to meet market demand and budget constraints. Details of each offering are provided later in this report. In 2018, DTE's Residential EWR Programs performed well. In total, the Residential EWR Programs achieved 301 GWh of verified net electric savings, which is 103 percent of plan, and 895 MMcf of verified net gas savings, which is 97 percent of plan. In a recent internal benchmarking, DTE's Residential EWR Programs were ranked well with respect to cost effectiveness and savings compared to other utility companies. Overall customer satisfaction was at 94 percent or higher for almost all programs in 2018.

Charts 9 and 10 summarize the electric and gas spending and verified net energy savings for all the 2018 EWR Residential and Low-Income Programs.

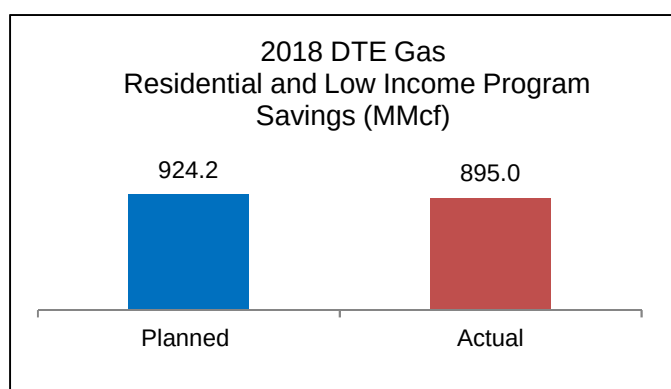
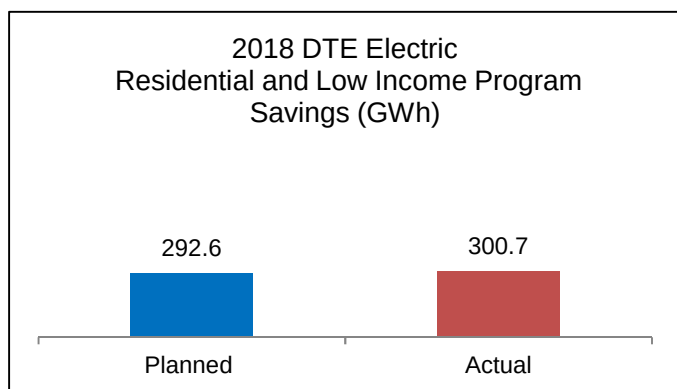
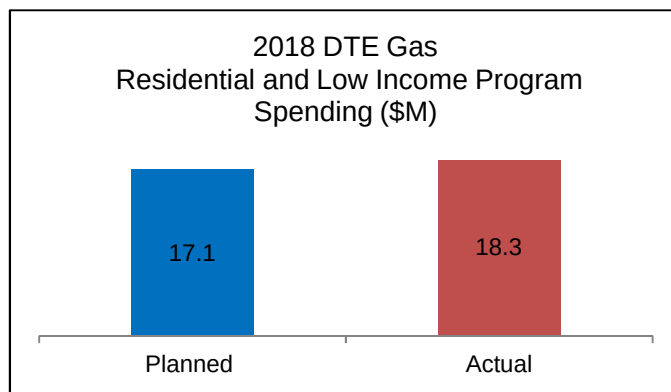
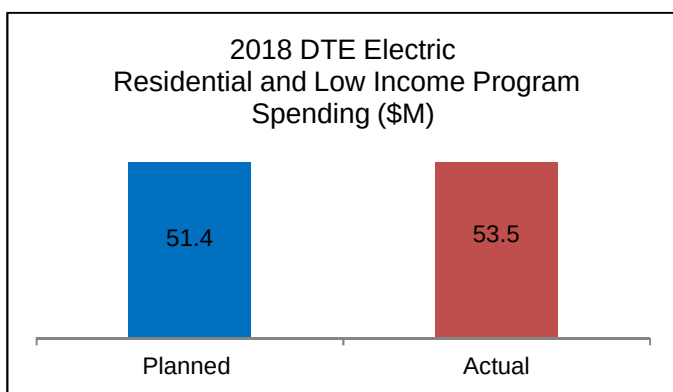
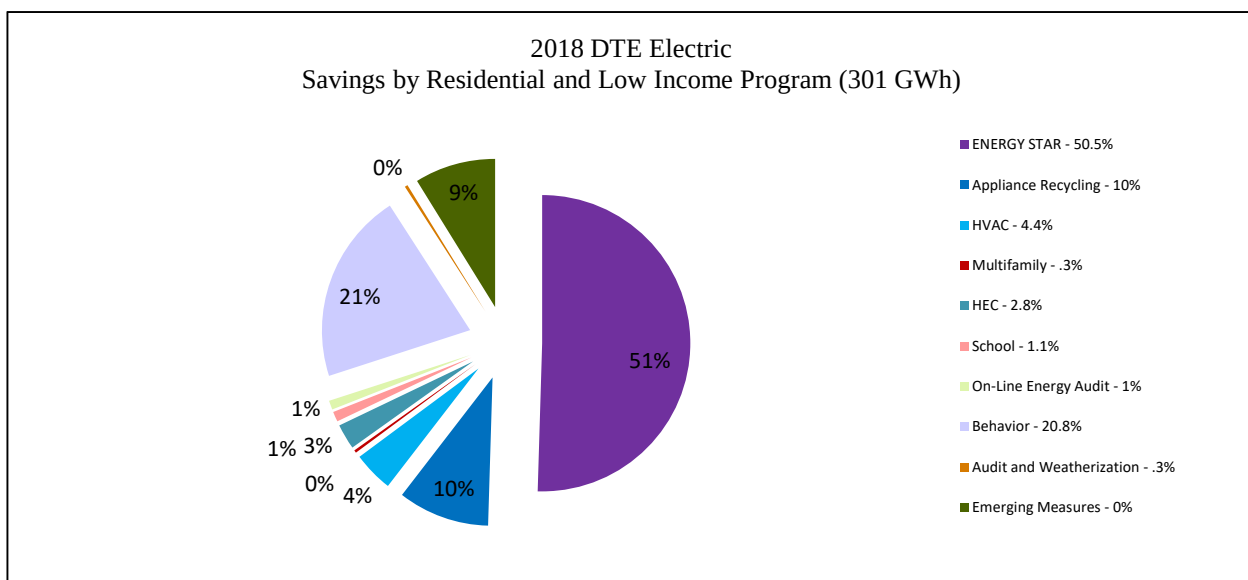
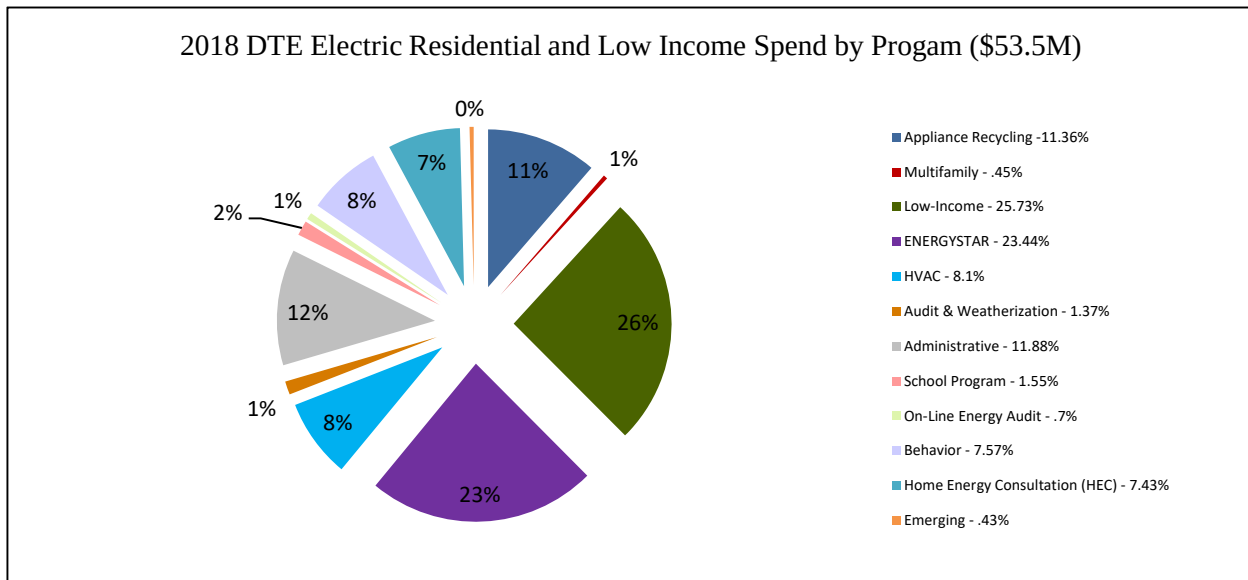


Chart 9 – 2018 Residential and Low-Income Program Spending and Verified Net Saving

In addition, **Chart 10** is a summary of the spending and verified net energy savings achieved by each Residential and Low Income EWR Program in 2018.



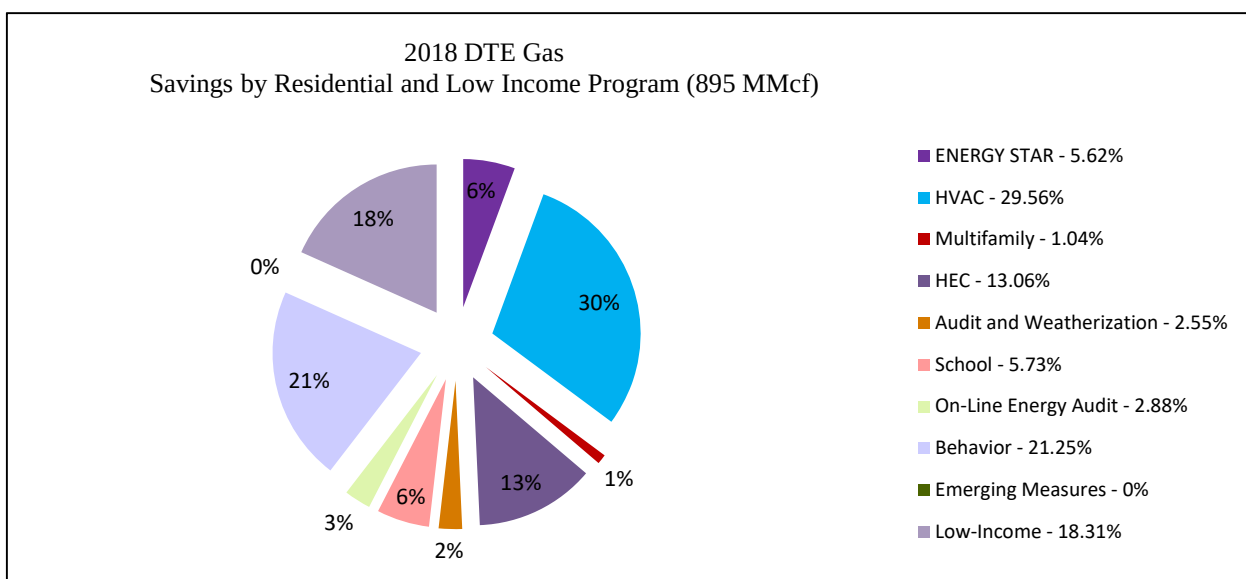
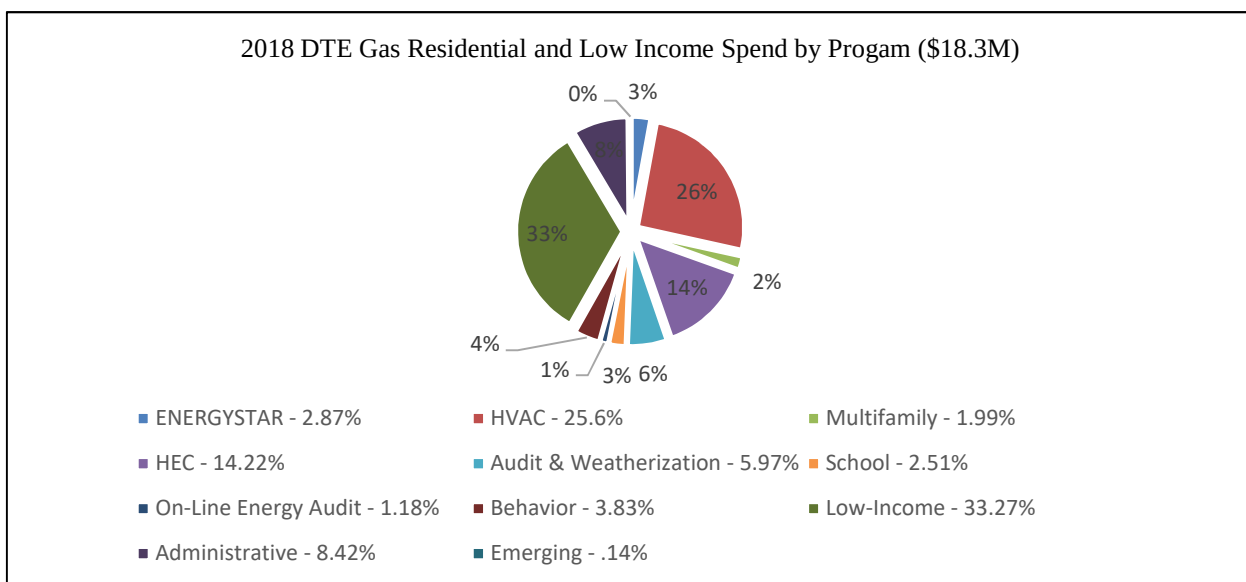


Chart 10 – 2018 Spending and Verified Net Savings by Residential and Low-Income Programs

In 2018, over 573,000 electric customers and over 674,000 gas customers participated in the Residential EWR Programs. **Chart 11** summarizes the number of customers participating in the EWR Program in 2018.

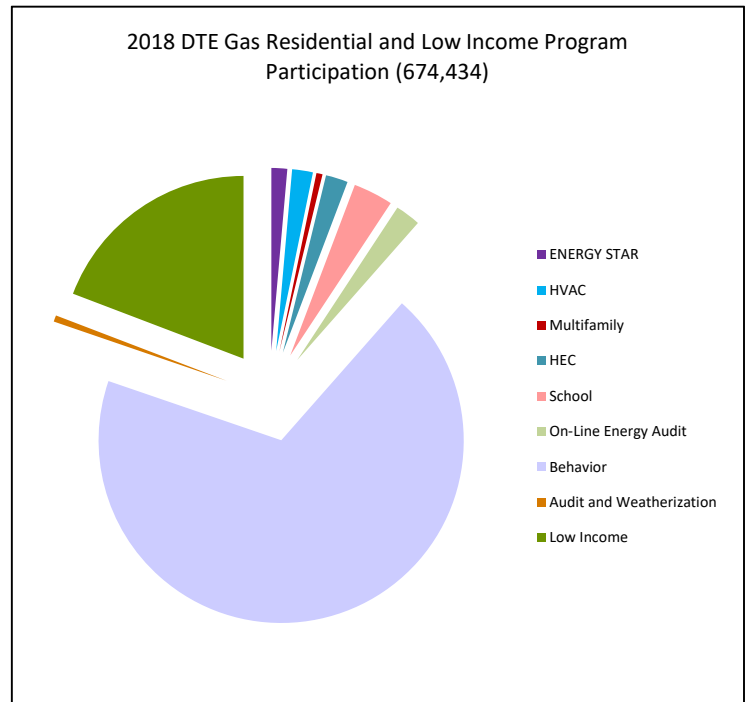
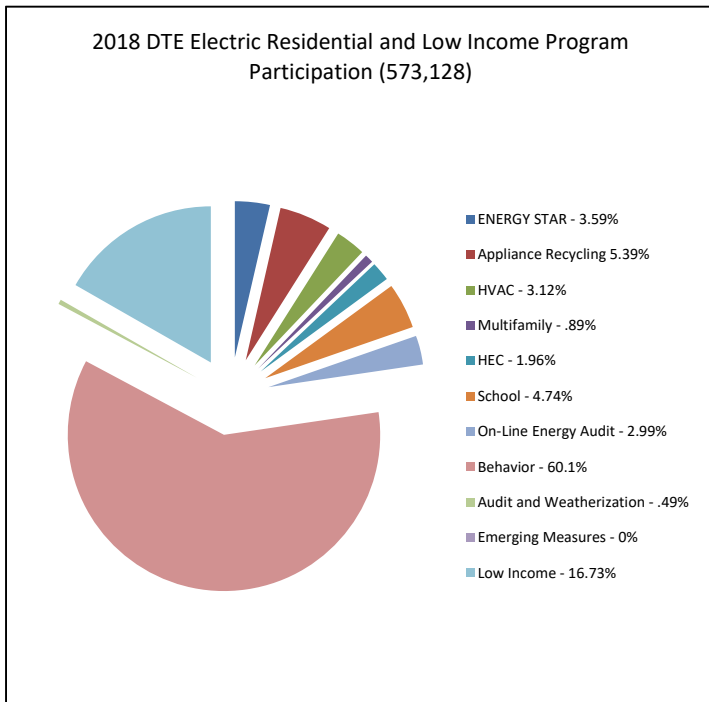


Chart 11- 2018 EWR Residential and Low-Income Customer Participation by Program

Appliance Recycling Program (DTE Electric Only)

Program Description

The objective of the Appliance Recycling Program is to produce cost-effective, long-term annual energy savings by promoting the early retirement and recycling of operable, inefficient appliances from DTE Electric households in an environmentally safe manner. The program removes older inefficient working refrigerators and freezers from the electric grid and recycles 95 percent of the appliance. Customers can also recycle a dehumidifier and/or room air conditioner when having a refrigerator and/or freezer picked up. At the same time, DTE educates its customers on the additional energy cost incurred by operating a second, inefficient appliance.

Highlights

- Customers received a \$50 rebate for a refrigerator, \$50 for a freezer, \$20 for a dehumidifier, and \$20 for a room air conditioner.
- Customers receive their rebates at the time of pickup.

Challenges

- The popularity of the program extended the pipeline of appointments from 2 to 3 weeks to 4 to 5 weeks. Consequently, the most common complaint from customers was the wait time between scheduling the appointment and the actual pickup.
- Replacing Sears with a new retailer who sells and delivers new refrigerators and freezers while picking up the old units has been a challenge. Many of the national retailers prefer a nationwide recycling program instead of a local recycling program.

Accomplishments

- The amount of time from the appliance pickup to the time the customers' rebate check is mailed was 1.72 days. This includes both customer and retail pickups.
- Overall customer satisfaction remained at 96% despite the wait time complaints.

Collaboration Efforts

- DTE collaborated with ABC Warehouse and Sears to pick up old refrigerators and freezers when delivering new ones.
- Retail pickups increased from 4 percent of the total units in 2018, compared to 3 percent of total units in 2017.
- As Sears pickups declined, ABC Warehouse increased their retail share of pickups to 87 percent of the total retail units in 2018.

Lessons Learned

- In 2018, 42 percent of customers identified Friends/Family as the number one mode on how they heard about the Appliance Recycling Program. Television advertisement came in second with 23 percent and Online came in third with 13 percent.
- 57 percent of customers scheduled their appliance pickup via phone, which is a decrease of 15 percent from the previous year. Online scheduling increased to 39 percent, up 23 percent from 2017. The remaining 4 percent scheduled an appliance recycling pickup through a retailer while purchasing their new refrigerator or freezer.
- Extending the program through the late December decreased the waitlist for the following year, thus increasing customer satisfaction.

Spend and Verified Net Savings Results

- DTE Electric spent \$6.1 million on the Appliance Recycling Program in 2018. This amount was \$.1 million over the planned amount.
- DTE Electric saved 30.1 GWh of verified net energy savings. This was .6 GWh over the plan.
- This program is offered to residential electric customers and not to gas customers, so there is no gas savings or spend.

Chart 12 summarizes the 2018 DTE Electric spend and verified net savings results for the program.

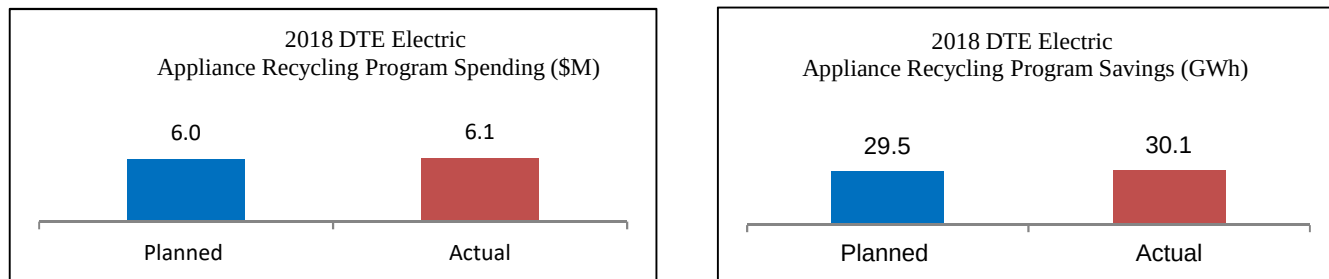


Chart 12 – 2018 Appliance Recycling Spending and Verified Net Savings

Program Participation

- Customer participation in the program increased 10% from 2017 and remains a well-known residential program offering.

Chart 13 summarizes the number of customers who have participated in the program since 2009.

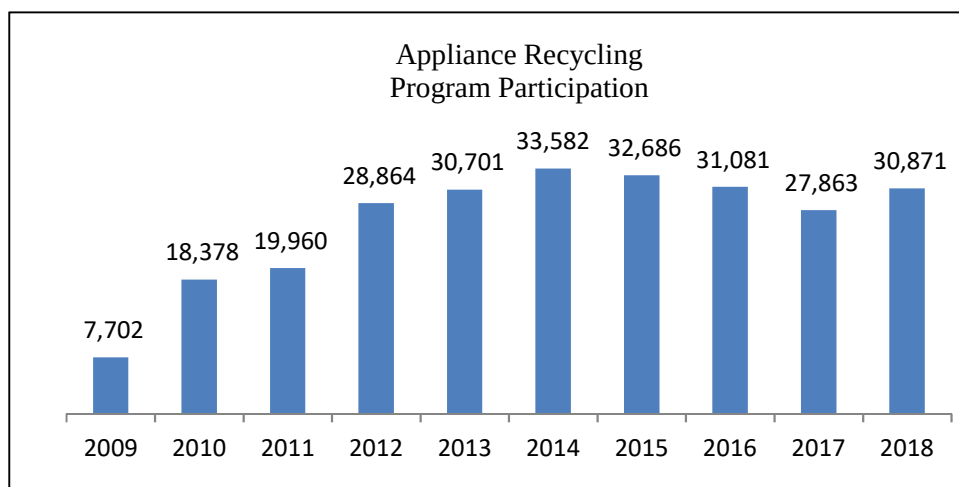


Chart 13 – Appliance Recycling Program Participation

Program Outlook

- As the proportion of customers who have already participated increases, it will be harder to achieve the goal because of saturation. The program will need additional marketing efforts to achieve targets.
- The program's marketing mix in 2019 will continue with a combination of television advertisement and increased social media presence. The new online scheduler, new-look website and updated commercial will help encourage customers to participate. Cross promotional material from other EWR residential programs will also continue as a marketing strategy for this program.

ENERGY STAR® Lighting and Appliances Program (DTE Electric and DTE Gas)

Program Description

The objective of the residential ENERGY STAR® Products Program is to increase the awareness and sales of high efficiency ENERGY STAR® products among residential customers. The program was designed to spur customer interest by providing educational information and incentives to customers who purchase qualified ENERGY STAR® equipment. The primary means used to accomplish this objective were in-store site visits, point-of-purchase material, digital and email campaigns, and promotional events that were held throughout the year.

The program helps customers reduce the cost of being energy efficient by providing rebates and/or discounts on ENERGY STAR® certified products. The program also provides upstream discounted light emitting diode (LED) light bulbs at over 400 retailer outlets. Midstream incentives on certified consumer electronics are provided for personal computers and monitors. Downstream rebates on certified appliances,

such as, clothes washers, clothes dryers, room air conditioners, dehumidifiers and pool pumps. Wi-Fi enabled and smart thermostats rebates were also provided.

Highlights

- DTE Electric offered \$25 rebates for ENERGY STAR® qualified clothes washers and dryers, dehumidifiers and room air conditioners. Wi-Fi enabled and smart thermostats had rebates ranging from \$75 - \$100. Pool pumps were added to the product mix and offered a \$350 rebate. In-store mark-down discounts for LED bulbs were between \$0.5-\$6 per bulb. Midstream consumer electronics incentives ranged from \$5 to \$25 per item.
- DTE Gas offered \$25 rebates for ENERGY STAR® qualified clothes washers and dryers. Wi-Fi enabled and smart thermostats had rebates ranging from \$75 - \$100. These rebates were available to customers by mail, online retail or online application.
- The appliance downstream program provided rebates for over 15,500 electric and 5,400 gas appliances.
- The Consumers Electronics Program midstream program provided incentives on over 5,700 electronics.

Challenges

- There were challenges in improving the DTE Marketplace website to reach a growing segment and deliver a customer focused experience.
- Awaiting for the Department of Energy (DOE) to rule on the Energy Independence and Security Act (EISA) backstop for lighting.
- Due to Energy Star testing guidelines, there were no television incentives or savings in 2018.

Accomplishments

- DTE sold over 5 million LED bulbs through manufacturer buy-downs at the retailer level.
- DTE Energy Marketplace, launched in 2017, continued to provide residential customers with energy and cost savings opportunities. Room sensors connected switches and additional smart thermostats were added to the product line.
- The program participated in over 400 in-store and community events to interact and educate customers.
- Customers continued their positive outlook about the program as demonstrated by an overall 96 percent satisfaction rating in 2018.

Collaboration Efforts

The program continues to collaborate with local and national retailers such as Costco, The Home Depot, Meijer, Family Dollar, Lowe's, ACE Hardware, Dollar Tree, Sam's Club, ACO Hardware Wal-Mart, Best Buy, ABC Warehouse, Menards and Sears to help our customers become more energy efficient.

Lessons Learned

- LEDs continue to flourish with discounted pricing and consumers are embracing Wi-Fi enabled and smart thermostats at a precipitous pace.
- As consumers become more educated and increase Energy Star products, the labeling seems to continue to have greater influence and create awareness.

Spend and Verified Net Savings Results

- DTE Electric spent \$12.5 million on the ENERGY STAR® Program. This amount was \$2.6 million less than the plan.
- DTE Electric saved 152 GWh of verified net energy savings. This was 5 GWh more than the plan.
- DTE Gas spent \$525,000 on the ENERGY STAR® Program. This amount was about \$80,000 over the plan.
- DTE Gas saved 50.2 MMcf of verified net energy savings. This was 13.8MMcf higher than the plan.

Chart 14 summarizes spend and verified net savings results.

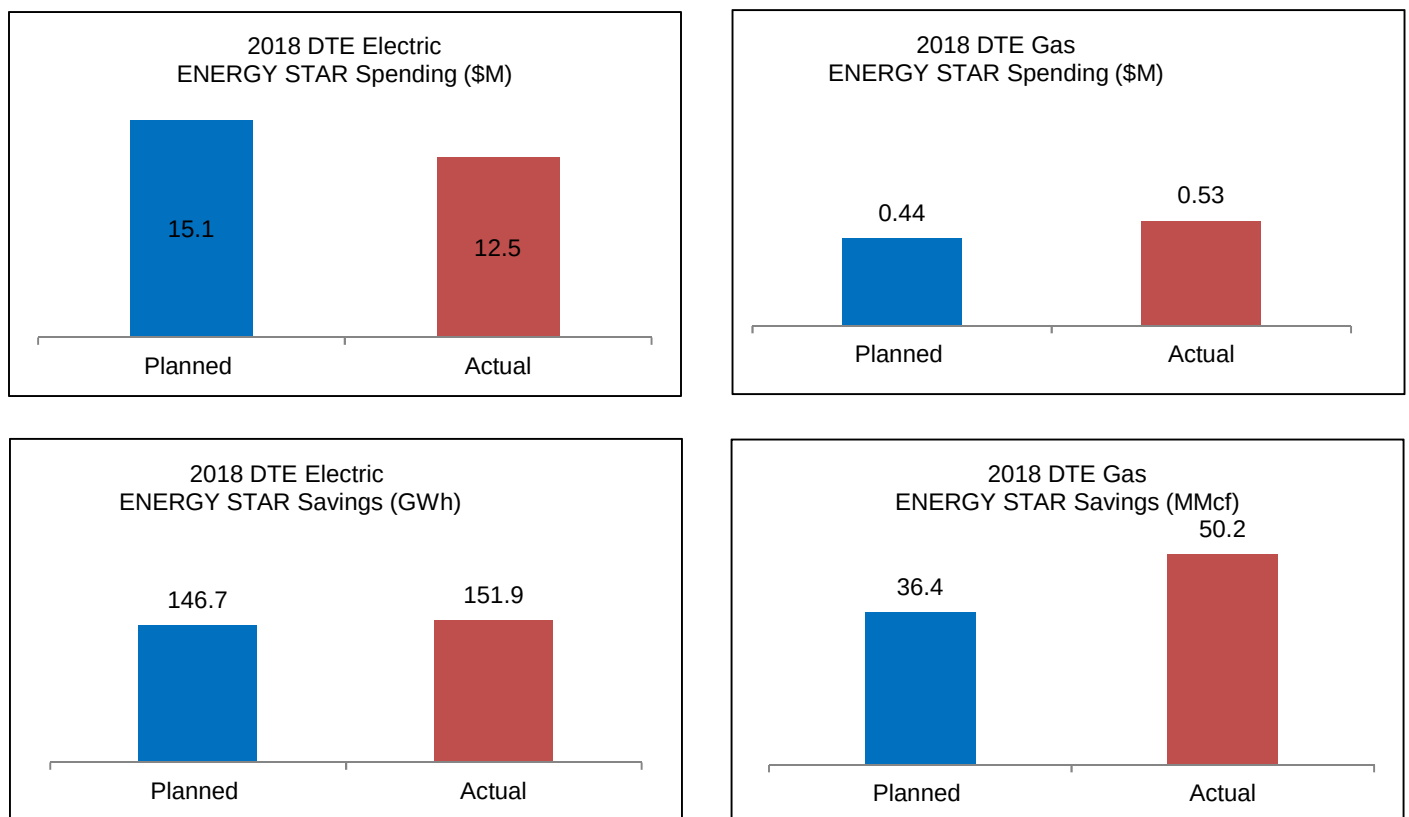


Chart 14 – 2018 ENERGY STAR® Spending and Verified Net Savings

Program Participation

- Customer participation in the ENERGY STAR® Appliance Program had an increase from 2017 to 2018.

Chart 15 summarizes the number of customers who have participated in the ENERGY STAR® Appliance Program.

Chart 16 summarizes the number of ENERGY STAR® Lighting products that have been purchased. Participation in ENERGY STAR® lighting has varied year to year as a result of changes in the product mix.

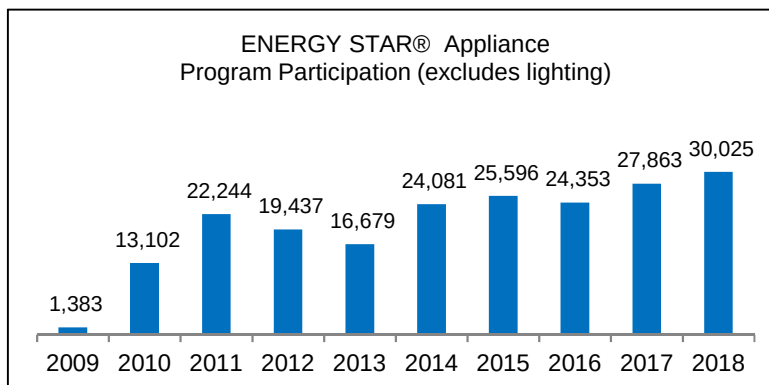


Chart 15 –ENERGY STAR® Appliance Recycling Program Participation

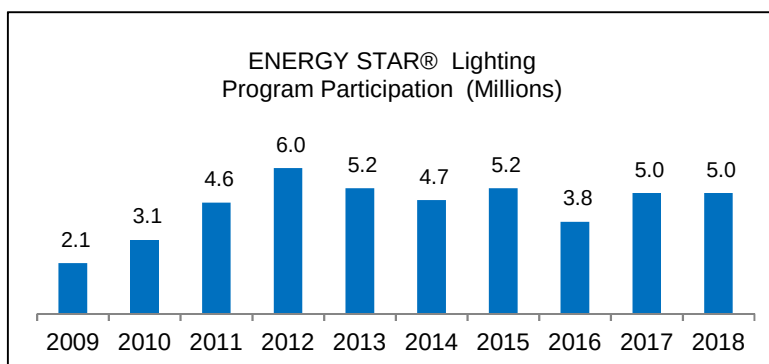


Chart 16 – ENERGY STAR® Lighting Program Participation

Program Outlook

- Marketplace will continue to add new products while continuing to improve the customer journey and increase customer satisfaction.
- As compared to the 2018 actuals, spending and savings are expected to decrease slightly in 2019.
- Adding air purifiers to the appliance rebate list in 2019
- Partnering with manufacturers to have special product promotions in stores

Heating, Ventilation, and Air Conditioning (HVAC) (DTE Electric and DTE Gas)

Program Description

The objective of the HVAC Program is to increase the demand for energy efficient heating and cooling equipment and high-efficiency water heating equipment. The electric measures offered in the residential HVAC Program include high-efficiency central A/C units, Wi-fi enabled thermostats and Electronically Commutated Motors (ECM). Gas measures include high-efficiency natural gas heating equipment, Wi-fi

enabled thermostats and water heaters. DTE has developed and utilizes a network of well informed and educated HVAC industry professionals who understand the benefits of and how to sell energy efficient products.

The program serves residential customers in single and multifamily dwellings of less than three units who purchase new high-efficiency central air conditioning units, high-efficiency natural gas furnaces or boilers and/or water heating equipment

Highlights

- In 2018, the DTE HVAC measure offering was received well by both the homeowner and the participating contractors. Electric measures included SEER 15 and above central air conditioners, Electronically Commutated Motors (ECM), Wi-fi enabled thermostats, Heat Pumps, and central air conditioning diagnostic test and tune ups.
- The incentive amounts were \$100 per thermostat unit, \$50 per ECM, \$150-400 for SEER 15+ central A/C units, \$50 on Air Conditioning tune-ups, \$200 - \$400 for high-efficiency furnaces and up to \$1,000 for boilers, \$75-\$100 on water heaters and a \$50 rebate on high efficiency furnaces and boiler diagnostic test and tune ups with combustion analysis.
- Launched web-based training platform solution for trade allies. This solution complements the existing suite of in-person (individual and group setting) and webinar-based offerings made available to trade allies. Trainings range from program specific, marketing and social media to technical and CEU eligible courses. All courses and trainings are offered free of charge to the trade ally network.

Challenges

- The program found challenges in engaging participants to participate in the high efficiency tank and instant water heating equipment.
- The program found challenges with heat pump participation in that savings capture requirements per the MEMD don't align with full market application for this specific measure. The program underwent an extensive process of re-enrolling participating contractors with updated participation agreements, trainings and updated listing on the energy efficiency directory.

Accomplishments

- DTE continued to leverage its very active trade ally network to maintain the momentum as the program transitioned into 2018.
- Over 30,000 HVAC customer applications were processed.
- The electric measures continue to be a very positive factor for the program.
- Increase of high efficiency – 19 SEER and higher – air conditioning units by over 25% from 2017.
- Introduction of an application-based solution for creating and submitting rebate applications resulted in an increase of participation by 12% for furnace tune-ups.
- The program introduced a reporting mechanism for contractors to have greater visibility into their participation in the programs.

Collaboration Efforts

- Meetings were held throughout the state to inform and train the trade ally network. These included rollout training, combustion analysis furnace tune-up training, new contractor training and one-on-one site training with trade allies. **Table 6** below provides a summary of the collaboration efforts.

Event	Number of Events	Attendance
Outreach and Conferences	146	3,013
Tune-Up Training	6	38
Online Intake Tool Training	11	40
On-Site Training	14	80
Webinar Training	4	18

Table 6 - Outreach and Training

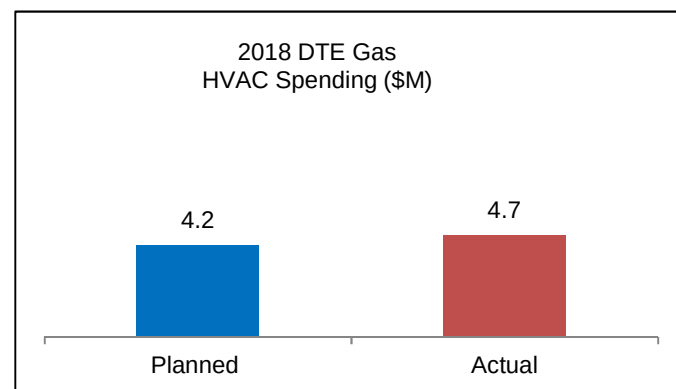
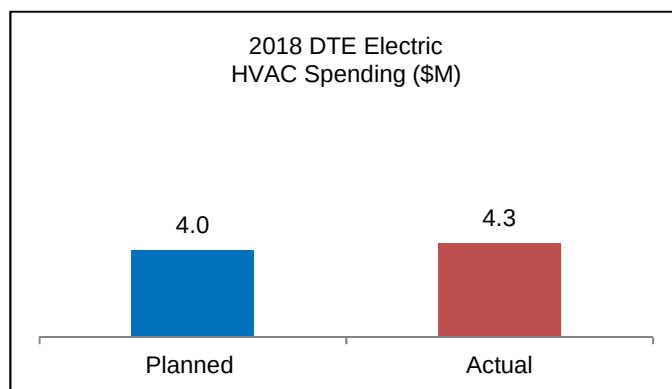
Lessons Learned

- Earlier communication and alignment with contractor plans on service based offerings, namely tune-ups, yields greater participation and decreases market confusion.
- Contractors and customers continue to respond well to “whole system” incentives.

Spend and Verified Net Savings Results

- DTE Electric spent \$4.3 million on the HVAC Program. This amount was \$0.3 million more than the \$4 million plan.
- DTE Electric saved 13.1 GWh of verified net energy savings. This was 1.1 GWh more than the 12.1 GWh plan.
- DTE Gas spent \$4.7 million on the HVAC Program. This amount was \$0.5 million more than the \$4.2 million plan.
- DTE Gas saved 264 MMcf of verified net energy savings. This was 9 MMcf more than the 255 MMcf plan.

Chart 17 summarizes the spending and verified net savings results.



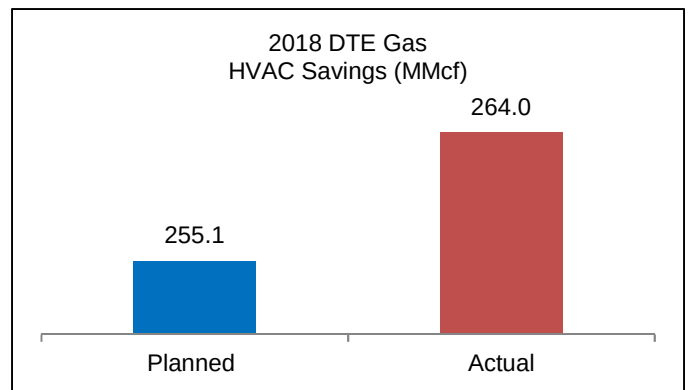
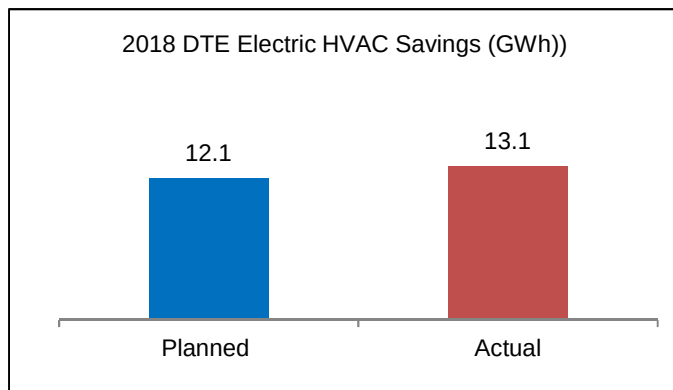


Chart 17 – 2018 HVAC Spending and Verified Net Savings

Program Participation

- Customer participation in the program has increased steadily since 2009.

Chart 18 summarizes the number of customers who have participated in the program.

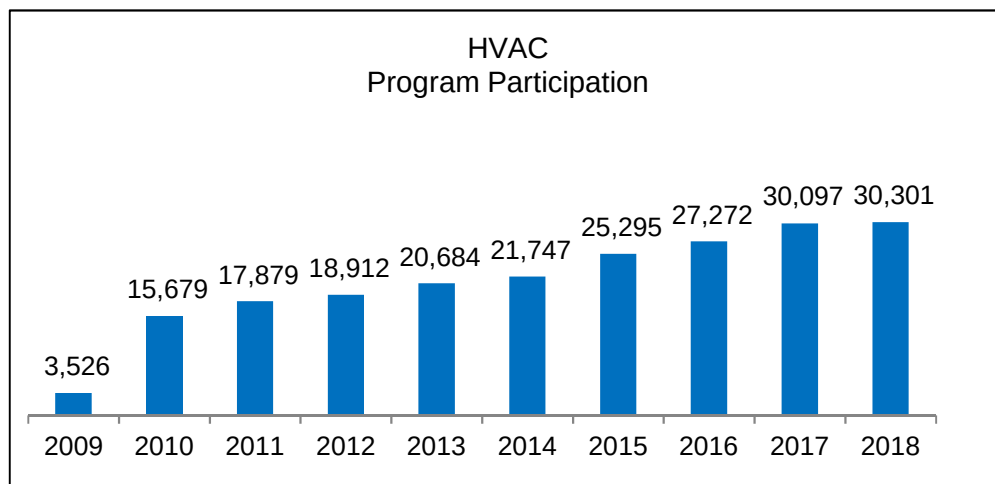


Chart 18 – HVAC Program Participation

Program Outlook

- Because the cost per MMcf saved is higher than other gas energy efficiency programs, DTE is looking at different models that provide other value propositions besides incentives to the customer to encourage participation in the HVAC Program
- A/C measures of 15 SEER or higher, ECM motors and heat pumps will continue to be offered, with new measures also being considered in the electric service territories of DTE Energy.

- The gas portion of the HVAC program will continue to provide rebates for high-efficiency furnaces, boilers, water heaters and Wi-Fi enabled thermostats in addition to on-going promotion of heating equipment tune-up.

Audit & Weatherization Program (DTE Electric and DTE Gas)

Program Description

The objective of the residential Audit & Weatherization (A&W) Program is to motivate customers by offering rebates for the installation of qualified weatherization measures in their homes. The A&W Program was expanded to offer many diverse products and services to DTE customers. Following is a summary of the program offerings:

- Home Performance (HP): offers customers incentives for insulation, windows and HVAC and air sealing measures.
- HP customers are required to have a comprehensive energy assessment (CEA) performed by a participating contractor listed on DTE's website.
- Insulation and Windows (INWIN) offers customers who do not wish to perform a CEA to still receive rebates for insulation and window improvements.

Challenges

- Many customers are not searching for Home Performance directly but searching for the specific improvements they think are needed.
- The comprehensive energy assessment (CEA) is a complex offering and the improvements suggested often times require significant financial investment.
- Customers are more likely to invest on projects that have a visible impact. Conversely, customers are less likely to invest in measures such as insulation and air sealing when faced with the option of where to invest in the home.

Highlights

- DTE simplified the rebate process for the customer aligning rebate levels for measures offered in both INWIN and HP Programs.
- DTE Launched social media contractor toolkit with two very successful campaigns aimed at promoting insulation and windows improvements.

Accomplishments

- DTE continued to improve the rebate process by simplifying and clarifying participation requirements. These improvements resulted in a 17% decrease in flawed applications (applications received that are incomplete or do not meet all the necessary requirements to fulfil the rebate) as compared to 2017.
- The program increased marketing with a focus on retail presence, resulting in an increase of 15% in insulation measures and 8% in window measures as compared to 2017.

Collaboration Efforts

- Customer outreach was performed through attending events with organizations, such as Michigan Saves.
- The HP Program online application tool utilized by participating contractors is shared with Consumers Energy, ensuring consistency for contractors.

Lessons Learned

- Increasing retail presence for the INWIN program was a successful step and one to continue expanding as the demand for standalone insulation and windows rebates (without CEA required) continues to outpace those of whole-home upgrades.

Spend and Verified Net Savings Results

- DTE Electric spent \$0.73 million on the Audit & Weatherization Program. This amount was about \$.06 million over plan.
- DTE Electric saved 0.6 GWh of verified net energy savings. This amount was 0.8 GWh lower than the 1.5 GWh plan.
- DTE Gas spent \$1.09 million on the Audit & Weatherization Program. This amount was \$0.14 million less than \$1.23 plan.
- DTE Gas saved 22.8 MMcf of verified net energy savings. This was 3.0 MMcf more than the 25.8 MMcf plan.

Chart 19 summarizes the spending and verified net savings results.

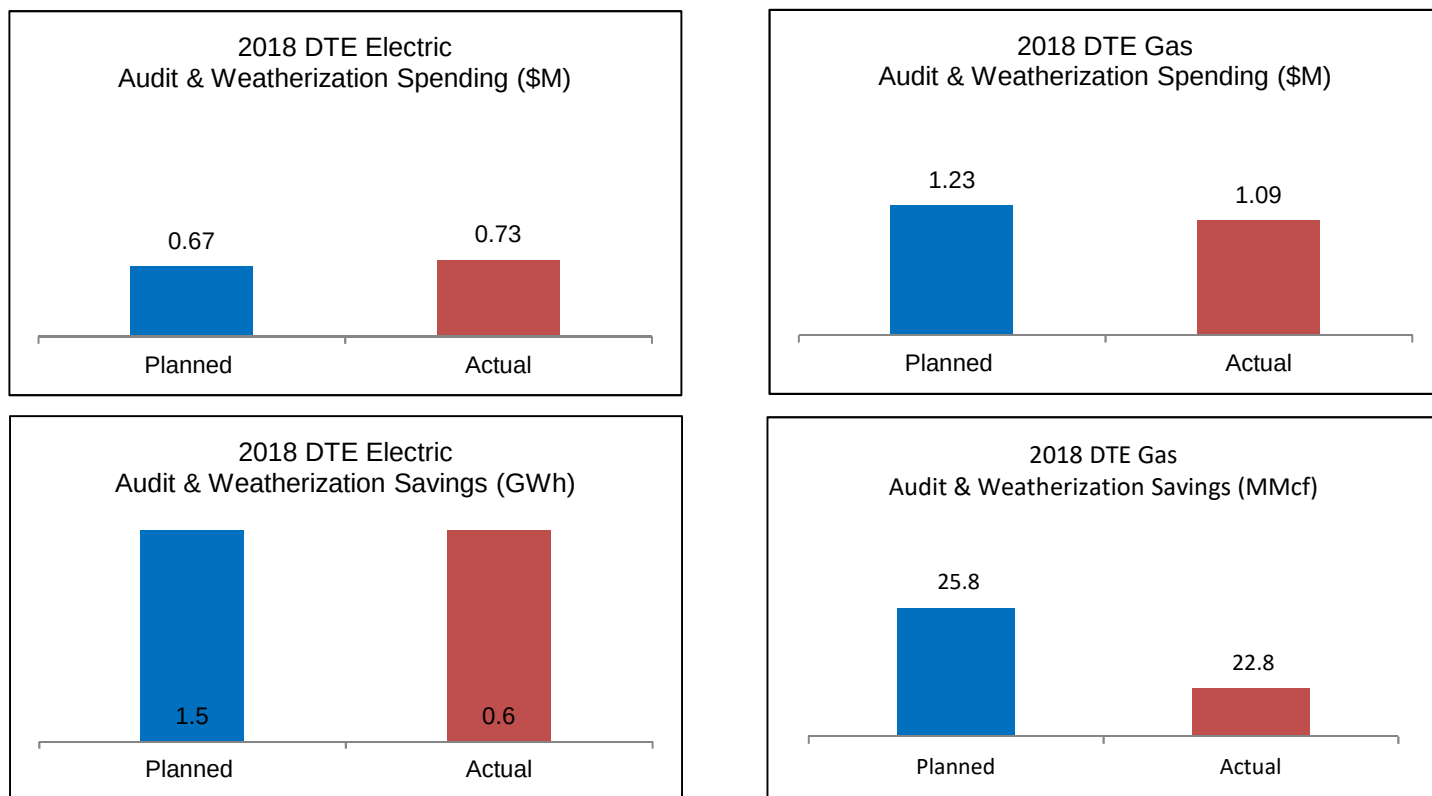


Chart 19 – 2018 Audit & Weatherization Spending and Verified Net Savings

Program Participation

Chart 20 summarizes the number of customers who have participated in the A&W Program.

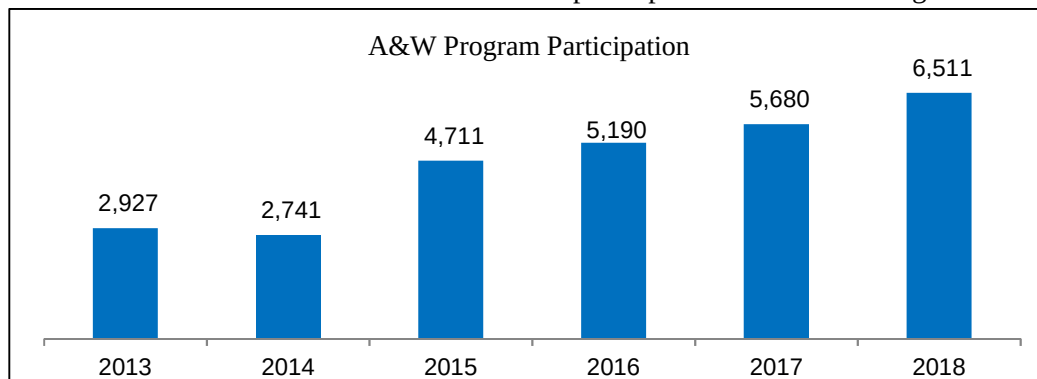


Chart 20 – Audit & Weatherization Program Participation

Note: Program design has been consistent since '13

Program Outlook

- The Audit and Weatherization Program will continue to explore opportunities to expand the program and test new approaches to meet customer demand.
- As compared to 2018, the program is expected to see a slight increase in DTE Electric and DTE Gas savings.

School Program (DTE Electric and DTE Gas)

Program Description

The School Program's objective is to develop a powerful culture of energy efficiency with elementary school students, teachers, schools and families throughout the DTE Energy service territory, in both public and private sectors, to deliver real, measurable energy savings.

The School Program provides non-traditional opportunities to raise awareness and the adoption of energy efficiency measures and behaviors and to help the environment. Each participating teacher and student received a kit filled with energy efficient technologies and a guide with information on energy resources and energy saving tips. Students are instructed to install all products with adult supervision in their residence. Instructional materials have been designed to correlate with the State of Michigan math and science curriculum for 4th through 6th grade students.

Challenges

- Balancing the needs of the program with the unique needs of teachers and students in extremely low-performing schools. The program serves fourth-grade students, but often the students in the combination territory are performing far below grade level, and so the program must be very closely tied to the curriculum for fourth grade, but also reinforce standards in reading and math at lower grades to maintain participation in struggling schools.

- Balancing the needs of collaborative partners to ensure that the program materials are acceptable to all and that each partner meets their savings goals.

Highlights

- In 2018, the program was able to serve 17,007 households in the combination service territory, plus an additional 10,137 electric only households and 6,705 gas only households through collaborations with Consumers Energy, SEMCO ENERGY Gas Company and Efficiency United. Fall kits debuted a new kit poster game to increase student interest and interaction with the program website.
- Introduced pipe insulation, which tested as a viable kit measure.
- Teacher workshops were added to the program for the first time in 2018, serving 26 teachers in the combination territory and eight in collaboration with Consumers Energy in Grand Rapids

Accomplishments

- Savings goals were met for both electric and gas savings as well as additional savings to the portfolio.
- Messaging on energy efficiency was delivered to over 37,200 students across the state.

Collaboration Efforts

- The School program maintained or extended all its pre-existing collaborations in 2018. The collaboration with Efficiency United allowed DTE to increase its visibility in the Upper Peninsula, while the collaboration with Consumers Energy put the DTE brand in front of over 6000 households on the west side of the state, where DTE provides natural gas service.

Lessons Learned

- Families enjoyed the new kit poster game; it is being expanded to all programs for 2019.
- The teacher workshops were very well received; they will also be continued for 2019.

Spend and Verified Net Savings Results

- DTE Electric spent \$0.83 million on the School Program. This amount was \$0.33 million less than the \$1.16 million plan.
- DTE Electric saved 3.37 GWh of verified net energy savings. This was 0.42 GWh more than the 2.95 GWh plan.
- DTE Gas spent \$0.46 million on the School Program. This amount was \$0.12 million less than the \$0.58 million plan.
- DTE Gas saved 53.11 MMcf of verified net energy savings. This was 21.65 MMcf more than the 31.46 MMcf plan.

Chart 21 summarizes the spending and verified net savings results.

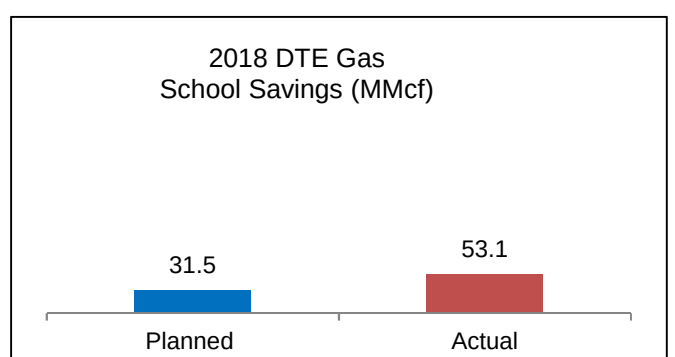
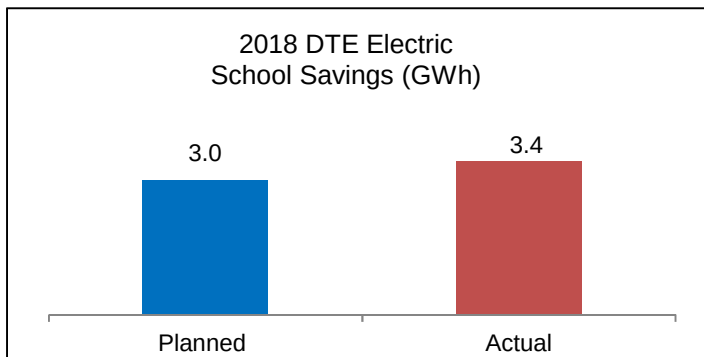
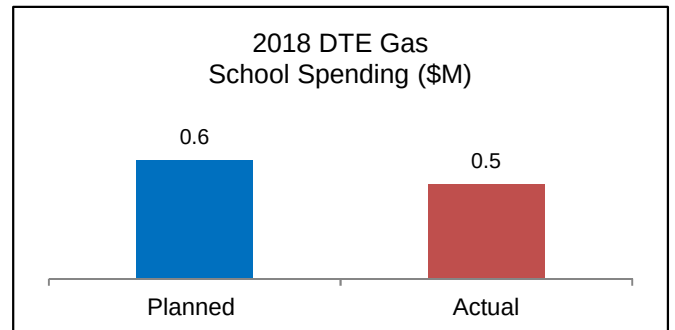
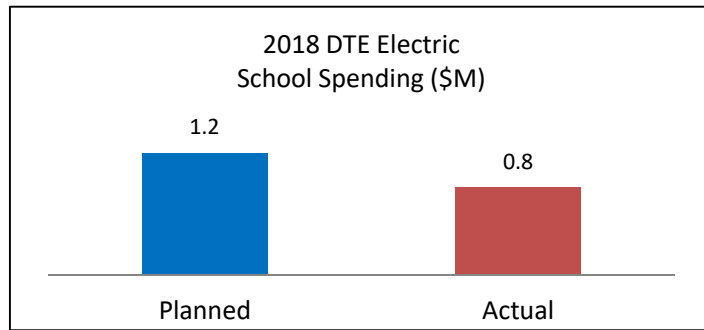


Chart 21 – 2018 School Program Spending and Verified Net Savings

Program Participation

Chart 22 summarizes the number of customers who have participated in the School Program.

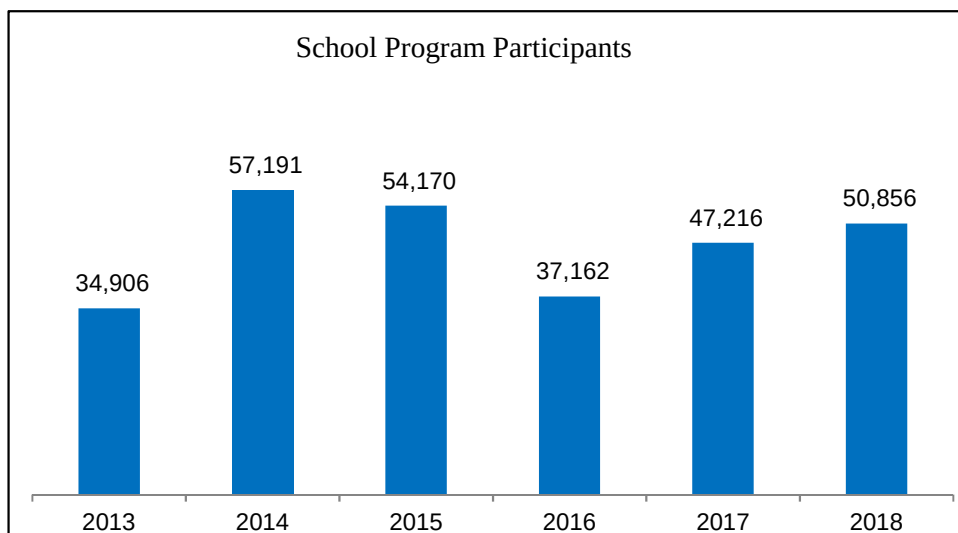


Chart 22 – School Program Participation

Program Outlook

- DTE Electric and DTE Gas savings are expected to grow and spending expected to stay flat beyond 2018.

Online Energy Audit Program (DTE Electric and DTE Gas)

Program Description

The objective of the Online Energy Audit Program is to provide a no-cost energy program to help residential customers to save money while producing electric and gas energy savings through a kit containing easy to install energy saving measures mailed to the home. Energy efficiency information and recommendations are also delivered with the kit as well as being available online. The measures mailed in the kit include LEDs, LED night lights, energy efficient showerheads, energy efficient kitchen and bath aerators, and pipe wrap insulation.

Challenges

- Motivating customers to install all of the provided measures remains a challenge. This causes a low IRAF which reduces the amount of energy that can be claimed for this program.

Highlights

- In 2018, the program remained available to customers through November.
- The program continued to explore various marketing channels to improve participation rates.

Accomplishments

- The Online Energy Audit Program continues to provide an easy way for customers to get started with their energy efficiency journey.
- In 2018, over 23,000 kits were mailed to DTE Energy customers.

Collaboration Efforts

- There are currently no utility collaboration efforts with this program.

Lessons Learned

- Understanding the length and complexity of the on-line survey helps to understand survey completion rates.
- The market is very responsive to marketing efforts, resulting in good control and capability to either leverage or stalled to help with portfolio savings objectives.
- Doing Online Energy Audit program cross promotion via other programs collateral and webpages show to be a good lead generation tool.

Spend and Verified Net Savings Results

- DTE Electric spent \$0.4 million on the Online Energy Audit Program. This amount was \$0.7 million lower than plan of \$1 million
- DTE Electric saved 3.05 GWh of verified net energy savings. This was 0.03 GWh below than the 3.08 GWh plan.

- DTE Gas spent \$0.2 million on the Online Energy Audit Program. This amount was \$0.4 million less than plan of \$0.6 million
- DTE Gas saved 25.7 MMcf of verified net energy savings. This was 7.7 MMcf more than the 33.4 MMcf plan.

Chart 23 summarizes the spending and verified net savings

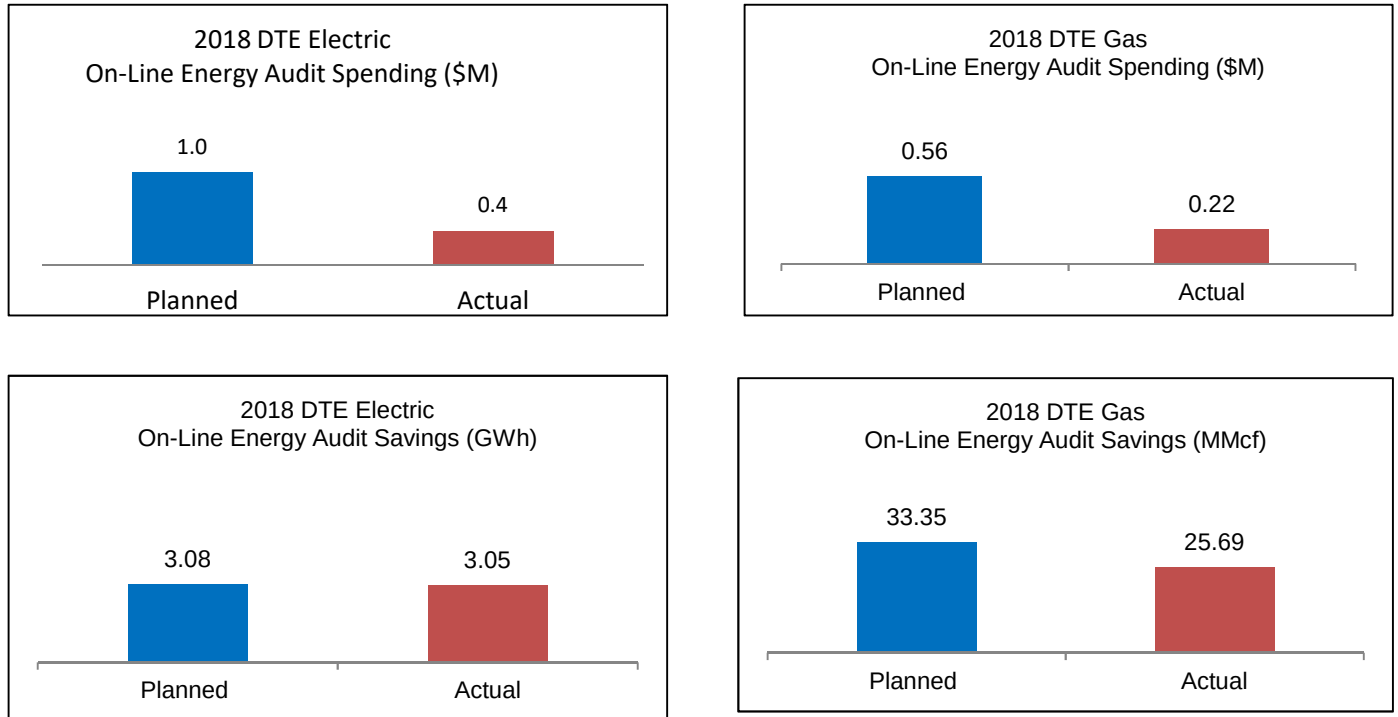


Chart 23– 2018 Online Energy Audit Program Spending and Verified Net Savings

Program Participation

Chart 24 summarizes the number of customers who have participated in the Online Energy Audit Program.

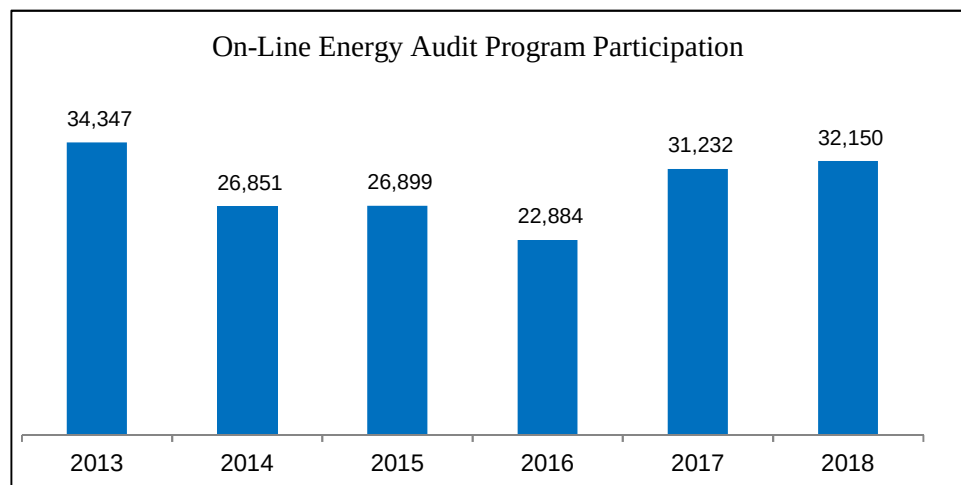


Chart 24 – Online Energy Audit Program Participation

Program Outlook

- DTE Electric and DTE Gas spending and savings are expected to continue at a lower rate beyond 2018.

Behavior Program (DTE Electric and DTE Gas)

Program Description

The objective of the Behavior Program is to encourage select customers to be more energy efficient by means of social competition and social norming. Encouragement is provided by way of printed and electronic Home Energy Reports that display the customer's energy usage in comparison with average energy usage of approximately 100 nearby similar homes and a second comparison with the customer's most efficient nearby similar homes (the top 20 percent). The Home Energy Report also contains the customer's individual ranking within the group of 100 homes, energy savings tips and promotions for other energy efficiency programs. The customer is sent a Home Energy Report via the USPS, and an abbreviated email version of the Home Energy Report is sent to customers with an available email address. Additionally, encouragement can also be provided through active engagement via the DTE Insight mobile app where customer is presented with electric usage data of their home. Customers that choose to receive the mobile application treatment download the mobile application to their smart device to receive a standard treatment. This treatment includes displaying hourly household electric consumption data. Other treatments include the ability to set an energy saving target and monitor progress towards it and various interactive feedback tools. Additionally, customers may request an additional piece of hardware that is connected to the home internet. This hardware, the Energy Bridge, enables an enhanced treatment by displaying one-minute household energy consumption history and displaying the real-time household electric energy consumption.

Challenges

- Comparisons shown on the Home Energy Report have not always been well received by customers. The opt-out process is tightly managed to prevent customer dissatisfaction.
- The DTE Insight app transitioned to a new platform in 2018. This presented some migration challenges for customers who were on the old platform.

Highlights

- In 2018, the Behavior Program had over 800,000 participants.

Accomplishments

- The Behavior Program introduced, is a very cost effective plan to generate energy savings while expanding the reach of our portfolio of energy efficiency programs.

- In 2018, customer satisfaction was 71 percent.

Collaboration Efforts

- There are currently no collaboration efforts with this program.

Lessons Learned

- After experiencing a couple of years of customer satisfaction between 69-70%, DTE continues to leverage strategies to sustain satisfaction.

Spend and Verified Net Savings Results

- DTE Electric spent \$4 million on the Behavior Program. This amount was \$1 million more than the \$3 million plan.
- DTE Electric saved 62.7 GWh of verified net energy savings. This was 2.7 GWh less than the 65.4 GWh plan.
- DTE Gas spent \$0.70 million on the Behavior Program. This amount was \$0.08 million more than the \$0.78 million plan.
- DTE Gas saved 189.8 MMcf of verified net energy savings. This was 59.6 MMcf less than the 249.4 MMcf plan.

Chart 25 summarizes the spending and verified net savings results.

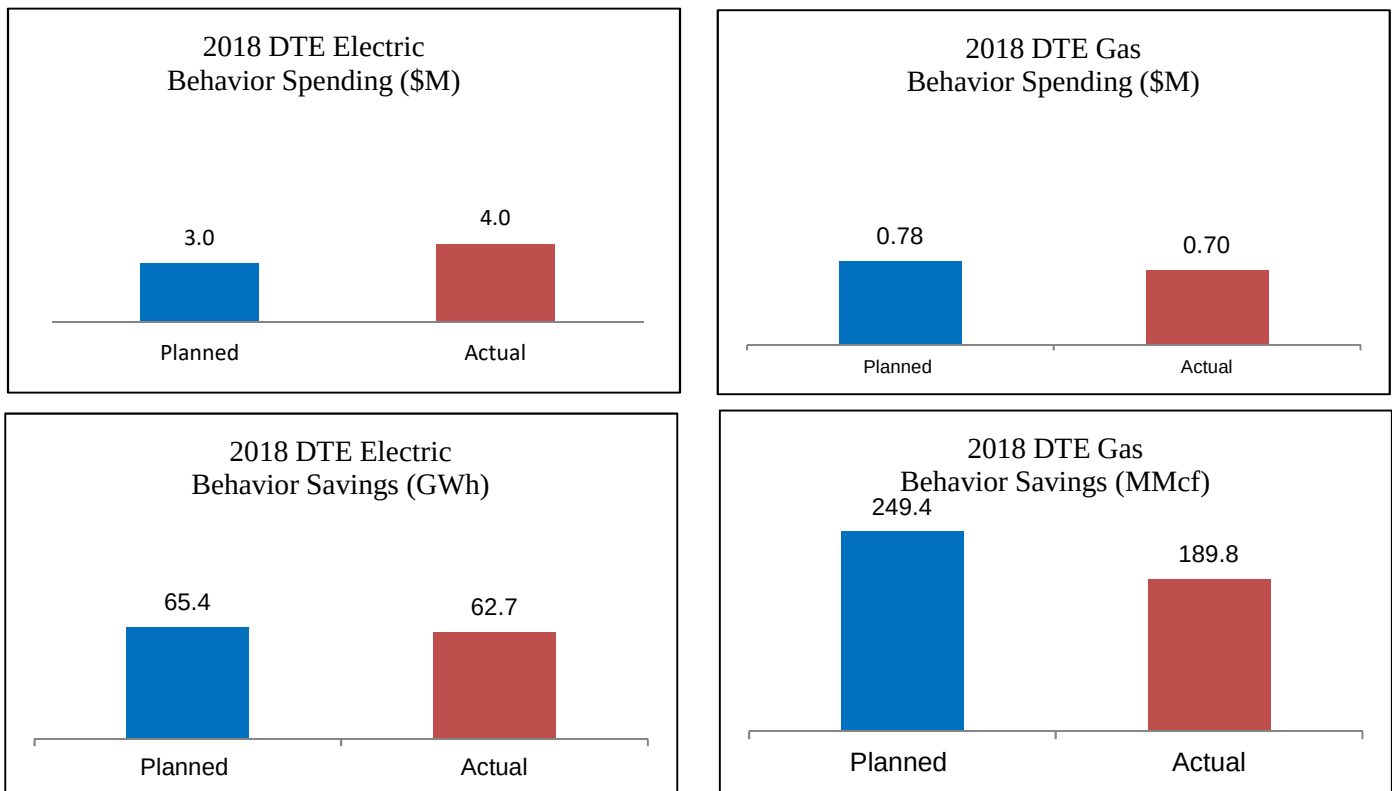


Chart 25 – 2018 Behavior Program Spending and Verified Net Savings

Program Participation

Chart 26 summarizes the number of customers who have participated in the Behavior Program, excluding low-income Behavior participants. Low income segment customers are counted in the 2017 numbers on **Chart 31**.

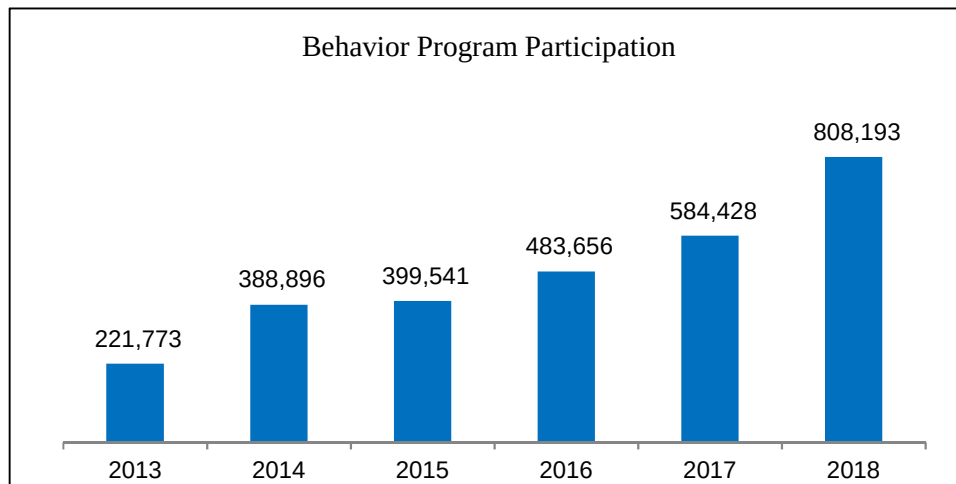


Chart 26 - Behavior Program Participation

Program Outlook

- DTE Electric and DTE Gas spending and savings are expected continue in 2018 for the Behavior program with expected declines in 2019 and beyond. There is an expectation to incorporate other behavioral treatments, such as the mobile application, thus changing the variety of offerings in this program.

Home Energy Consultation Program (HEC) (DTE Electric and DTE Gas)

Program Description

The objective of the HEC Program is to provide a no-cost energy education program that is available to all residential customers with a single-family home while producing immediate energy savings through the direct installation of energy saving measures in the home.

Energy efficiency education is delivered at all phases of the home visit to the homeowners or tenants while the direct installation is occurring. Typical in-unit measures include LEDs, LED night lights, energy efficient shower heads, energy efficient kitchen and bath aerators, smart and programmable thermostats and pipe wrap insulation.

Challenges

- HECs have been offered in the EWR program portfolio since 2010. The opportunities to perform HECs have diminished as the program matures.
- Getting low income customers to participate in the program has been a challenge. We have directed marketing efforts and outreach events to low income areas to overcome this.

Highlights

- In 2018, there were over 24,000 non low income HECs completed throughout the DTE service territory.
- The HEC program continues to have high customer satisfaction scores (95% in 2018), often exceeding the customers' expectations.
- The HEC outreach team participated in over 350 community events throughout 2018 including Customer Assistance Days, faith-based events, food pantries, green fairs, sporting events, community art fairs, libraries, Neighborhood Energy Efficiency Days, etc.

Accomplishments

- In conjunction with the Week of Warmth, the HEC program concentrated on Hispanic neighborhoods in Detroit and Grand Rapids to immerse the energy efficiency message and recruit customers to participate in the HEC program. The program participated in 36 community events with outreach materials in both English and Spanish leading up to a Neighborhood Energy Efficiency Day (NEED) in each community. More than just conducting NEED, we made our presence felt in the communities. The NEED events produced 71 HECs in Grand Rapids and 111 in Detroit. NEED volunteers walked the neighborhoods and left door hangers at customer residences to recruit for future HECs. Over 120 volunteers participated between the two cities.
- The HEC Program continues to collect information helpful in conducting targeted marketing so that customers can continue their energy efficiency journey.
- The HEC program measured marketing efforts with A/B testing which is where 2 types of communications were sent or placed. Each had different prose, subject lines and visual images. This was done with email and online digital ads. We then measured which type got the best response and adopted the ad that got the better response in future efforts.

Collaboration Efforts

- The HEC Program collaborates with the Alliance for Deaf Services (ADS) to provide the program to customers who are deaf or hard of hearing. Energy Specialists have a video remote tablet that provides live interpreting. Customers can ask questions and receive answers easily.
- Through an HEC program collaboration with the American Red Cross the HEC program was able to install smoke alarms in homes that need them.

Lessons Learned

- Customer questions about programming thermostats come in the change of season. Customers misplace or discard program leave behind materials that have instructions to change the thermostat season. To help customers change from season to season, a shoulder season letter with how to

instructions was sent proactively to everyone that received a programable thermostat making it easy for the customer to change their thermostats from heat to cool or cool to heat.

Spend and Verified Net Savings Results

- DTE Electric spent \$4.0 million on the HEC Program. This amount was \$1.2 million more than the \$2.8 million planned.
- DTE Electric saved 8.3 GWh of verified net energy savings. This was 3.6 GWh more than the 4.7 GWh planned.
- DTE Gas spent \$2.6 million on the HEC Program. This amount was \$.1 million more than the \$2.5 million planned.
- DTE Gas saved 116.6 MMcf of verified net energy savings. This was 15 MMcf more than the 101.6 MMcf plan

Chart 27 summarizes the spending and verified net savings results. (Does not include low-income homes.)

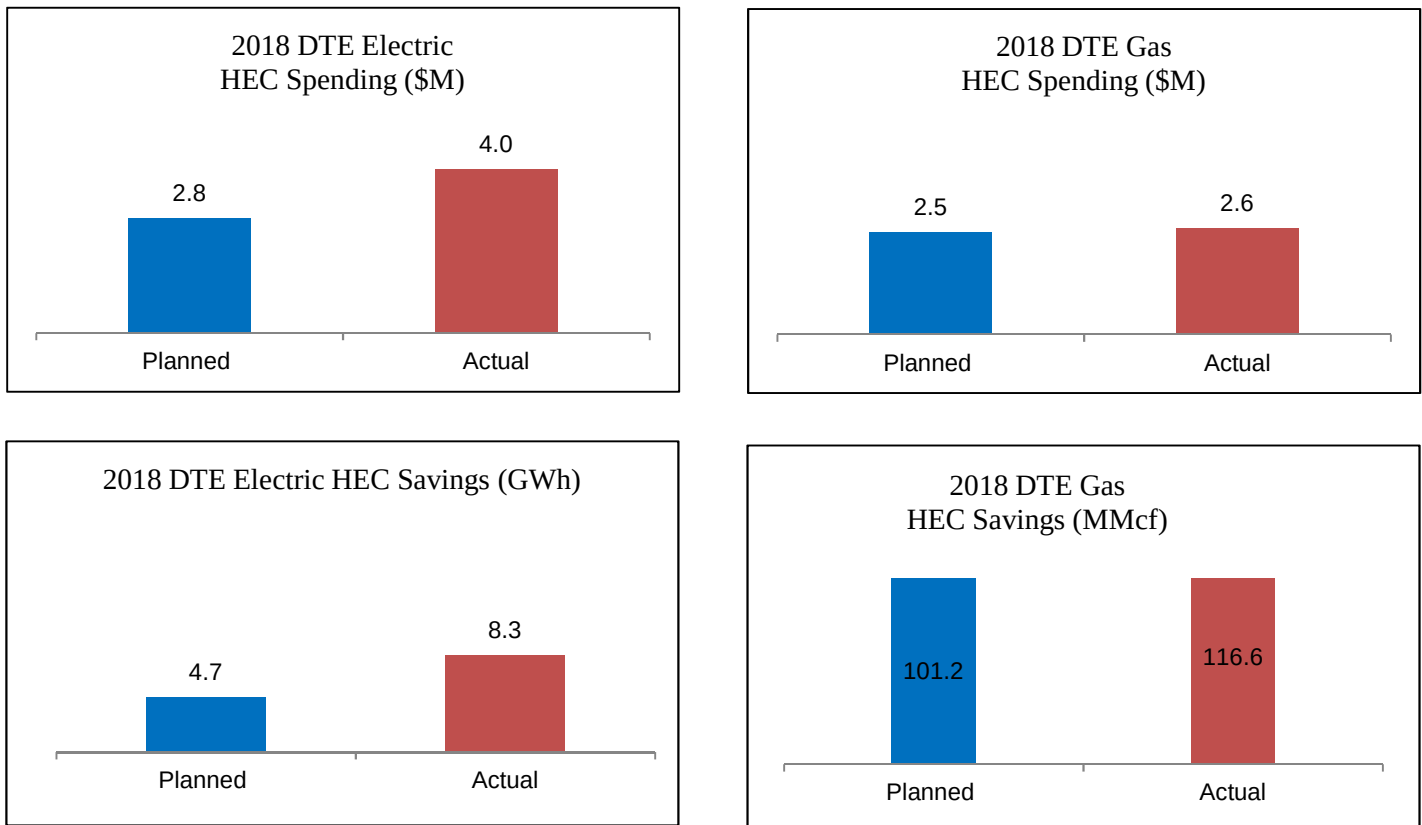


Chart 27 – 2018 HEC Program Spending and Verified Net Savings

Program Participation

Chart 28 summarizes the number of customers who have participated in the HEC Program, excluding low-income HEC participants. Low income segment customers are counted in the 2018 numbers on **Chart 31**.

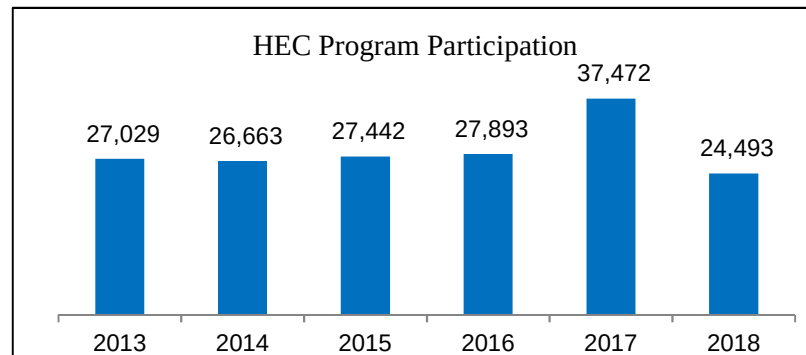


Chart 28 – HEC Program Participation

Program Outlook

- The HEC Program is looking to leverage its high-quality customer touch to create continuing customer engagement in 2019.
- The Alliance for Deaf Services outreach has been extended through 2019.
- In 2019, the program is adding Tier 1 power strips to the compliment of measures for low income customers.

Multifamily Program (DTE Electric and DTE Gas)

Program Description

The objective of the Multifamily Program is to produce energy savings in multifamily buildings with three or more units under one contiguous roof through the direct installation of energy saving measures. Typical in-unit measures include LEDs, LED night lights, energy efficient showerheads, energy efficient kitchen and bath aerators, programmable thermostats and pipe wrap insulation where the units have electric water heating. There is no cost for the in-unit installations. Energy efficiency education is also delivered at all phases of the project to property owners, managers and to individual tenants. Since the Multifamily Program is a direct-install program, tenants do not receive incentive payments.

The Multifamily Program has a common area rebates as well as direct installations. Typically, building owners receive rebates and are responsible for paying a portion of the cost of the installed common area measures. Energy savings and costs for measures installed in the common areas are included in the C&I prescriptive program for reporting purposes. Direct install measures include LEDs, incandescent exit sign bulb replacements, faucet aerators, and pipe wrap for qualified properties at no cost to customers.

Highlights

- 8,800 multifamily units received direct install energy efficient measures.
- 38 electric “common area” jobs were completed.
- 72 gas “common area” jobs were completed.

Challenges

- The Multifamily Program faces diminishing direct install opportunities as the program matures. Finding new properties willing to participate that have previously not participated is getting difficult.
- Untouched properties are smaller in size, so less savings per property is achieved.
- Revisiting properties we have already completed direct install and installing new measures has lower opportunity for savings than properties that have never participated in the program before.

Accomplishments

- All responsibilities outlined in the settlement agreement were achieved by the program.

Collaboration Efforts

- The Multifamily Program collaborates with Consumers Energy to perform direct install measures. Working together to jointly serve utility customers maximizes customer participation and satisfaction as follows: There are fewer visits and less disruption to owners and tenants. It helps make both programs more attractive to potential customers. It increases market reach for both teams.
- Shared learnings among the parties (DTE, Consumers, Walker-Miller Energy Services and Franklin Energy Services).
- During 2018, over 2,900 collaborative units were completed.

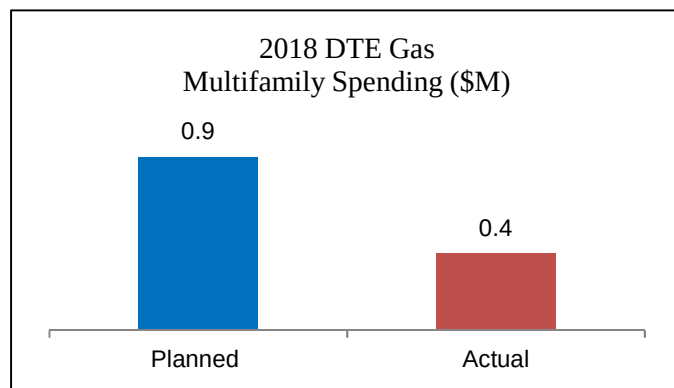
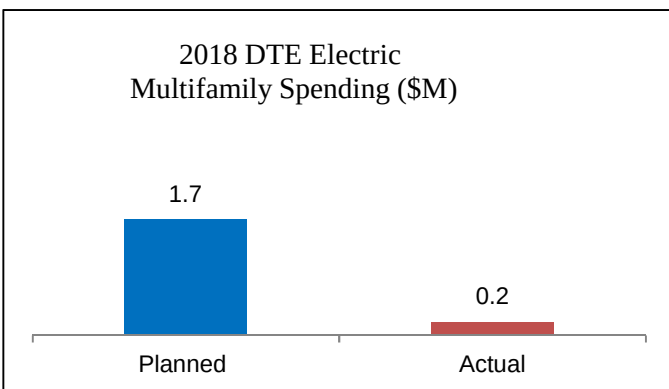
Lessons Learned

- As the program matures, direct install measure opportunities decrease as do the remaining untouched property sizes, making it more difficult to meet energy savings goals.
- Low income properties have opportunity for common area improvements.

Spend and Verified Net Savings Results

- DTE Electric spent \$0.2 million on the Multifamily Program. This was \$1.5 million less than the planned 1.7 million.
- DTE Electric saved 1 GWh of verified net energy savings with the Multifamily Program. This was 1.1 GWh less than planned 2.1 GWh.
- DTE Gas spent \$0.4 million on the Multifamily Program. This amount was \$0.5 million less than the planned \$0.9 million.
- DTE Gas saved 9.3 MMcf of verified net energy savings. This was 16.1 MMcf less than the planned 25.4 MMcf.

Chart 29 summarizes the 2018 DTE Electric and DTE Gas spend and verified net savings results for the program (does not include low-income multifamily units).



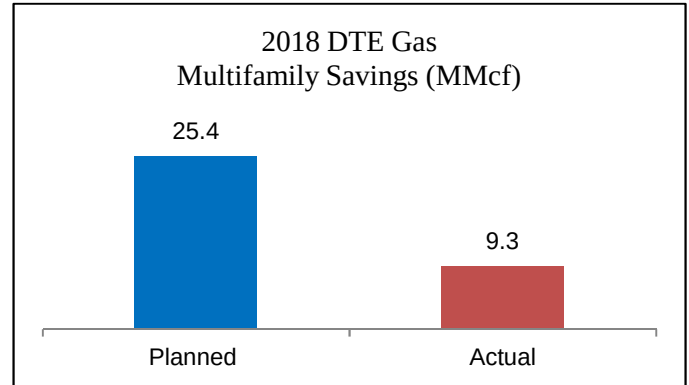
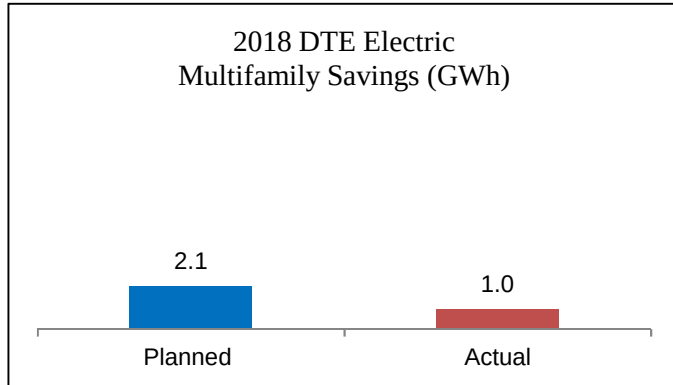


Chart 29 – 2018 Multifamily Program Spending and Verified Net Savings

Program Participation

- **Chart 30** summarizes the number of customers who have participated in the Multifamily Program, excluding low- income multifamily units. Low income segment customers are counted in the 2018 numbers on **Chart 31**.

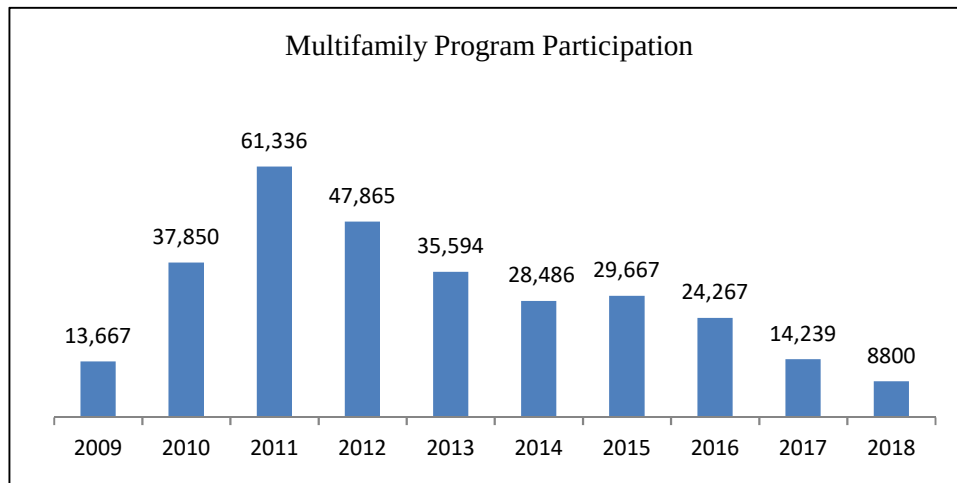


Chart 30 – Multifamily Program Participation

Program Outlook

- In 2019, we are implementing a low-income multifamily program with much higher rebates than non-low-income to stimulate deeper savings.

Low-Income Program (DTE Electric and DTE Gas)

Program Description

The objective of the Low-Income Program is to provide recommendations, direct installation of qualified EWR measures and education to income-qualified DTE customers in order to assist them in reducing their energy use and managing their utility costs. The program leverages the services provided by member agencies of the Michigan Community Action Agency Association (MCAAA), municipalities, counties, public housing commissions, faith-based institutions, community development corporations and nonprofit organizations with existing housing and energy programs. It also works with a select number of independent contractors when needed. This vast network of participating organizations not only offers comprehensive assistance, but also assists DTE in identifying low-income qualified customers. The residential Low-Income Program also was designed to include customers residing in designated low-income multifamily units.

DTE does not pay incentives directly to its income-qualified customers. The Low-Income Program delivers “incentive” funding to these customers through a variety of in-kind services. The services include deep savings measures such as weatherization, furnace tune up and replacement, insulation, water heater replacement plus the replacement of inefficient refrigerators with ENERGY STAR® model refrigerators in single-family homes and low-income multifamily dwellings, and in-home consultation and installation of energy-efficient measures through the Home Energy Consultation (HEC) Program for income-qualified customers. Low-cost measures such as LEDs, pipe wrap, energy efficient showerheads and faucet aerators are installed at no cost to low-income multifamily tenants. The low-income multifamily program also expanded its measure offerings to multifamily tenants to include more expensive items, such as refrigerators, also at no cost to the customer. In addition to the measures installations, some customers that are identified as low-income have been selected to receive the Home Energy Report behavioral treatment.

Highlights

- The program offers a wide range of whole home, home performance-oriented energy-efficient measures to low-income households.
- The energy efficiency improvements made to homes with support from this program included installation of ENERGY STAR® certified LED light bulbs and refrigerators, hot water pipe wrap insulation, energy efficient showerheads and kitchen and bathroom faucet aerators, insulation (of attic, wall, band joist and mobile home belly among other areas), and programmable thermostats; improvements made also included sealing cracks to reduce air leakage, water heater replacement, and heating system tune-ups or replacements (where health and safety issues were present).
- In 2018, the program continued to expand its network of community action agencies, nonprofit organizations, and local units of government to increase program participation across the state.
- There were over 55,000 participants to receive the Home Energy Report behavioral treatment.
- Over \$2,000,000 in low-income single-family spending for compliance with 2018-2019 rate case settlement
- Over \$2,250,000 in additional funding was invested into low income programs to broaden the program reach
- The program provided LEDs to the food bank distribution program.

Challenges

- Midyear investments into the program were slower to ramp up than expected due to additional contractor and agency onboarding, training and timing constraints.
- Food pantries and local community organizations needed an easier way to request energy efficient lighting packages so that packages go to where they are most needed.

Accomplishments

- Over \$2,000,000 in low-income single-family spending supports compliance with 2018-2019 rate case settlement.
- An additional \$250,000 in low-income multi-family spending supports compliance with 2018-2019 rate case settlement.
- Distributed over 200,000 LED bulbs to approximately 10,000 low-income customers in partnership with local food banks.
- Worked with a network of community action agencies, nonprofit organizations and local government agencies to fulfill nearly 4,295 requests for funding of home weatherization and furnace tune-ups or replacements.
- Provided over 2,700 customers with new ENERGY STAR® certified refrigerators to replace their old, inefficient refrigerators.

Collaboration Efforts

- The program continued to work with DTE's Low-Income Self Sufficiency Plan to provide utility bill assistance program customers with whole home energy upgrades; this effort is continuing to help low income families lower their bills and move toward self-sufficiency.
- The program developed a collaboration with The Heat and Warmth Fund (THAW). This pilot focused on creating an agency partner who was able to coordinate direct installations while at the same time providing bill assistance in one package.

Lessons Learned

- Quality assurance and control processes and customer follow up help ensure the best energy efficiency installations and service for DTE's low income customers.
- The program is enhanced when landlords contribute toward heating and cooling system upgrades (among others) that improve their property, reduce maintenance costs, and lower bills for their low-income tenants.
- With commitment, preparation and training for participating organizations, the program is able to evolve and provide a higher level of customer service and energy savings and support better program planning.
- New lead generation methods and innovative service delivery channels can help serve more low-income people with energy savings opportunities.
- Participating organizations can learn from each other about creative ways to link and combine various funding mechanisms to serve more limited-income customers.

Spend and Verified Net Savings Results

- DTE Electric spent \$13.8 million on the Low-Income Program. This amount was \$2 million more than the \$11.8 million planned.
- DTE Electric saved 26.5 GWh of verified net energy savings. This was 3.2 GWh more than the 23.3 GWh planned.
- DTE Gas spent \$6.1 million on the Low-Income Program. This amount was \$1.5 million lower than the \$4.6 million plan.
- DTE Gas saved 163.5 MMcf of verified net savings. This was 1 MMcf more than the 162.5 MMcf plan.

Chart 30 summarizes the spend and verified net savings results, which include the Low-Income portion of the Behavior, Multifamily and Home Energy Consultation options.

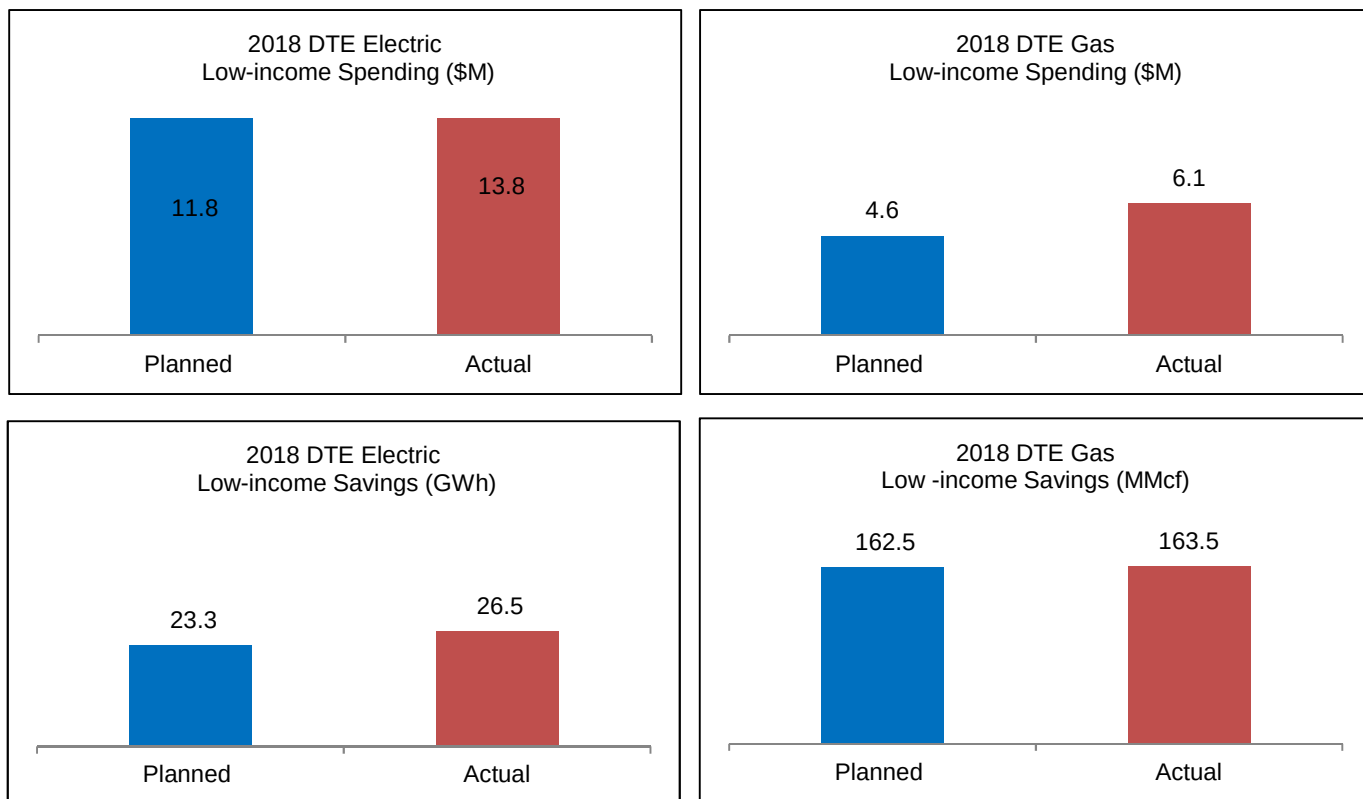


Chart 30 – 2018 Low-Income Program Spending and Verified Net Savings

Program Participation

- Customer participation in the program continued to increase significantly in 2018 due to the continuation of Behavior as a Low-income Program offering.

Chart 31 summarizes the number of customers who participated in the program each year. The numbers include the Low-Income portion of the Behavior, Multifamily, Non-profit, and Home-Energy Consultation Programs.

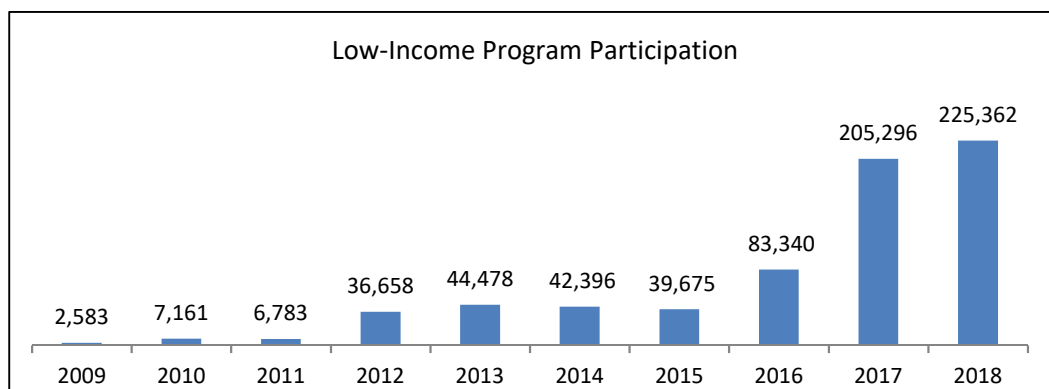


Chart 31 – Low-Income Program Participation

Program Outlook

- DTE Electric and DTE Gas spending and savings are expected to stay flat beyond 2018.

Residential Emerging Measures & Approaches

Program Description

The residential Emerging Measure and Approaches (EM&A) promotes the installation of energy efficient technologies that have recently been commercialized in DTE's residential program offerings. The EM&A program in 2018 included the Revolving Loan Fund program.

The Revolving Loan Fund program is designed to serve customers that are not eligible to participate in the Low-Income program but still are facing financial challenges in participating in the normal programs. This program targets customers that are above 200% Federal Poverty Levels (FPL) but are below 300% FPL.

Customers with incomes over 200% FPL but less than 250% FPL will have customized grant/loan split developed that allows customer to make major energy efficiency upgrades and be annually cash flow neutral between the energy savings and loan payment.

Customers with incomes over 250% FPL but less than 300% FPL will be provided a grant/loan split of 50% each.

The program began its foundational design phase in 2018. Program participation, and therefore the installation and financing of energy efficient measures will begin in 2019.

Highlights

- Customers that have been traditionally underserved will have an option to participate.
- The Revolving Loan Fund program will offer customer financing option paired with grants amounts that provide an opportunity for these customers to participate..
- DTE has committed to operate this program for four years.

Challenges

- Until cost effectiveness is better understood in the portfolio, the program is limited in size to 25-30 participants per year.

Accomplishments

- DTE is unaware of this program design elsewhere.

Collaboration Efforts

- The Revolving Loan Fund program is being operated with the Michigan Saves.

Lessons Learned

- Program success will be dependent of both the customer engagement as well as engagement from trade allies willing to be paid through external financing as well as the verification requirements that are associated with the program.

Spend and Verified Net Savings Results

- DTE Electric spent \$250,000 toward the funding and administration of the program in 2018.
- There were no savings associated with the program in 2018, as no measures were installed at that time.

Chart 32 summarizes the spend and verified net savings results.

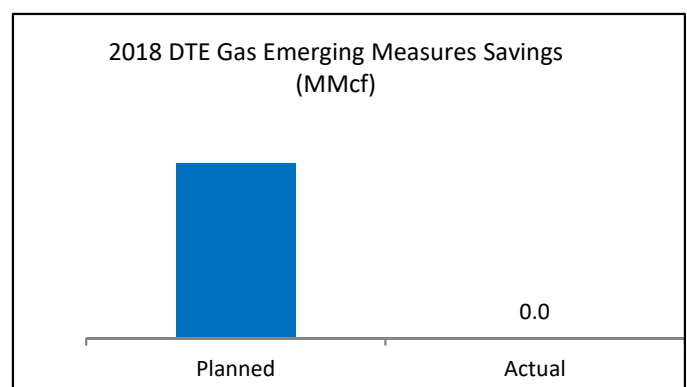
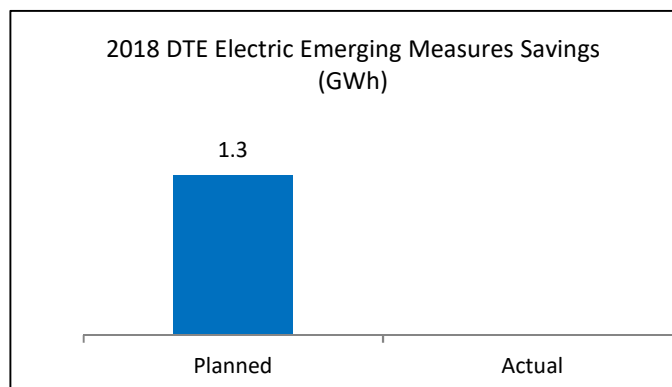
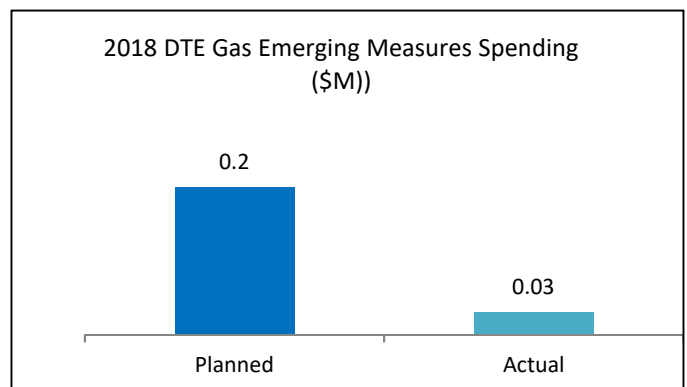
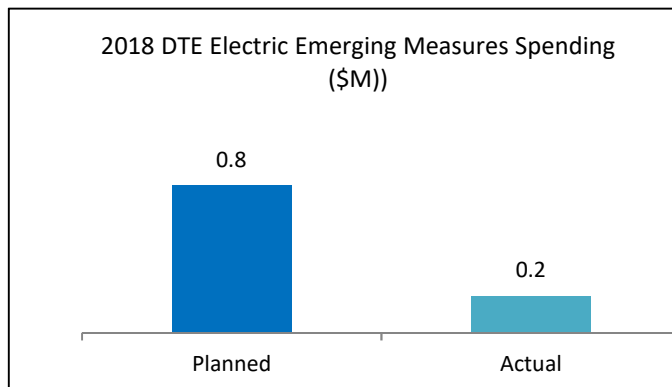


Chart 32 – 2018 Emerging Measures and Approaches Program Spending and Verified Net Savings

Program Outlook

- DTE Electric and DTE Gas spending and savings for the Emerging and Measures program are dependent on the pilots that are found to be ready for commercialization.

Commercial & Industrial (C&I) Programs (DTE Electric and DTE Gas)

The goal of C&I Programs is to provide incentives to encourage customers to install more energy- efficient equipment to reduce their overall energy consumption and save on their energy bills. DTE customers can take advantage of incentives for energy efficient upgrades tailored to reduce energy use in their business, improving their bottom line. The C&I EWR Programs offer customers incentives to replace existing equipment and fixtures with new energy efficient equipment and incentives for designing and building new and/or remodeling projects that are energy efficient.

There are two main C&I incentive programs: C&I Prescriptive and C&I Non-Prescriptive. Both aim to influence customers to purchase and install equipment of higher efficiency than they would likely do otherwise. DTE commercial and industrial customers can apply for energy efficiency incentives under these programs. As part of DTE C&I Emerging Measures and Approaches, DTE has commercialized Midstream Lighting program and Business Energy Consultation (BEC) to our small-to-medium business customers. Retro Commissioning was a commercialized program but has now been brought back to Pilots to be re-engineered.

Key C&I marketing channels included DTE account managers who are responsible for assigned C&I business customer relationships, Energy Partnership & Services' energy managers, Product Knowledge workshops, DTE Energy's annual energy efficiency conference, and trade allies who market energy efficiency technology directly to customers. Other materials and mechanisms used to educate, and drive awareness were the DTE Energy website, training seminars, technical support, press and periodicals. Throughout the year, program presentations were made to customers; associations/organizations; city, state and federal government agencies; and vendors, contractors, engineering and architecture firms.

For the Prescriptive and Non-Prescriptive programs, DTE used the same implementation contractor (IC) in 2018 that was used to implement the C&I EWR Programs in 2009 – 2017, DNV-GL. As the C&I IC, DNV-GL currently provides operational support including application review and processing, rebate fulfillment, call center operations and tracking of results, and customer satisfaction surveys for the program.

To encourage an equitable distribution of funds among as many DTE customers as possible, incentives are subject to annual limits and caps. Customers could receive payments up to the cap, but not more than \$1,000,000 per customer for electric customers and \$300,000 for natural gas customers within a single program year. To further ensure incentive funds are used by many customers, special offers are established will also have funding participation limits and a time duration.

Table 7 displays the program year incentive limits. Actual payments per customer's facility determine incentive limits regardless of whether the incentive is paid directly to the customer or to an intermediate party, such as the contractor performing the service for the customer.

	Electric	Gas
Customer	\$1,000,000	\$300,000

Table 7 – 2018 C&I Incentive Caps

The Prescriptive Program application outlines incentive payments for applicable measures. Prescriptive incentives can include both the cost of the measure and labor required to install the measure. For custom projects, project incentives cannot exceed 50 percent of the total custom project cost to purchase and/or install the eligible energy efficiency measure(s). Several proactive specials were launched in 2018 to create broader customer participation. These included the promotion of Gas Express Program, boiler tune-ups and stream traps, a LED Streetlight Program; and DLC LED Lighting Special.

In 2018, EWR C&I Programs performed well. In total, the EWR C&I Programs achieved 370.6 GWh of verified net electric savings, which was approximately 4 percent above the 2018 plan of 357.6 GWh, and 722.3 MMcf of verified net gas savings, which is approximately 11 percent more than the 653 MMcf plan.

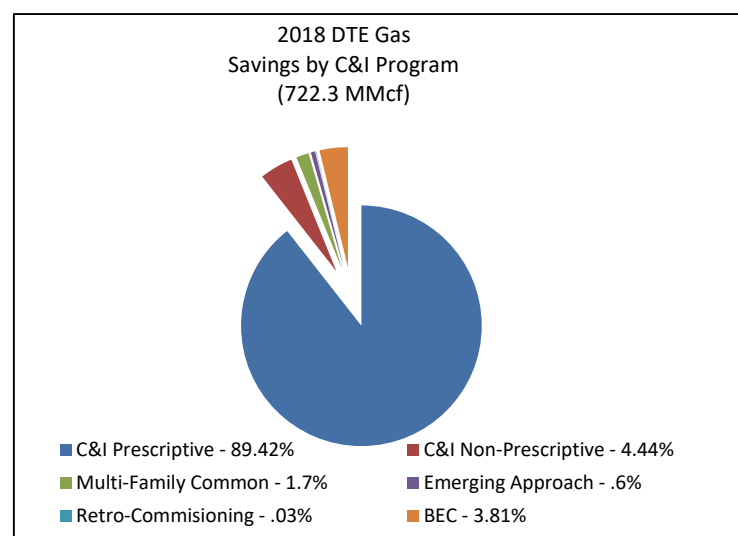
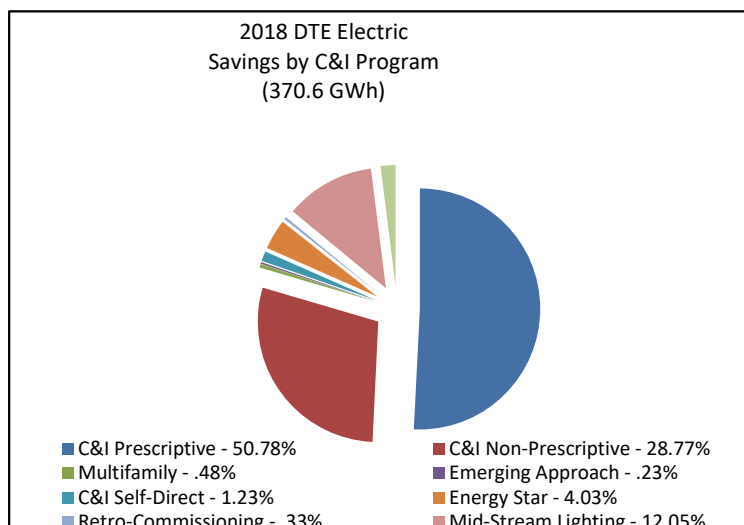
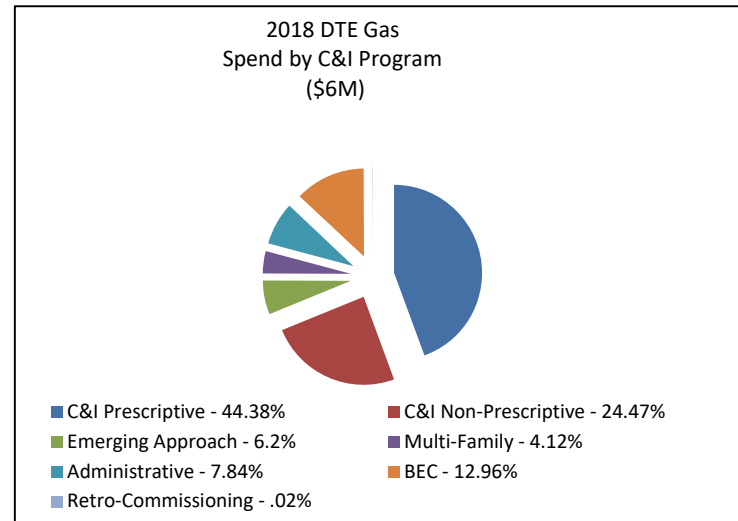
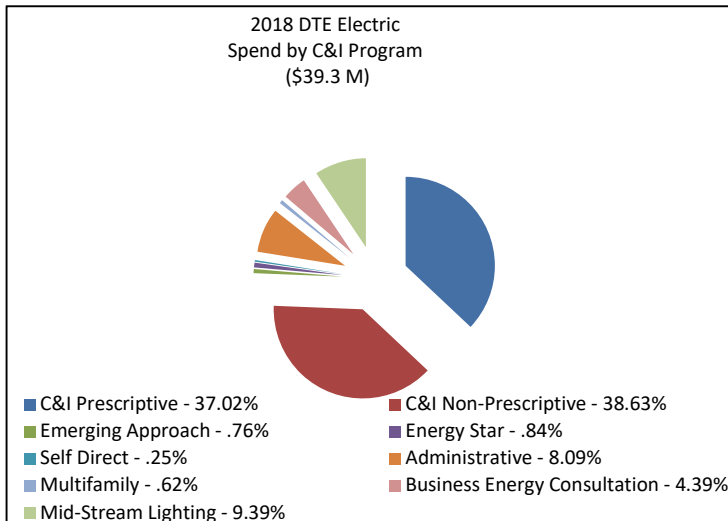


Chart 34 – 2018 C&I Spending and Verified Net Savings

Chart 34 is a summary of the spending and verified net energy savings achieved by each EWR C&I Program in 2018 with the following assumptions:

- DTE Electric includes spend and verified savings for the C&I Prescriptive, Multifamily Commercial, ENERGY STAR®; C&I Non-prescriptive; Emerging Measures & Approaches (includes Midstream Lighting, Midstream Food Service, and Business Energy Consultation), along with planned savings and spend for the Self-Direct Program.
- DTE Gas includes spend and verified savings for C&I Non-prescriptive, Prescriptive, Multifamily, and Emerging Measures & Approaches (includes Midstream Food Service and Business Energy Consultation.) No customers participated in the gas Self-Direct option.

Chart 35 summarizes the electric and gas spending and verified net energy savings for the entire 2018 EWR C&I Program.

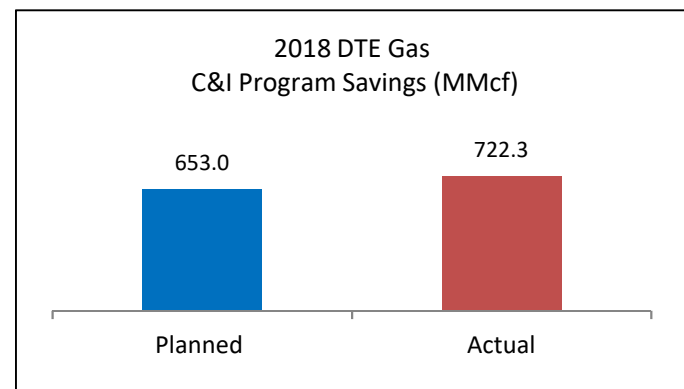
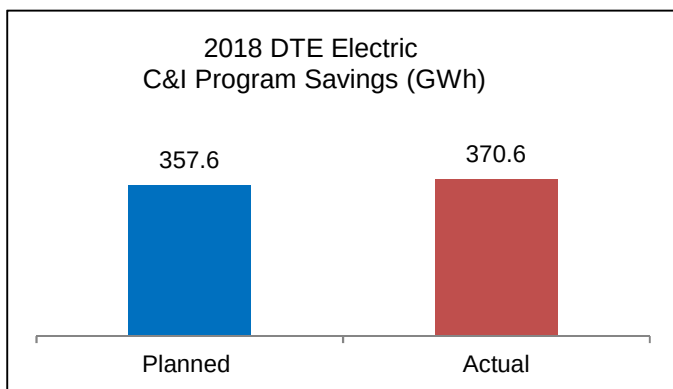
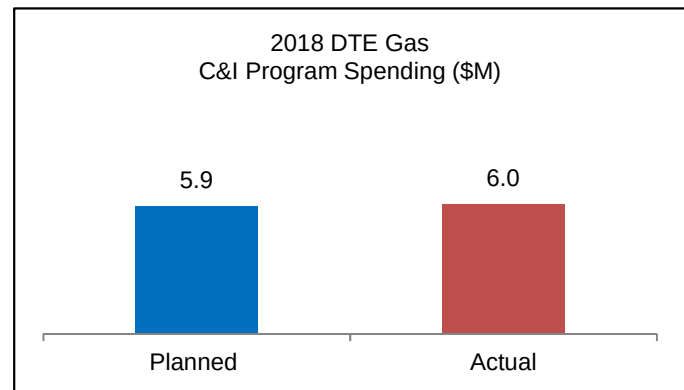
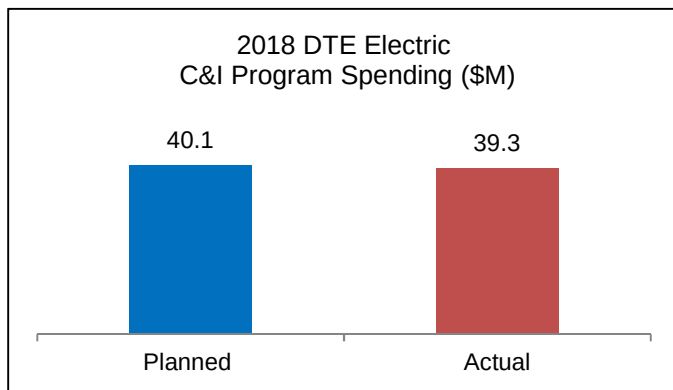


Chart 35 – 2018 C&I Program Spending and Verified Net Savings

The C&I Programs received high customer satisfaction scores in 2018 as 93 percent of customers responded with “satisfied” or “extremely satisfied” ratings. In 2018, 203,526 customer applications were part of the C&I Electric and Gas Programs.

Chart 36 summarizes the number of customers participating in each of the C&I Program categories

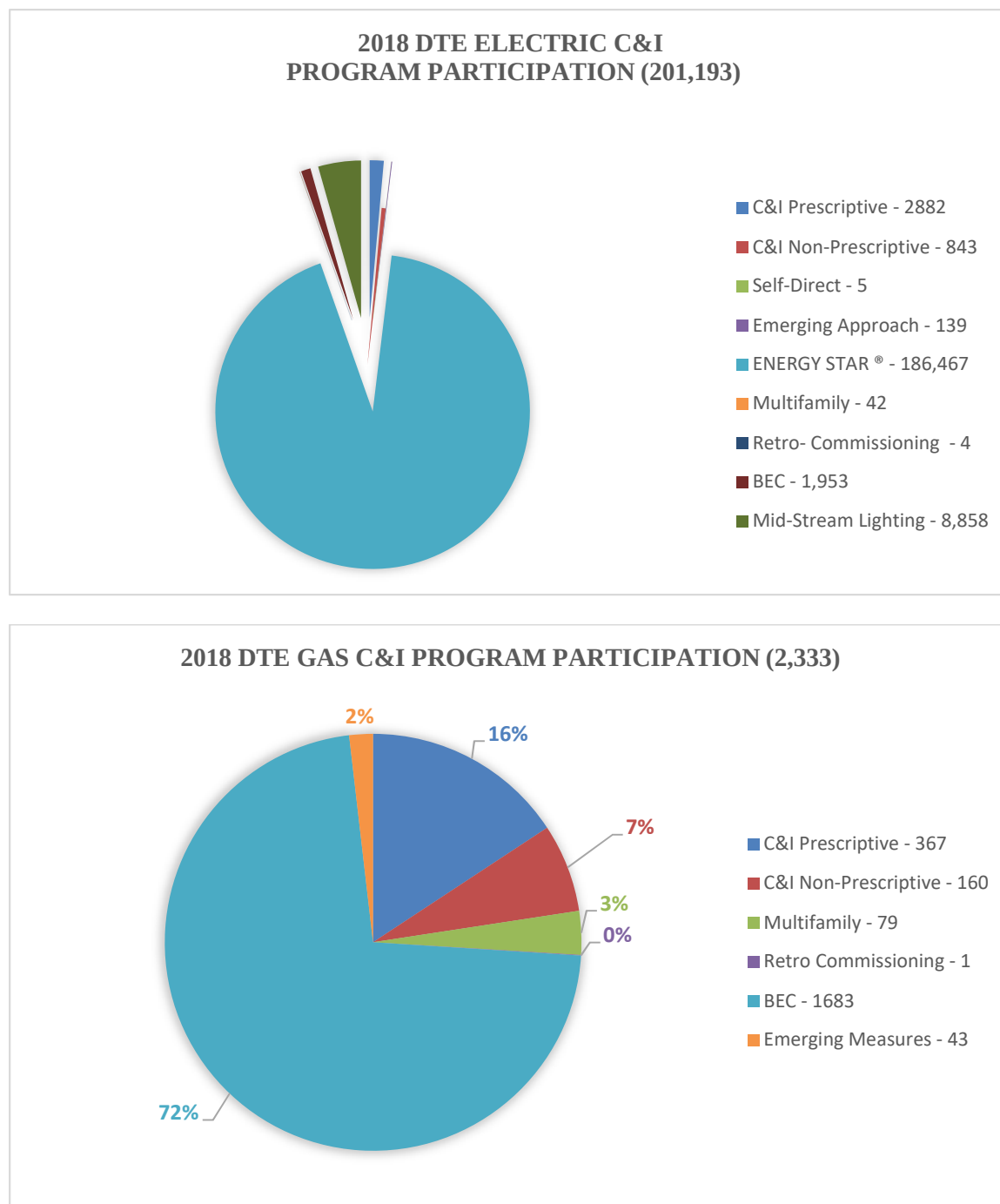


Chart 36– C&I Program Participation

Commercial & Industrial (C&I) Prescriptive Program (DTE Electric and DTE Gas)

Program Description

The objective of the C&I Prescriptive Program is to provide predetermined measures and incentives to C&I customers for the installation of energy efficient equipment. These incentives were designed to encourage commercial and industrial business customers to install energy efficient measures in existing facilities in an effort to reduce overall energy consumption and save money on their energy bills.

C&I Prescriptive categories of energy efficient equipment for numerous applications, include but not limited to: LED lighting and fixtures, control systems, HVAC, refrigeration and food service equipment. Incentives apply to qualified equipment commonly installed in a retrofit or equipment- replacement project and are paid based on the quantity, size and efficiency of the technology installed. Prescriptive incentives take the form of rebates paid after the installation of eligible measures.

The C&I electric and gas Prescriptive Programs include more than 400 prescriptive measures. The primary measures implemented include lighting fixtures, lamps, LED lighting systems and controls; motors and variable-speed drives, food service and refrigeration equipment, air conditioning and ventilation equipment, boiler tune ups, and other common energy-efficient equipment. Additionally, the savings and spend for commercial common areas of the Multifamily Program and the ENERGY STAR® retail lighting program are included as C&I Prescriptive components. Property owners are encouraged and provided with incentives to install energy- efficient equipment in the common areas (e.g., hallways, stairwells and parking lots) of their building(s). Examples of common area measures implemented during 2018 include interior lighting replacement, parking lot lighting, LED exit signs and controls.

Highlights

DTE Electric

- Prescriptive program offers more than 400 electric prescriptive measures in addition to its custom measures.
- Prescriptive measures generated 51 percent of electric savings in 2018.
- As a measure category, lighting continues to be a leading prescriptive measure.
- Michigan Saves financing option was used on over 181 projects.
- An Agricultural Program offering is available to serve the agricultural industry.
- The greatest electric savings (more than 50%) percent) came from combined Industrial businesses.

DTE Gas

- Prescriptive program offers more than 50 gas prescriptive measures in addition to its custom measures.
- HVAC system measures such as process controls, energy management systems, boiler/furnace tune ups and steam traps accounted for the largest percent of gas savings.
- The greatest prescriptive savings came from process, HVAC controls and Boiler/furnace tune-ups.
- The Agricultural Program offering continues to target the agricultural industry.

- The greatest gas savings (over 60 percent) came from the following vertical markets; light industry, heavy industry and offices.

Challenges

- Penetrating the multifamily market with EWR Programs has been challenging.
- Decision-makers for these properties are often hesitant to invest in energy efficiency measures when the benefits are shared among the tenants and property owners, but the investment is wholly borne by the owner.
- Installing energy- efficient measures as an investment helps multifamily property owners and managers enhance the value and marketability of their properties while reducing their energy-related operating expenses.
- Smaller business customers require different strategies and tactics than larger Commercial & Industrial customers.
- Creating awareness and assisting the agricultural industry regarding the Agricultural Program offering.

Accomplishments

- Continued the electric and gas agricultural program offering for the agricultural industry.
- Provided customers with an energy assessment to give them a solid foundation to begin their energy efficiency journey.
- Municipalities and Michigan Department of Transportation (MDOT) continued their street lighting replacement momentum with more efficient, longer life LED lamps.
- Completed 78 C&I customer energy assessments which included 12 Strategic Energy Plans

Collaboration Efforts

- Worked to promote energy efficiency with Michigan Saves and Property Assessed Clean Energy (PACE) by co-presenting at events and sharing materials with customers.
- Collaborated with Michigan Saves to offer low cost financing to Michigan customers.
- Sponsored and participated in the Michigan C&I Energy Conference with Efficiency UNITED.

Lessons Learned

- Small business customers are receptive to learning about the benefits of EWR measures.
- Direct Install Programs can be effective in increasing participation with small business customers, but they cost more.
- Providing small-to-medium business customers with an energy assessment provides them a prioritized foundation to begin their energy efficiency journey.
- Touching the largest number of small businesses will require multiple marketing strategies and potentially, additional resources.

Spend and Verified Net Savings Results

DTE Electric Prescriptive Program

- DTE Electric spent \$14.5 million on the C&I Prescriptive Program. This amount was \$1.1 million more than the approved 2018 EWR plan. The Prescriptive program underspend was allocated to the Emerging Measures and Approaches.

- DTE Electric Prescriptive saved 188.2 GWh of verified net energy savings. This was 44.2 GWh more than the approved 2018 plan.
- \$1.8 million was spent on the C&I component of Multifamily Program for common area measures; \$0.3 million was spent on C&I component of the ENERGY STAR® Retail Lighting program.
- Energy saved was approximately 1.8 GWh for the Multifamily Program and 14.9 GWh for the Retail Lighting program.

DTE Gas Prescriptive Program

- DTE Gas spent approximately \$2.6 million on the C&I Prescriptive Program which was around \$30,000 less than the approved 2018 plan.
- DTE Gas saved 645.9 MMcf of verified net energy savings. This was 357.6 MMcf more than the approved plan of 288.3 MMcf.
- \$0.2 million was spent on the C&I component of the Multifamily Program for common area measures.
- Energy saved was approximately 12.2 MMcf for the Multifamily Program.

Chart 37 summarizes the spending and verified net savings results for the DTE Energy C&I Prescriptive Program and includes the C&I portion of the Multifamily and ENERGY STAR® Retail Lighting Programs.

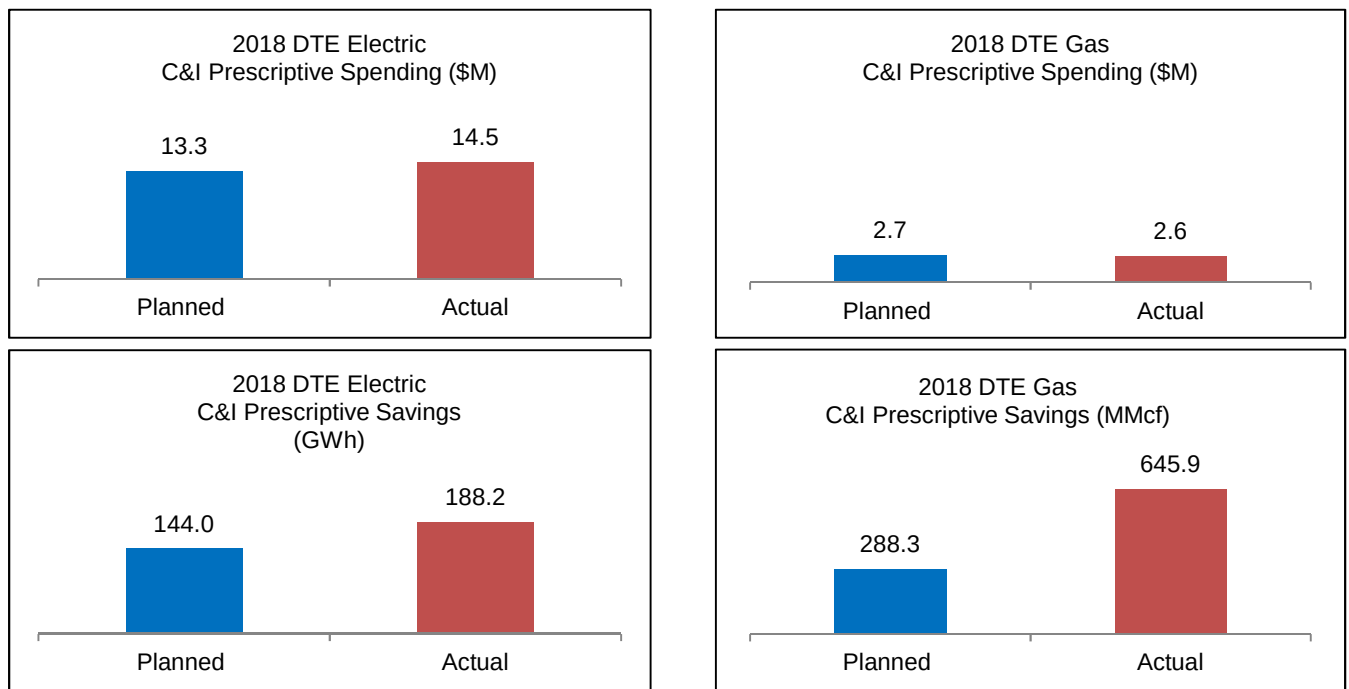


Chart 37 – 2018 C&I Prescriptive Spending and Verified Net Savings

Program Participation

- There were 1918 customer applications in 2018 for the Electric C&I Prescriptive Program and an additional 42 multifamily applications.

- The gas C&I Prescriptive Program had 324 customer applications and an additional 79 multifamily applications.

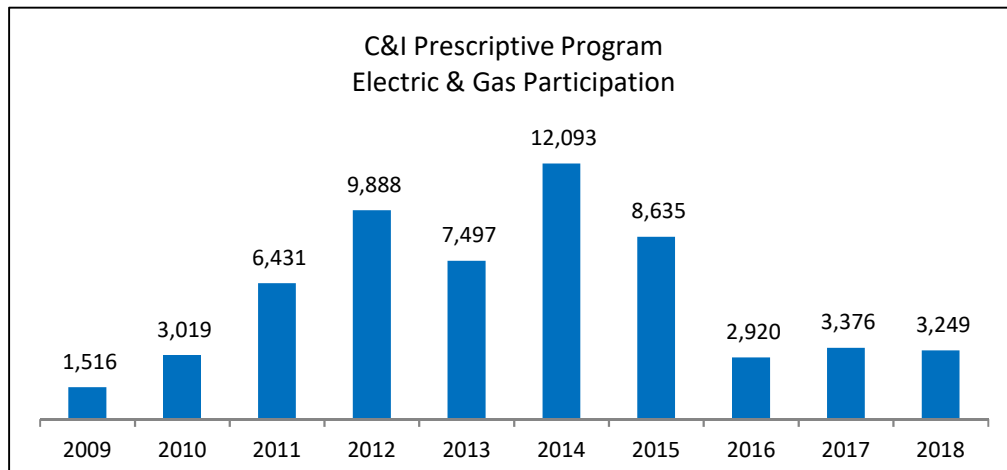


Chart 38 – C&I Prescriptive Program Participation

Program Outlook

- Electric C&I Prescriptive Program will continue to be driven by lighting system measures.
- Gas Prescriptive Program will continue to be driven by HVAC system measures.
- Continue launching campaigns with specific measures to targeted vertical markets.
- Increase small-to-medium sized business customer energy assessments to provide them a prioritized energy efficiency foundation.

Commercial & Industrial (C&I) Non-Prescriptive Program (DTE Electric and DTE Gas)

Program Description

The C&I Non-Prescriptive Program promotes the installation of energy efficient technologies among DTE's commercial and industrial customers. The program's components include custom measures and Request for Proposal (RFP). The program provides incentives to customers for measures installed in qualified projects that are less common or more complex than the Prescriptive measures. As with Prescriptive incentives, custom incentive payment occurs after the equipment is installed and operational at the customer's location.

The objective of the C&I Non-Prescriptive Program is to provide customized incentives to C&I customers for the installation of innovative and unique energy efficiency equipment and controls that decrease the consumption of electricity or gas. Examples of C&I Non-Prescriptive Program measures implemented during 2018 include energy management system controls on condenser and chilled water pumps, cooling tower replacement with energy efficient motors and variable frequency drives, demand control ventilation (DCV) mechanical systems and custom lighting projects with extended hours of use. Measures that were not eligible for an incentive include fuel switching (i.e., electric to gas or gas to electric), changes in

operational and/or maintenance practices or simple control modifications not involving capital costs, on-site electricity generation, projects that involve peak-shifting and not kWh savings, projects involving renewable energy and projects in which the payback did not meet the C&I Non-Prescriptive requirements.

Measure incentives were based on the first 12-month estimated energy savings. The electric Non-Prescriptive Program incentive was \$0.05 per kWh. The gas Non-Prescriptive Program incentive was \$3.50 per MMcf. To qualify for the incentive, projects required a one-year to eight-year simple payback for electric and minimum of one-year simple payback for both gas and electric projects, while a maximum of eight-year payback for electric projects only. Additionally, incentives are capped at 50 percent of the total project cost.

Highlights

DTE Electric

- The C&I Non-Prescriptive program is comprised of two components; Custom and RFP.
- Non-Prescriptive measures generated 29 percent of electric savings in 2018.
- Over 30 percent of the Non-prescriptive savings were attributable to non-traditional LED lighting system installations.
- Lighting systems continue to be the largest non-prescriptive measure installed
- The greatest electric savings (nearly 60 percent) came from the following vertical markets; Industry, Small Retail and Large Office.

DTE Gas

- The C&I Non-Prescriptive Program is comprised of two components; Custom and RFP.
- Approximately 4 percent of the DTE Gas program savings were attributable to the Non-Prescriptive Program.
- HVAC gas measures remain an integral part of the total Non-Prescriptive Program.
- The greatest gas savings (over 60 percent) came from large industrial, light industrial and the office markets.

Challenges

- Large gas customer projects require larger incentive amounts to achieve a reasonable rate of return before the customer will even consider making the improvements.
- Larger gas projects require longer lead times.
- Effectively increasing small business participation.
- Small business customers require different strategies and tactics than larger commercial & industrial customers.
- Creating awareness and assisting the agricultural industry regarding the Agricultural Program offering.

Accomplishments

- Municipalities' street lighting conversions to LED remained strong.
- Michigan's favorable economic climate continued, therefore customers continued to take advantage of the Energy Efficiency program

- Provided small business customers with an energy assessment to assist them in building a solid prioritized energy efficiency foundation.
- Continued to maintain a relevant Trade Ally Directory.

Collaboration Efforts

- Collaborated with Efficiency UNITED and participated in the Michigan Commercial and Industrial Energy Conference. Two sessions were held; one in Harris, MI. and the other in Battle Creek, MI.
- Worked to promote energy efficiency with Michigan Saves and PACE by co-presenting at events and sharing materials with customers.
- Collaborated with Michigan Saves to offer low cost financing to Michigan customers
- Sponsor and participate in advancing Michigan's lighting control efforts through Lighting Technology Energy Solutions (LiTES) with a funding grant from the Department of Energy and being implemented by DTE Energy, Next Energy and Consumers Energy.

Lessons Learned

- Customers will always be looking for “a deal”; therefore, special programs and limited-time offers will continue to generate interest and participation.
- Small business customers are receptive to learning about the benefits of EWR measures.
- Direct install programs are not necessarily a cost-effective measure for small business customers
- Providing small business customers with an energy assessment provides them a prioritized foundation to begin their energy efficiency journey
- Touching the largest number of small businesses will require a multiple marketing strategies and potentially additional resources

Spend and Verified Net Savings Results

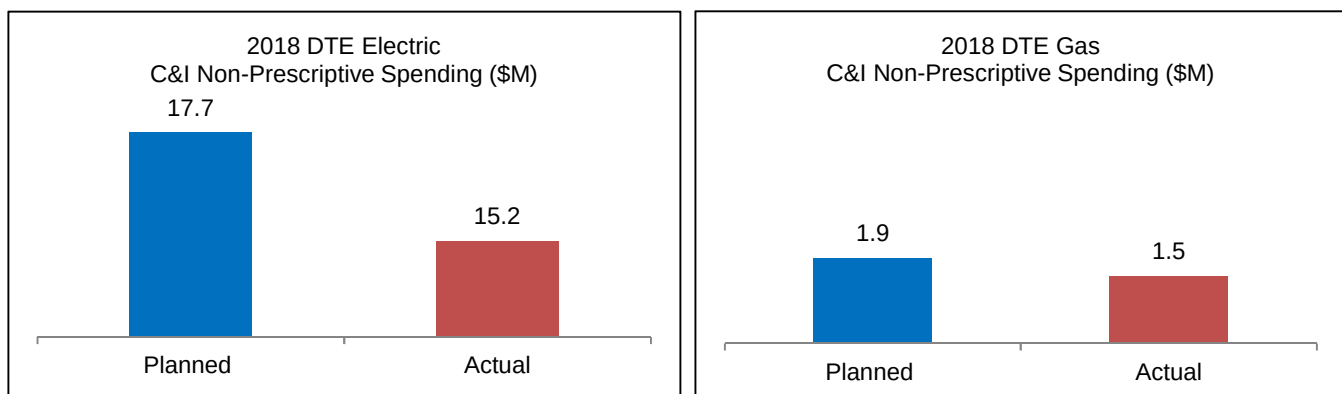
DTE Electric

- DTE Electric spent \$15.2 million on the C&I Non-Prescriptive Program. This amount was \$2.5 million less than the \$17.7 million in the approved plan.
- DTE Electric saved 106.6 GWh of verified net energy savings. This was 54.9 GWh less than planned.

DTE Gas

- DTE Gas spent \$1.5 million on the C&I Non-Prescriptive Program. This amount was approximately \$0.4 million less than the approved plan of \$1.9 million.
- DTE Gas saved 32.1 MMcf of verified net energy which was 267.8 MMcf less than planned.

Chart 39 summarizes the spending and verified net savings results.



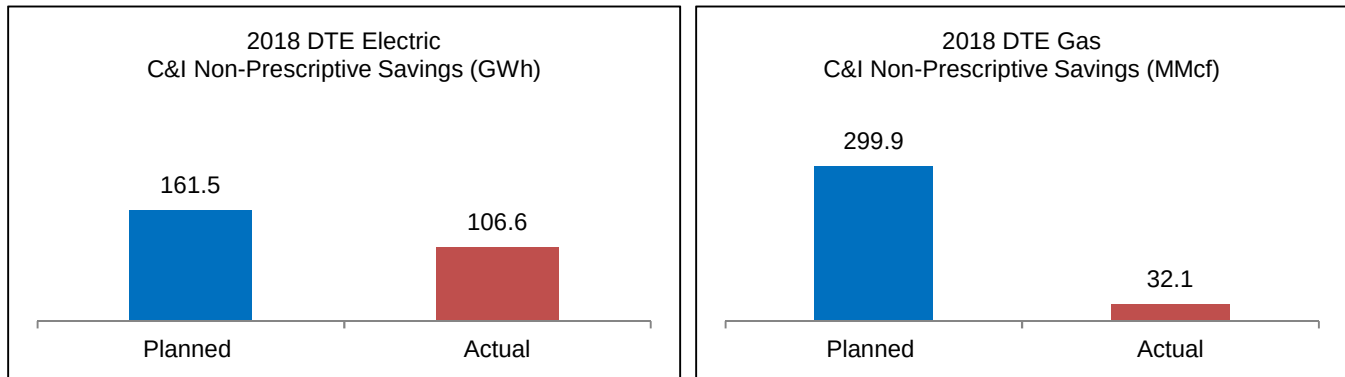


Chart 39 – 2018 C&I Non-Prescriptive Spending and Verified Net Savings

Non-Prescriptive Program Participation in 2018

- DTE Electric processed 843 customer applications.
- DTE Gas had 160 customer applications.

Chart 40 summarizes the C&I Non-Prescriptive Program Participation

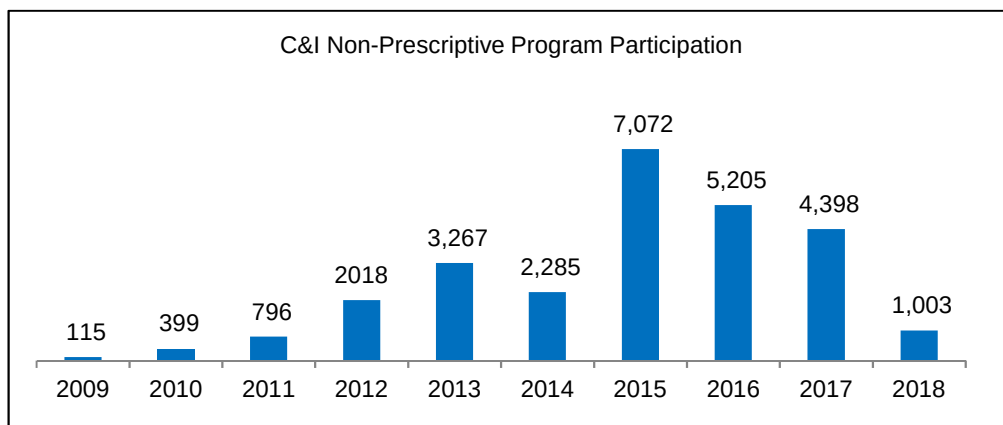


Chart 40 – C&I Non-Prescriptive Program Participation

Program Outlook

- Efficiency programs for business customers will keep pace with forecast budgets for energy savings.
- Strong, and now long-standing, relationships with the contractor and business community at a variety of levels will keep the program going with continued interest, deeper savings and behavioral transformation.
- Electric Non-Prescriptive Program will continue to be driven by lighting system measures.

- Gas Non-Prescriptive Program will continue to be driven by HVAC system measures.
- Continue launching campaigns with specific measures to targeted vertical markets.
- Increase small business customer energy assessments to provide them a prioritized energy efficiency foundation.

Commercial & Industrial (C&I) Emerging Measures & Approaches (DTE Electric & DTE Gas)

Program Description

The C&I Emerging Measures & Approaches (EM&A) promotes the installation of energy efficient technologies or delivery channel strategies that have recently been commercialized in DTE's C&I Program offerings. The EM&A programs are currently the Midstream Food Service Program.

The Midstream Food Service program is a simplified marketing approach that targets food service cooking equipment distributors that provide a point of purchase incentive to the customer for purchasing and installing energy efficient certified food service equipment.

Highlights

DTE Electric & DTE Gas

- Midstream Food Service was well received by C&I customers, distributors and trade allies.
- The greatest vertical market opportunities for the Midstream programs are small and medium sized commercial DTE Energy Customers.
- Midstream Food Service exceeded company expectations for distributor participation.

Challenges

- Effectively increasing small business participation.
- Small business customers require different strategies and tactics than larger commercial & industrial customers.
- Identifying new product offerings for Midstream Food Service.
- Creating awareness for new product offerings in Midstream Food Service.
- Identifying and on-boarding new distributors for Midstream Food Service to continue program growth.

Accomplishments

- Midstream Food Service allowed the C&I portfolio to meet its increased EWR goals that were implemented while not negatively impacting the Prescriptive and Non-Prescriptive programs.
- The Business Energy Consultation (BEC) and Midstream Lighting programs were commercialized through their success as EM&A programs.

Collaboration Efforts

- Conducted Product Knowledge workshops that targeted specific technologies in which DTE Energy designated trade allies were the main presenters.

- Collaborate with Energy Star on energy efficient Food Service equipment qualification requirements.

Lessons Learned

- Small business customers are receptive to learning about the benefits of EWR measures.
- Touching the largest number of small businesses will require a multiple marketing strategies and additional resources will likely be needed.

Spend and Verified Net Savings Results

DTE Electric

- DTE Electric spent \$.3 million on the Emerging Measures & Approaches Programs. This amount was \$.9 million less than the \$1.2 million in the current plan.
- DTE Electric saved .9 GWh of verified net energy savings. This was 5.5 GWh less than the 2018 EWR plan.

DTE Gas

- DTE Gas spent \$0.4 million on the C&I Emerging Measures & Approaches Programs which was \$0.2 million more than planned.
- DTE Gas saved 4.3 MMcf of verified net energy which was 2.2 MMcf less than plan.

Chart 41 summarizes the Emerging Measure & Approach Program spend and savings

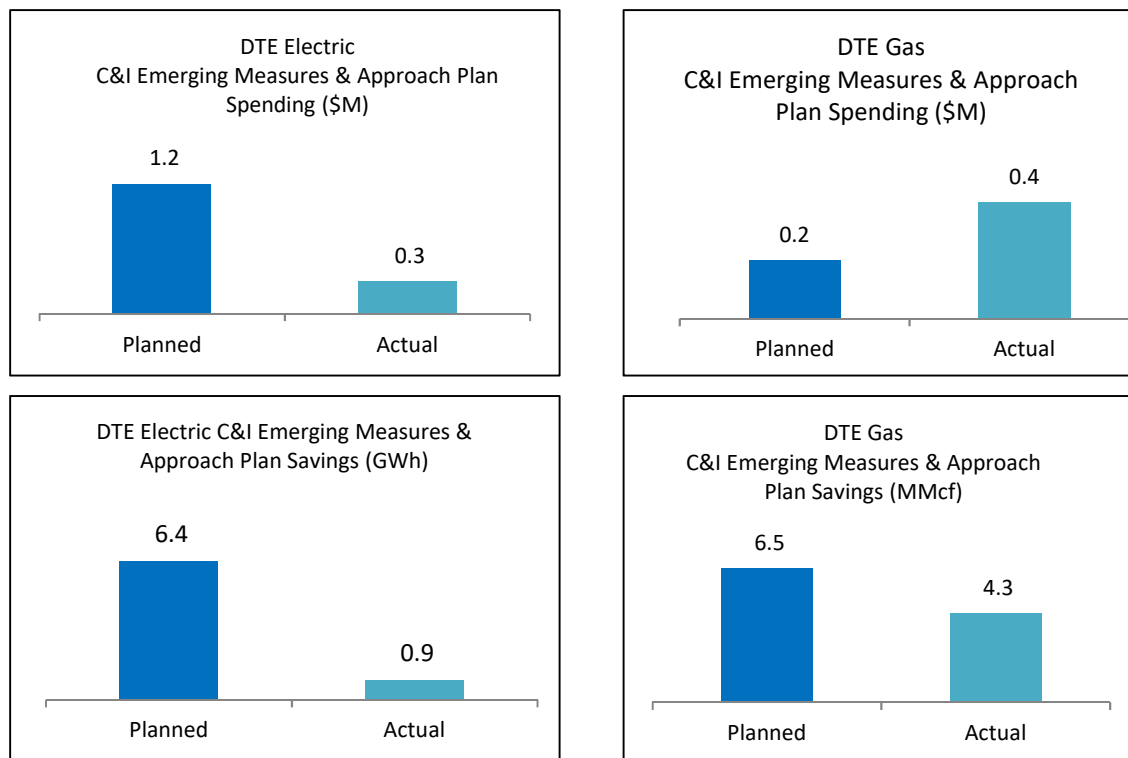


Chart 41 – 2018 C&I Emerging Measures & Approach Spending and Verified Net Savings

Program Participation

Chart 42 summarizes the DTE Electric Emerging Measures & Approaches Program participation.

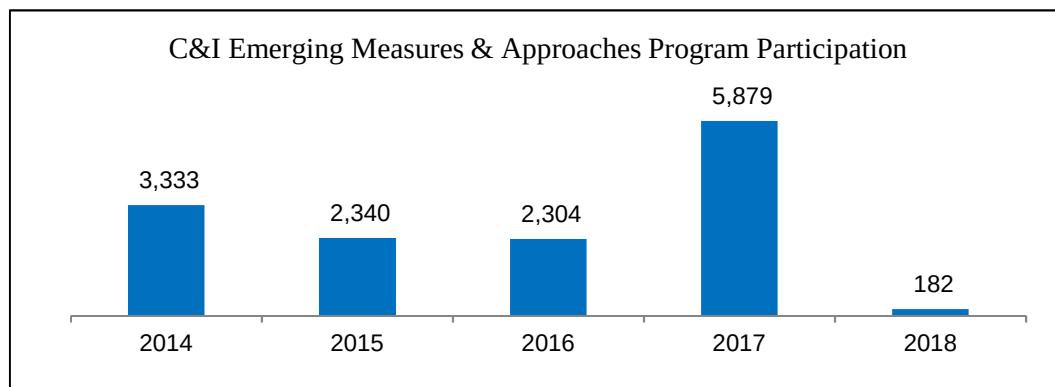


Chart 42 – C&I Emerging Measures & Approaches Program Participation (No EM&A prior to '14, only Midstream Food Services in '18)

Program Outlook

- The Midstream Food Service Program will continue to grow and provide instant discounts for energy efficient commercial food service equipment.

Commercial & Industrial (C&I) Self-Direct Program (DTE Electric & DTE Gas)

Program Description

DTE Electric C&I customers are able to choose to self-direct and implement their own EWR plan.. In 2018 five customers applied to the Self-Direct Program. The main features of either Self-Direct Program are similar. Customers who choose to self-direct are exempt from the mandatory EWR electric surcharge(s), with the exception of a portion of the surcharge that funds the Low-Income Program as well as the associated cost to administer the program.

For the 2018 DTE Electric Self-Direct Program, DTE Electric placed a bill message on all commercial customer bills notifying them about the program and how to subscribe to the program. All existing self-directed customers were sent personalized letters to inform them it was time to re-apply. Account managers followed up with a phone call after the letters were mailed to address customer questions. The program information was also placed on the DTE website along with the required energy plan templates for customers to apply to the program.

DTE Gas established a Self-Direct program for C&I End Use Transportation (EUT) customers in 2013. A bill message was placed on all EUT customer bills notifying them about the program and how to subscribe

to the program. Account managers followed up with a phone call after the letters were sent out to address customer questions. The program information was also placed on the DTE website along with the required energy plan templates for customers to apply to the program. Zero EUT customers have participated in this offering.

Highlights

- Five electric customers participated in the 2018 Electric Self-Direct Program.
- No gas EUT customers participated in the 2018 Gas Self-Direct offering.
- Annual peak demand of 1 megawatt (MW) or greater per single site or annual peak demand of 5 MW or greater per aggregated sites of customers.
- Cannot include sites or accounts in a Self-Direct plan that have received an EWR rebate or incentive from an electric provider and are within the calculated waiting period.
- The waiting period in months is equal to the total rebate amount divided by the current month's EWR surcharge.
- If the waiting period will lapse after the Self-Direct plan filing deadline, but before the Self-Direct plan year begins on January 1, a customer may include those sites or accounts during the upcoming plan period.
- Self-Direct customers determine their energy reductions by multiplying their annual consumption by the percentage factor specified in PA 295. The designated energy savings factor for 2018 was 1.0 percent.

Lessons Learned

- Customers adhere to the program requirements, submitting plans and annual reports.
- Account managers assist in communication to those customers.

Spend and Verified Net Savings Results

DTE Electric

- DTE Electric spent \$0.1 million on the C&I Self-Direct Program.
- DTE Electric saved 5.0 GWh verified energy savings, which was 2GWh less than planned.

DTE Gas

- DTE Gas spending and savings are not applicable because no EUT customers choose to participate in gas Self-Direct offering.

Challenges

- Communicating the program requirements to the applicable customers.
- Obtaining the customer's annual reports.

Accomplishments

- All five customer's reports were received on time.
- Five customers reported meeting or exceeding their energy saving goal.

Collaboration Efforts

- Collaboratively worked with Consumers Energy on the reporting requirements to ensure program consistency.

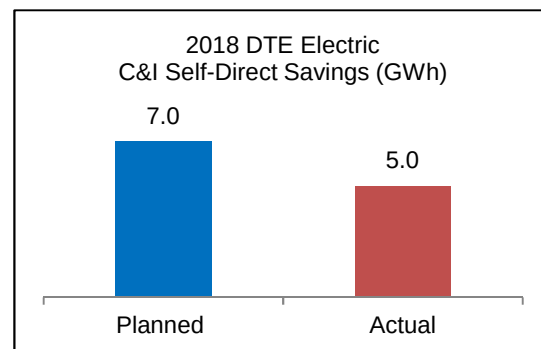
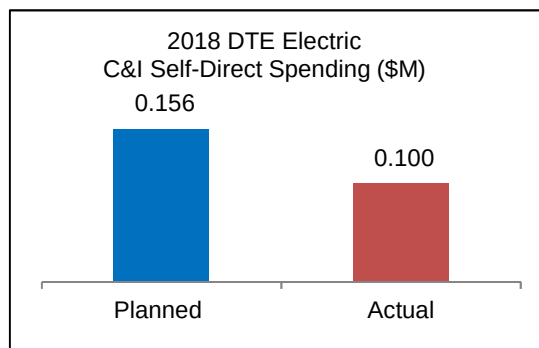


Chart 43 – 2018 C&I Self Direct Spending and Verified Net Savings

Program Participation

Chart 44 summarizes the DTE Electric C&I Self-Direct Program participation.

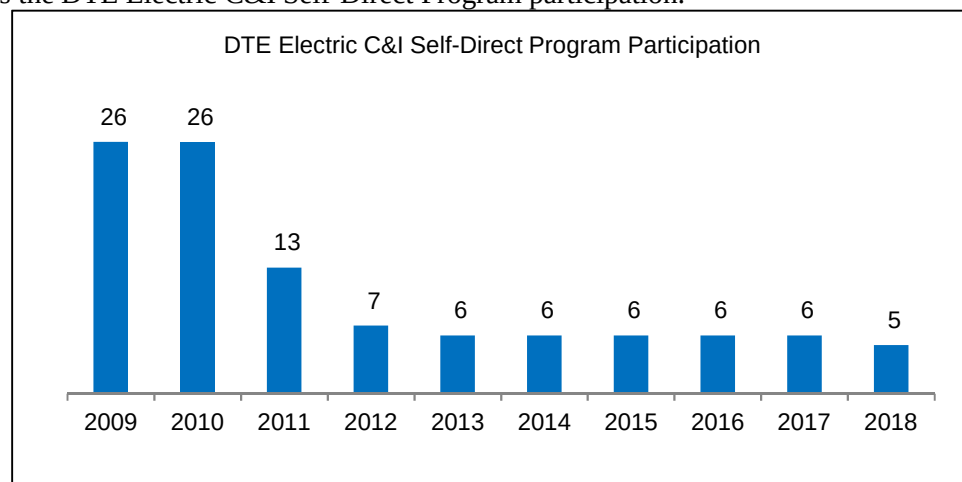


Chart 44 – C&I Self Direct Program Participation

Program Outlook

- Based on current program offerings, DTE does not anticipate any significant changes.

- DTE Gas Self-Direct Program did not have any customers apply in 2018, so the projected spend and savings are zero.

Education & Awareness (E&A) Program (DTE Electric and DTE Gas)

Program Description

The objective of the EWR education program was to provide DTE Electric residential and business customers with information and resources to help them learn how to utilize energy more efficiently and to better manage their energy costs. The DTE Energy website, mass media, social media and outreach campaigns such as outbound mail, digital communications, community events and sponsorships are key channels to engage customers with energy efficiency information. In 2018, the Company continued to rely on our website, mass media and outreach campaigns targeting specific customer segments in an effort to increase their awareness of energy efficiency.

Highlights

In 2018, a 12 month mass media campaign and several direct outreach campaigns were implemented to continue to raise DTE customer awareness of energy efficiency and opportunities to participate in the EWR programs. Key campaigns conducted in 2018 are as follows:

- Residential campaigns including radio, print, direct mail and digital advertising focused on low-cost or no-cost tips. Beyond energy efficiency, message themes to making these home improvements included improved comfort.
- Small business campaigns including radio, print, direct mail and digital advertising focused on low-cost or no-cost tips, and featured case studies to illustrate how to achieve energy efficiency improvements. Messaging highlighted the added benefits of energy efficiency improvements to increase comfort, productivity, and enhance safety to improve the satisfaction of both the businesses customers and their employees.
- Various contests and promotions were held at events and online to educate and engage customers about energy efficiency.
- Events for residential and business customers such as the DTE Energy and Engineering Society of Detroit (ESD) Energy Efficiency Conference, trade associations events, community festivals and Earth Day events.
- Sports sponsorships, including partnering with the Detroit Red Wings, Detroit Lions, Detroit Tigers, The Whitecaps and Griffins where direct event marketing opportunities were executed along with various additional messaging.
- Every year since 2015, DTE sponsorships have included the USGBC's Michigan Battle of the Buildings Competition to reach businesses.
- Employee outreach through the Company intranet, employee events, and monthly and weekly electronic newsletters.

As in previous years, new collateral was updated with fresh messaging and was created in an effort to educate customers on energy efficiency. This included brochures, case studies, trinkets, shade banners, ambassador cards, and energy-saving tips handouts. In addition, a print magazine with in-depth information on how energy efficiency can be applied in businesses was developed in four editions. We also continued

to utilize bill inserts, direct mail, email newsletters and digital tools and communications (online calculators, targeted and bilingual videos, social media posts, and website information) to engage customers in learning.

Challenges

In 2018, overall customer satisfaction with DTE Energy among residential and business customers remained a top priority. To help maintain and improve customer satisfaction, it is key to increase awareness of DTE's energy efficiency information and tools to help customers achieve higher value from the energy they consume. As energy efficiency communications continue with our audience, we are always striving to find new ways to engage and break through the awareness barriers. Continuing messaging related to improving comfort and other non-energy benefits such as safety, environment and productivity was leveraged in effort to keep messages engaging. This was accomplished by keeping a steady state of outreach communications and utilizing best practices in messaging and offerings that engaged our customers on energy efficiency education.

Accomplishments

- In 2018, the DTE electric residential familiarity with energy efficiency programs was 50%, surpassing the national and Midwest large utility average.
- In 2018, DTE achieved a first quartile score for variety of energy efficiency programs offered for business customers.

Key residential and business campaigns included the following:

Residential

- Detroit Lions sponsorship and contest — engaged fans through social media posts, web stories, email communications and on-site LED messaging. Garnered more than 30,000 entries.
- Detroit Red Wings sponsorship and contests – Engaged fans through email communications, website features and on-site scoreboard messaging. More than 33,000 entries were received.
- Participation in more than 44 community events.
- Executed 142 direct outreach tactics through direct mail, energy efficiency articles in our e-newsletter and DTE Energy blog, and bill inserts.
- Posted energy efficiency tips and promoted contests in social media among Twitter and Facebook.

Business

- Continued the Business Pride contest among customers allowing them to tell their story of energy efficiency improvements and why they're proud of their business. We selected winners and provided them an energy efficiency makeover and developed their story into media and communications to educate other business customers about energy efficiency.
- Executed 77 direct outreach tactics through direct mail, energy efficiency articles in our e-newsletter and DTE Energy blog, our Energy Smarts magazine, and bill inserts.
- Posted energy efficiency tips and promoted contests through social media using LinkedIn, Twitter and Facebook.

Collaboration Efforts

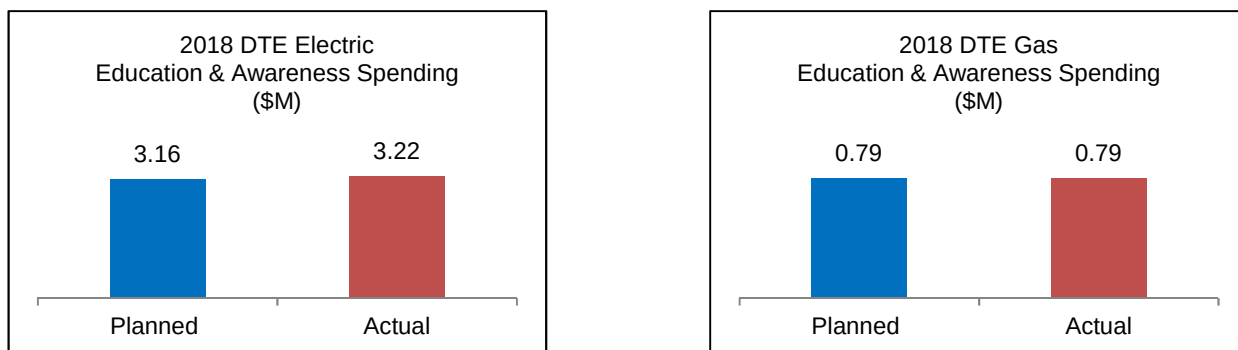
- Co-sponsored the Michigan Battle of the Buildings competition offered by the US Green Buildings Council. The competition is an awards and recognition program for energy use reduction open to all Michigan area commercial & industrial buildings. The program is a way to encourage energy efficient practices in buildings across the state and to instill a spirit of friendly competition among the area's building owners and operators.
- Continued the relationships with the Detroit 2030 District and Grand Rapids 2030 District community programs. In 2018, we created a new partnership with the Ann Arbor 2030 district. This effort will encourage the member businesses in Ann Arbor to become more energy efficient and serve as a communication channel to reach these audiences. This is a collaborative business community effort in which they sign themselves up to be more sustainable, obviously including energy efficiency.

Lessons Learned

- Partnering with business organizations such as chambers of commerce and associations creates advocates for the programs and information.
- Mass media is key to raising overall awareness of the program.
- Proactive communications are desired by our customers to help them manage their energy consumption.
- Personalized or tailored messages and offerings are meaningful to customers and have a higher positive impact on customer awareness and satisfaction.

Spend and Verified Net Savings Results

Chart 45 summarizes the spend and associated verified net savings results for E&A.



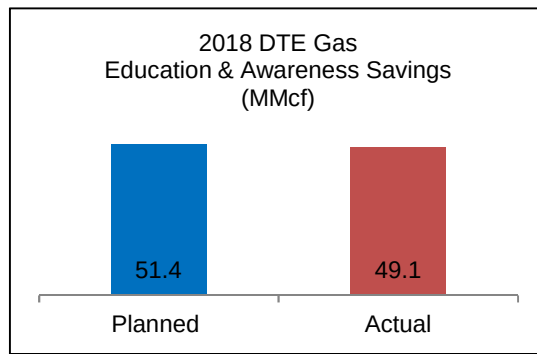
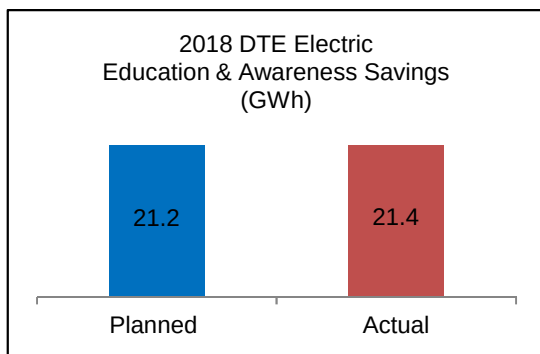


Chart 45 – 2018 E&A Spending and Verified Net Savings

Program Outlook

As the E&A team continues to seek new and innovative approaches to educate customers and employees about energy efficiency, the focus will remain on the following key areas:

- Communicating the value of energy efficiency.
- Developing engaging messaging and content that are applicable for the residential and business audiences.
- Providing real-life examples that support the learnings and opportunities for other similar customers.
- Leveraging existing digital technologies like mobile applications and mobile-friendly web platforms.
- Providing educational tips and information that resonate with the target audience.

Pilot Programs (DTE Electric and DTE Gas)

Program Description

The purpose of the pilot program was to explore technologies and approaches not included in the commercialized programs described in the approved 2018 EWR Plan. The pilot program also enabled the Company to measure energy savings and test cost effectiveness of emerging technologies. This program also tested customer adoption of new technologies and market adoption of existing technologies using new approaches. As designed, this program supported both Residential and C&I programs.

Highlights

The Pilots team targeted a variety of projects across the portfolio in 2018. The following are examples of Residential and C&I pilot projects implemented:

Residential Focus

HVAC Tune-Up: Developed as a joint effort between DTE Electric and SEMCO ENERGY Gas Company to test the impact of energy efficiency-specific technologies and procedures on heating and cooling tune-up services. The Pilot leveraged proprietary applications and tune-up procedures not currently adopted in the DTE Electric service territory. The Pilot aimed to serve customers, train contractors on a new approach and enhance HVAC system efficiencies. The Pilot was concluded in 2018.

Heat Pump Dryers: Pilot sought to drive market transformation by educating and incentivizing customers to purchase Heat Pump Clothes Dryer technologies. The pilot incentivized and promoted a variety of ENERGY STAR Electric Heat Pump Dryer models through an assortment of marketing channels, supplement to DTE Electric's ENERGY STAR program. The pilot concluded in 2018 with several qualified ENERGY STAR Heat Pump dryer models that are now incentivized with rebates as part of the DTE Electric's Residential ENERGY STAR appliances program.

ENERGY STAR Retail Product Platform (ESRPP): A National scale, midstream collaboration between energy efficiency program sponsors, retailers, program partners, and stakeholders facilitated by the U.S. Environmental Protection Agency. ESRPP enabled DTE Electric to engage national retailers to increase availability and accelerate adoption of select ENERGY STAR certified products. ESRPP influenced retailers to stock and promote more energy efficient models through a combination of mid-stream incentives and engagements that included retailer agreements, marketing, and field services. The Pilot was concluded in 2018.

Manufactured Homes: Pilot objective was to develop a cost-effective solution to achieve energy savings for residential customers who reside in a manufactured home. The pilot field-tested a broad range of measures including the installation of duct sealing, roof insulation, belly insulation, pipe wrap, furnace tune-ups, bathroom, kitchen and showerhead aerators, and a variety of LED lighting options. The pilot continues into 2019.

Multifamily Low-Income: This pilot was developed to encourage low-income property owners to upgrade their building envelope, mechanical equipment and appliances that save tenants energy and money. The pilot employed a "Concierge Model" that includes an Energy Advisor performing a Level 1 audit assessment, which comprises gathering billing history, visually inspecting the property for energy efficiency opportunities, energy modeling and presenting opportunities for the customer to save on their energy bill. The pilot encompasses the gathering of bids from contractors for the project(s) and supervising installation of the measure(s). The pilot will continue in 2019.

Non-Wire Alternative: The non-wire alternatives pilot will continue in 2019 with ongoing collaboration with MPSC Staff and stakeholders to explore the potential for geographically targeted energy efficiency measures to cost-effectively defer distribution system upgrades. The focus includes both Residential and C&I customer segments. Field testing launched in 2018 and continues in 2019.

New Homes Construction: This pilot program launched in the fourth quarter of 2018 with the objective of increasing builders' adoption of high efficiency building practices and methods. Partnering with Home Energy Rating System (HERS) raters and builders, the pilot will evaluate training, field support, marketing and incentives to ensure cost-effective packages are designed to maximize the energy efficiency of new homes. These measures include appliances, HVAC equipment and insulation. This pilot will continue in 2019.

Home Energy Management (HEM) with DTE Insight: This is a multi-year pilot designed to understand customers' willingness to adopt smart home products and smart home functionalities that save energy. In the pilot, market research, benchmarking, competitive analysis, and various pricing scenarios were explored. **DTE Insight's** platform was enhanced with new features that leveraged smart home connected devices, including voice integration via Amazon Alexa, smart lightbulbs and smart thermostats, and many other connected devices. The pilot is ongoing.

DTE Insight AMR Gas: This pilot is a research project to understand the viability of extending the DTE Insight app to approximately 500,000 residential customers in the DTE gas-only territory whom have an Automatic Meter Reader (AMR) meter. The pilot identified interconnection issues across both software and hardware. The root cause of these have now been identified and is being resolved. This pilot is in progress.

E-Challenge 3: This is a pilot where DTE has partnered with the Engineering Society of Detroit (ESD) to develop a collegiate challenge to test and validate new measures and approaches for C&I customers, including lighting, HVAC controls and humidification. The pilot produced three finalists and has concluded.

Commercial and Industrial Focus

Strategic Energy Management: This pilot provides technical support and financial incentives for customers interested in moving beyond project-by-project energy savings to managing energy continuously in a holistic approach through Strategic Energy Management (SEM). This program offers up to 24 months of technical support, plus unique incentives. The incentives are paid on verified operational changes primarily involving HVAC systems that result in energy use reductions. The objective is to advance energy management capabilities and establish a continuous energy management process for enrolled customers. The pilot is currently serving hospitals and is ongoing.

Rooftop Unit Market Assessment: This assessment was performed to support a future midstream HVAC pilot. The assessment characterized the roof-top units (RTU) market in the DTE Energy service territory and will define potential pilot energy efficiency program approaches that can help transform those RTU customers to higher efficiency levels. The pilot has concluded.

Mid-Stream HVAC: The pilot was designed to increase the market share of efficient HVAC systems, accelerating the adoption of rooftop air-conditioning by providing streamlined incentives to distributors, which in turn leverage their sales and outreach capabilities. The program is designed to test and expedite a simple solution for C&I customers, providing an instant discount at the point of sale with the distributor. Paperwork is virtually eliminated for both the end use customer and the utility. This pilot continues into 2019.

Retro-Commissioning: This pilot offers an onsite energy analysis for customers to determine operational energy efficient measures, with simple payback periods of less than 1.5 years. The focus of the analysis is on controls and HVAC systems and is on-going.

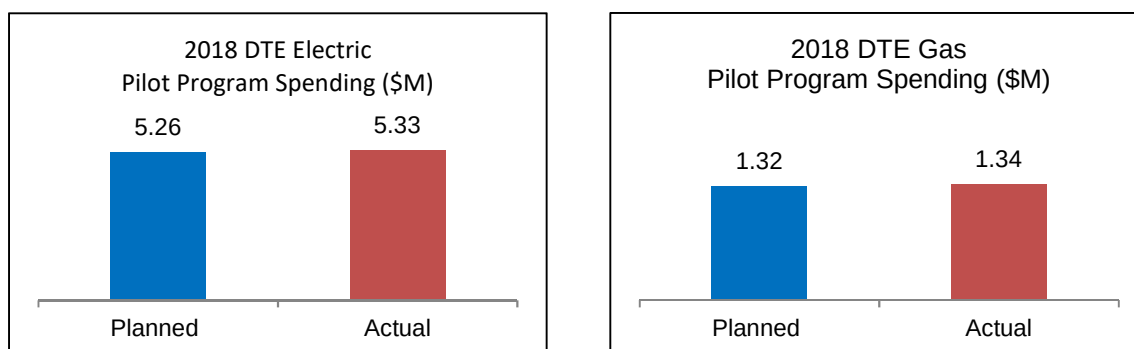
New Commercial Energy Codes: This pilot supports the development of training materials for building code officials, builders, designers, contractors, architects, engineers, state code agencies and commercial trade allies. This activity has concluded.

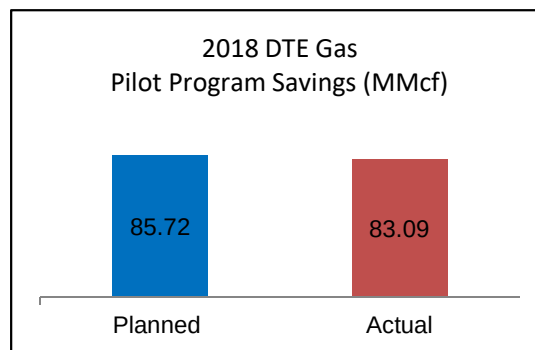
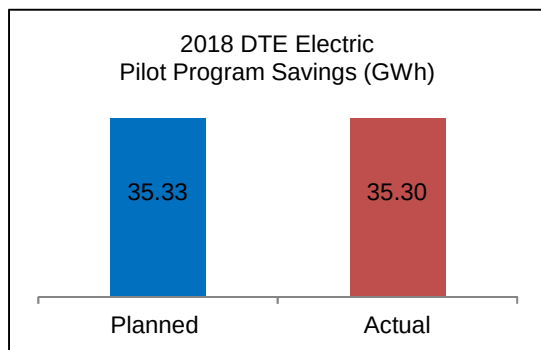
Accomplishments

- **Market Transformation**
DTE is recognized as a thought leader and partner, collaborating with other utilities, industry leaders and distributors in pioneering new approaches that accelerate the adoption of energy efficiency solutions through market transformation.
- **Non-Wire Alternatives**
Taking a strategic approach, the pilot has received positive recognition for both the innovative design approach and the evaluation methodology, developing potential utility cost deferment solutions utilizing energy efficiency enhancements. These are being applied concurrently to both residential and business customers.
- **For C&I customers:**
The Strategic Energy Management pilot provides a unique approach encompassing both technical support and financial incentives, enrolling hospitals in a continuous energy management process to enhance efficiencies. The adoption for energy efficient roof top air conditioners will be accelerated, following validation of a proven rooftop pilot.

Spend and Verified Net Savings Results

Chart 46 summarizes the spend and associated verified net savings results.





DTE Electric

- DTE Energy spent \$5.3 million in 2018 on the Electric EWR pilot program. This is \$0.1 million over the planned spend. Pilot program funds were primarily spent on contracted services and incentives for the projects outlined above, as well as on the cost of internal administration to manage the portfolio of projects.
- Energy savings were determined to be 35.3 GWh; this amount was on plan

DTE Gas

- Consistent with the planned spend, DTE Gas spent \$1.3 million on the gas EWR pilot program. Pilot program funds were primarily spent on contracted services and incentives for the projects outlined above, as well as on the cost of internal administration to manage the portfolio of projects.
- The pilot program had 83.1 MMcf in gas savings, which was 2.6 MMcf under the planned 85.7 MMcf.

Program Outlook

The Pilots team will continue to serve the future portfolio needs of the Energy Waste Reduction team by investigating, exploring and testing new innovations in collaboration with industry leaders and partner utilities. These include:

- Serving underserved communities and working with trade resources to develop partnerships and process enhancements that increase the cost-effectiveness and energy efficiency and laying the groundwork for a commercialized program.
- Exploring opportunities in collaboration with Consumers Energy, to enhance the energy efficiency of new home construction beyond established building codes.
- Applying open-ended innovation techniques to evolve and study new ideas to fulfill future portfolio needs.

- Exploring new midstream marketing approaches to broaden the reach of additional product markets in both Residential and Commercial and Industrial applications beyond cooking and HVAC systems.

EWR Program Achievements

Energy Savings

- Since its inception in 2009, more than 3.8 million electric customers and 2.7 million gas customers have directly participated in DTE's energy efficiency programs.
- As a result, DTE customers have saved approximately 5,800 gigawatt hours (GWh) and over 13,000 million cubic feet (MMcf) since the program started. The savings achieved so far will continue for years into the future.
- The electric savings are equivalent to the energy required to power all the homes in cities similar in size to Lansing or Ann Arbor, Michigan for around ten years.
- The gas savings are equivalent to the energy required to heat the same number of homes in cities similar in size to Lansing or Ann Arbor, Michigan for over two years.

Monetary Savings

- Our customers have benefited as a result of our energy efficiency offerings. Residential customers pay an average of \$36 annually or less than 2 percent of their total bill for combined energy efficiency gas and electric surcharges (Electric customers pay on average \$23 and gas customers pay on average \$13).
- For every \$1 spent on energy efficiency programs, DTE Energy customers will save more than \$4.30 in avoided energy costs.

Economic Development Benefits

- DTE's EWR Program resulted in implementation contractors (ICs) establishing local offices (in Detroit, Livonia, Lansing and Grand Rapids) and the hiring of local talent to operate and manage their respective programs.
- Through 2018, 309 Michigan-based jobs have been created by the ICs under contract and with DTE Energy as summarized in **Table 8**. These jobs include field operations staff, appliance pick-up drivers, call center representatives and program managers.
- Throughout the state of Michigan, over 2,400 small- and medium-sized contractors have actively participated with utilities in various EWR Programs.
- Customers and communities benefit from the new jobs and investment in the community.

<i>IC Name</i>	<i>Michigan-Based Jobs</i>
DTE Energy	37
ICF International	38
Solutions for Energy Efficient Logistics (SEEL)	87
DNV-GL	52

Navigant Consulting	13
Walker-Miller Energy Solutions	75
Ignite	7
Total	309

Table 8 – Implementation Contractor Jobs

Program Participation

Since its inception in 2009, more than 3.8 million electric customers and 2.7 million gas customers have directly participated in DTE’s energy efficiency programs. Customers have upgraded equipment, enabling them to be more energy efficient year after year. They have also been educated on simple actions they can take to save on their energy use on a continuing basis.

- In 2018 alone, more than 770,000 DTE Electric customers and 670,000 DTE Gas customers took control of their energy use through the EWR Program and saved millions of dollars as a result.

To give some perspective on the magnitude of this effort, here are some of DTE Energy’s 2018 accomplishments:

- Over 500,000 residential customers received Home Energy Reports and over 24,000 Home Energy Consultations were performed at customer’s homes, helping them save energy.
- Similarly, over 1,650 small-to-medium size business customers received Business Energy Consultations at their place of business.
- DTE distributed over 200,000 LED bulbs to approximately 10,000 low-income customers in partnership with local food banks.
- DTE incentivized approximately 5 million LED light bulb sales through manufacturer buy-downs at retailers, and via in-store coupons at small independent hardware stores
- Over 26,000 appliances were recycled.
- Over 30,000 customers benefited from HVAC upgrades.
- DTE customers received 23,000 energy saving kits in their homes.
- Over 4,000 of DTE Energy’s low-income customers have received home weatherization, furnace tune-up or replacement funding.
- 10,000 low-income customers received almost 200,000 ENERGY STAR® certified light bulbs. These included more than 166,000 LED light bulbs.
- The Schools Program was able to serve over 17,000 households in combination service territory, plus over 10,000 electric only households and over 6,500 gas only households through collaboration efforts.
- Business applications served included lighting, lighting controls, HVAC and heating controls, food services, process electric and food services.
- Most C & I markets were served including light and heavy industry, retail, grocery, hospital, hotel and educational institutions.

Environmental Benefits

Since 2009, the following environmental benefits achieved from the electric and gas savings are equivalent to:

- greenhouse gas emissions avoided by recycling more than 1,680,000 tons of waste instead of sending it to the landfill, equivalent to 240,000 garbage trucks.
- the annual carbon emissions reduction from over 576,000 homes' energy use for one year.
- a reduction in the greenhouse gas emissions equivalent to more than 1,020,000 cars driven in one year.
- the carbon sequestered by over 5.6 million acres of forest in one year.

Source: EPA Equivalency Calculator

Program Administration

Evaluation, Measurement and Verification (EM&V)

Michigan's EWR construct requires independent verification of the utilities' claimed energy savings. This work is performed by an independent Evaluation, Measurement and Verification (EM&V) contractor and must be performed to industry standards and guidelines developed by the Evaluation Workgroup of the MPSC Energy Waste Reduction Collaborative. Currently Navigant Consulting fulfills this role for DTE Energy.

DTE Energy and its evaluation contractor are active participants in the Evaluation Workgroup, along with Consumers Energy and cooperative and municipal utilities, with their respective evaluation contractors and the MPSC staff. In addition to developing guidelines for evaluation, members of the Collaborative established a statewide resource for technical energy savings values for thousands of energy efficient measures, known as the Michigan Energy Measures Database (MEMD). The MEMD enables fast and efficient entry, tracking and evaluation for the vast majority of measures installed in Michigan EWR Programs, regardless of program provider.

The MEMD is managed by Morgan Marketing Partners under contract to the MPSC. The Evaluation Workgroup oversees the management and updating of MEMD. Updating measure values to reflect changes in standards, incorporate newer studies, etc., and make them more representative of Michigan follows a well-defined process involving all stakeholders. DTE Energy and Consumers Energy work together with their evaluation contractors to conduct foundational research on important measures to develop up-to-date Michigan-based values. Since 2009, numerous additions and calibrations have been made to MEMD to make the values more encompassing, accurate and Michigan-specific.

Implementation Contractors

Table 9 is a summary of the ICs assigned to the various EWR Programs

Implementation Contractor Listing			
EWR Program	IC Name	Corporate Location	Local Office

ENERGY STAR® Products, HVAC, Audit & Weatherization,	ICF International/Ignite	Fairfax, VA/Birmingham, MI	Detroit, MI/Birmingham, MI
Online Energy Audits, Energy Efficiency Assistance, Home Energy Consultations, Multifamily, Schools	Walker-Miller Energy Services	Detroit, MI	Detroit, MI
Business Energy Consultations, Appliance Recycling	Solutions for Energy Efficient Logistics (SEEL)	Detroit, MI	Detroit, MI
Behavior	OPOWER	Arlington, VA	N/A
Commercial and Industrial Programs	DNV-GL	Oakland, CA	Detroit, MI
EM&V	Navigant Consulting	Chicago, IL	Ann Arbor, MI

Table 9 – List of Implementation Contractors

Challenges

Opportunities and challenges lie ahead, and the Company is well-positioned to continue to provide value to its customers and other stakeholders through a robust and well-run energy efficiency program. Beyond 2018, achieving current savings levels will continue to become more challenging as codes and standards continue to change and technology evolves. DTE will need to reach more customer markets and segments to increase participation. In addition, the Company may face other challenges such as:

- The Company’s EWR portfolio is now in its eleventh year and is experiencing some saturation of existing programs.
- There are many unknowns associated with the implementation of the Energy Independence and Security Act (EISA) lighting standards, as well as the upgrades to building codes, and the rollout of increasingly strict appliance efficiency standards. Old planning assumptions about what portfolios can achieve, based on high levels of LED residential lighting savings, are no longer applicable. For example, the Company currently relies on lighting for approximately 70% of its residential energy savings. The implementation of EISA lighting standards may have a significant impact on the Company’s ability to achieve energy savings in the future.
- Customer baseline installed efficiency keeps rising as energy efficiency programs and other factors make customers more energy-conscious. This will continue to decrease NTG ratios as free-ridership increases.
- Non-incentive costs will likely increase when attempting to capture hard-to-reach segments, further increasing cost to the Company’s customers, necessitating higher rates
- There is uncertainty around design and delivery of emerging and future pilot programs.

Conclusion

2018 was another successful year for DTE Energy's EWR Program. The year was successful in all key areas: Energy savings, spending and participation. Customers were made aware of energy efficiency benefits and the programs offered by DTE Energy via innovative approaches and targeted marketing campaigns.

Customer experience was enhanced by improving the content of the website, creating new educational tools and resources, and expanding social media and contests. Programs were upgraded and delivered with high quality, meeting the ever-rising level of customer expectations. Promising Pilot Programs were transitioned to full program offerings, and additional Pilots were undertaken to stay ahead of the technology curve and to test innovative market approaches. Continuous Improvement activity rose again in 2018 as several efforts were undertaken to eliminate defects and improve efficiency in our processes. Collaboration with other utilities, and the energy efficiency community at large provided additional benefit to DTE Energy's customers.

Opportunities and challenges lie ahead, and DTE Energy is well-positioned to continue to provide value to its customers and other stakeholders through a robust and well-run energy efficiency program. Our strategic efforts have resulted in increased awareness, improved experiences and higher satisfaction among our customers.

2019 will be another pivotal year for DTE Energy's EWR program as the Company is focused on continuing to work with key stakeholders on securing Michigan's energy future in light of unprecedented industry and energy policy changes. As our EWR Program continues to mature, we will continue our journey to become the best operated energy efficiency program in North America.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

QUALIFICATIONS

AND

DIRECT TESTIMONY

OF

JASON KUPSER

DTE ELECTRIC COMPANY
QUALIFICATIONS OF JASON KUPSER

Line
No.

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

2 A. My name is Jason R. Kupser. My business address is: One Energy Plaza, Detroit, MI
3 48226. I am employed by DTE Electric Company (DTE Electric) within the Business
4 Planning and Development department; my title is Manager Residential Programs
5 and Education Programs, Energy Waste Reduction (EWR).

6

7 **Q. On whose behalf are you testifying?**

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

9

10 **Q. What is your educational background?**

11 A. I graduated from the Wayne State University with a Bachelor of Arts Degree in Public
12 Relations in 1998. In 2013, I graduated from Wayne State University with a Master
13 of Business Administration in Marketing/Management.

14

15 **Q. What is your employment experience at DTE Electric?**

16 A. In 1999, I was hired by Detroit Edison as a Customer Service Representative in the
17 Customer Service department with responsibilities to address various customer
18 transactions and concerns. After the 2001 merger between Detroit Edison and
19 Michigan Consolidated Gas Company (MichCon), my work expanded to include
20 subjects related to MichCon's natural gas service. Through various promotions and
21 experience my responsibilities changed to include small commercial customer
22 transactions, CSR training and CSR quality assurance. During this time, I was
23 educated in continuous improvement and received extensive Lean Six Sigma training.

24

Line
No.

1 In 2007, I was promoted to the position of Marketing Analyst on the Tactical
2 Marketing team in the Regulated Marketing department of DTE Energy Corporate
3 Services LLC. My primary responsibility was marketing energy efficiency to DTE
4 Energy customers and employees through various marketing offerings.

5
6 In 2009, I was promoted to the position of Principal Marketing Analyst in the
7 Regulated Marketing Department working within Energy Optimization (EO). My
8 primary job responsibilities included developing market intelligence capability and
9 analysis related to EO. In conjunction with this, I provided project management and
10 EO program analytics and modeling. I used DSMore as the analytical tool used to
11 define the cost effectiveness of EO measures and programs. I provided internal
12 savings tracking, reporting and report analysis for all EO programs. In this role, I also
13 administered the program tracking database for the EO program as well as many other
14 databases that had been created for business intelligence purposes.

15
16 In 2011, I was promoted to the position of Principal Marketing Specialist. My
17 primary job responsibilities included the program management of the Company's
18 single-family direct install program, home energy report behavioral program, and the
19 online energy audit program, which included kits being mailed to customers.

20
21 In 2014, I became the Principal Supervisor of the EO Evaluation Measurement &
22 Validation (EM&V) staff. My primary job responsibilities included supporting the
23 needs and facilitate many interactions between DTE Energy and 3rd party evaluator to
24 perform evaluations, provide testimony and produce process and impact evaluation
25 reports. Other responsibilities included support of the MEMD calibration efforts,

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1 being a representative on the State of Michigan EO Collaborative and leading various
2 research efforts.

3

4 In 2016, I was promoted to Manager of Residential programs, EO, now being EWR.
5 As the Manager of the Residential EWR programs, I was responsible for
6 development of residential electric and gas product offerings that support the DTE
7 Energy's overall energy efficiency program strategies. In 2017, the responsibility
8 of managing the Education & Awareness EWR team. Those responsibilities
9 included the development and delivery of the educational programs to the
10 Company's various customers about the value and benefits of energy efficiency.

11

12 In 2019, my responsibilities changed to manage the EWR strategy, EWR EMV, and
13 Demand Response teams.

14

15 **Q. What are your current job responsibilities?**

16 A. As the Manager of the EWR strategy, EWR EMV, and Demand Response teams, I
17 am responsible for developing the DTE EWR portfolio of EWR electric and gas
18 program offerings; the assurance of the portfolio plan's cost effectiveness, and the
19 management of the relationship with the third party evaluator that performs the EWR
20 EMV functions. I am also responsible for the delivery and development of demand
21 response programs. The delivery and development of both EWR and demand
22 response programs is incorporated with the DTE Integrated Resource Plan.

23

Line
No.

1 **Q. Are you a member of any professional organizations?**

2 A. I am a member of the Association of Energy Services Professionals (AESP). AESP
3 is an organization that provides professional development programs, a network of
4 energy practitioners, and promotes the transfer of knowledge and experience to
5 promote energy efficiency programs. I have previously been a member of the
6 Consortium for Energy Efficiency (CEE) engaging on its benchmarking committee.
7 CEE is the United States and Canadian consortium of gas and electric efficiency
8 program administrators; whose goal is to accelerate the development and availability
9 of energy efficient products and services.

10

11 **Q. Have you previously sponsored testimony in cases before the Michigan Public**
12 **Service Commission (Commission)?**

13 A. Yes, I testified in the following cases:

14 U-16358 2009 DTE Electric EO Reconciliation

15 U-16289 2009 DTE Gas EO Reconciliation

16 U-16671 2011 DTE Electric Biennial Review and Amended EO Plan

17 U-16730 2011 DTE Gas Biennial Review and Amended EO Plan

18 U-17049 2012 DTE Electric Amended EO Plan

19 U-17050 2012 DTE Gas Amended EO Plan

20 U-18262 2018-2019 DTE Electric EWR Plan

21 U-18268 2018-2019 DTE Gas EWR Plan

22 U-18332 2016 DTE Electric EO Reconciliation

23 U-18338 2016 DTE Gas EO Reconciliation

24 U-20029 2017 DTE Electric EWR Reconciliation

25 U-20035 2017 DTE Gas EWR Reconciliation

DTE ELECTRIC COMPANY
DIRECT TESTIMONY OF JASON KUPSER

Line
No.

1 **Q. What is the purpose of your testimony in this proceeding?**

2 A. The purpose of my testimony in this proceeding is to describe the performance and
3 accomplishments of DTE Electric's 2018 EWR Residential, Low Income and
4 Education programs. My testimony will demonstrate that programs' objectives were
5 met through various marketing tactics, community outreach, and delivery channels.
6 My testimony will cover the following:

- 7 1) The objective of each residential EWR program that was deployed to increase
8 customer awareness and demand for energy efficient products and services.
- 9 2) A description of the energy efficient measures and customer incentives that were
10 offered in 2018. I will describe adjustments that were made to program delivery
11 approaches and changes to incentive levels to respond to market conditions.
- 12 3) The energy savings achieved for each residential EWR program. The actual
13 energy savings that are shown have been validated and provided by Company
14 Witness Brannan. I will also show the participation (or applications) that were
15 processed for each residential EWR program.
- 16 4) The actual amount spent on the residential EWR program and how the program
17 costs compared to the 2018 EWR expenses filed pursuant to Public Act 295 of
18 2008, as amended by Public Act 342 of 2016. The program costs that I will reflect
19 were provided by Company Witness Mr. Chubb.
- 20 5) The actual spend and savings for residential emerging measures and approaches
21 in 2018.
- 22 6) The description and evolution of the education program. I specifically provide
23 examples of the types of actions and projects undertaken this area. I also detail
24 the method for determining the energy savings attributed to the education
25 program and the resulting calculated savings.

Line
No.

1 **Q. Are you sponsoring any exhibits in this proceeding?**

2 A. Yes. I am sponsoring the following exhibits:

3	<u>Exhibit</u>	<u>Description</u>
4	A-8	Residential, Low Income, and Education Program Cost and Energy
5		Savings
6	A-9	Education Program Savings Calculation

7

8 **Q. Were the exhibits prepared by you or under your direction?**

9 A. Yes, they were.

10

11

Residential And Low Income Programs

12 **Q. What was the overall performance for DTE Electric's residential and low**
13 **income EWR programs?**

14 A. In 2018, DTE Electric's residential and low income EWR programs achieved
15 300,659 MWh of electric savings, which is 103% of the plan. In total, the residential
16 and low income EWR programs cost \$53.5 million, which is about 4% above of the
17 plan. The results are shown on Exhibit A-8 and are discussed in more detail below.

18

19 **Q. How did DTE Electric implement its residential EWR programs in 2018?**

20 A. DTE Electric approached managing its programs using two methods. DTE managed
21 the On-line Energy Audit kits program internally, subcontracting a couple aspects of
22 its operations. In addition, DTE Electric used the following implementation
23 contractors (ICs) in 2018 to implement its remaining residential programs, as listed:

24 • Ignte – HVAC and Audit Weatherization programs

Line
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- 1 • Strategic Energy Efficient Logistics, LLC (SEEL) – residential and small
- 2 business ENERGY STAR products, appliance recycling, Energy Efficiency
- 3 Assistance programs
- 4 • Nation Energy Foundation – Schools program
- 5 • Walker-Miller Energy Services, LLC – Multifamily and Home Energy
- 6 Consultation (HEC) programs
- 7 • Oracle – Behavior program’s Home Energy Reports (HER)
- 8 • Powerley – Behavior program’s Smartphone Behavior Application and Real
- 9 Time Data Add-on to Smartphone Behavior Application
- 10 • Michigan Saves – Emerging Measures and Approaches

11

12 **Q. How were customers made aware of DTE Electric’s residential EWR programs?**

13 A. The Company used various marketing tactics and community outreach events to

14 promote and inform customers of its residential EWR programs. These marketing

15 tactics included specific program information conveyed through the Company’s

16 website, e-mail, social media (Facebook and Twitter), direct mail, bill inserts,

17 newsletters, radio and television ads, billboards, and advertisements in local

18 newspapers. In addition, DTE Electric continued to deploy program-specific tactics

19 as it had in prior program years and outreach to promote and educate customers on

20 the benefits of purchasing energy efficient products. Examples of program-specific

21 tactics included in-store events and demonstrations to help educate customers on the

22 benefits of qualified ENERGY STAR products; home shows to recruit and educate

23 energy efficiency auditors and contractors; and targeted marketing campaigns in

24 select neighborhoods to promote in-home energy consultations with direct install

25 measures. In 2018, the Company continued its delivery channel for direct installation

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1 of various low cost measures for both single-family homes and multifamily units.

2

3 **Q. What was the objective of the residential ENERGY STAR products program?**

4 A. The objective of the residential ENERGY STAR products program was to increase
5 the awareness and sales of high efficiency ENERGY STAR products among
6 residential customers. The program was designed to spur customer interest by
7 providing educational information and incentives to customers who purchased
8 qualified ENERGY STAR equipment. The primary means used to accomplish this
9 objective were in-store site visits and promotional events that were held throughout
10 the year. In 2018, the Company continued its midstream incentive for retailers to
11 increase shelf space and inventory of ENERGY STAR consumer electronics such as
12 televisions, computers, and monitors. The Company also continued its upstream
13 incentive for light emitting diodes (LEDs). The downstream program provided
14 incentives for clothes washers and dryers, Wi-fi and smart thermostats,
15 dehumidifiers, room air conditioners and pool pumps.

16

17 **Q. Were there any changes to the delivery of the residential ENERGY STAR**
18 **products program?**

19 A. Yes. The Company expanded its residential ENERGY STAR products program with
20 the introduction of ENERGY STAR pool pumps to its downstream delivery.

21

22 **Q. What measures were offered in the residential ENERGY STAR products**
23 **program?**

24 The program offered light emitting diode (LED) light bulbs, certified appliances
25 included clothes washers and dryers, dehumidifiers, room air conditioners Wi-Fi

Line
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1 enable and smart thermostats and pool pumps. Certified consumer electronics
2 included televisions, personal computers, and monitors.

3

4 **Q. What level of incentives were offered under the residential ENERGY STAR**
5 **products program?**

6 A. DTE Electric offered \$25 rebates for ENERGY STAR qualified clothes washers and
7 dryers, dehumidifiers, and room air conditioners. Rebates on Wi-Fi-enabled and
8 smart thermostats ranged from \$75 to \$100. DTE Electric offered \$350 rebates for
9 ENERGY STAR qualified pool pumps. All of these rebates were available to
10 customers by mail, online application or online retail. In-store mark-down discounts
11 for LED light bulbs were between \$0.50 and \$6.00 per bulb. Midstream consumer
12 electronics incentives ranged from \$5.00 to \$25.00 per unit.

13

14 **Q. What results were achieved for the residential ENERGY STAR products**
15 **program in 2018?**

16 A. As shown in Exhibit A-8 (line 1, column (d)), DTE Electric saved 151,885 MWh
17 under the ENERGY STAR products program. In 2018, approximately 5.3 million
18 LED bulbs were incentivized through manufacturer mark-downs at the retailer level.
19 In addition, line 22 of this exhibit shows that 20,586 applications were processed for
20 qualified ENERGY STAR clothes washers, thermostats, dehumidifiers, and room air
21 conditioners.

22

23 **Q. What did DTE Electric spend for the residential ENERGY STAR products**
24 **program in 2018?**

25 A. As shown in Exhibit A-8 (line 1, column (e)), DTE Electric spent \$12.5 million on

Line
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1 the ENERGY STAR products program. This amount was \$2.6 million lower than
2 planned spend in 2018. The variation in spend was a result of lower rebate levels
3 while sustaining sales volumes. The spend on line 1 includes the rebates for the
4 ENERGY STAR measures; third party vendor costs to manage the program, such as
5 call center activities; rebate processing and fulfillment, marketing, and field activity
6 to verify that signage and pricing is correct and visible in retail stores.

7

8 **Q. What was the objective of the appliance recycling program?**

9 A. The objective of the appliance recycling program was to produce cost-effective, long-
10 term annual energy savings by promoting the early retirement and recycling of
11 operable, inefficient appliances from DTE Electric households in an environmentally
12 safe manner. At the same time, DTE Electric educated its customers on the additional
13 energy cost incurred by operating a second, inefficient appliance.

14

15 **Q. What appliances were included in the appliance recycling program?**

16 A. The appliances included in the program were working condition refrigerators,
17 freezers, room air conditioners (ACs), and dehumidifiers. Room ACs and
18 dehumidifiers were only accepted when a refrigerator/freezer was also being picked
19 up.

20

21 **Q. What incentive amounts were offered under the appliance recycling program?**

22 A. The Company offered a \$50 rebate for each working refrigerator and freezer, and a
23 \$20 rebate for each working dehumidifier and room AC.

24

Line
No.

1 **Q. What results were achieved for the appliance recycling program in 2018?**

2 A. As shown in Exhibit A-8 (line 2, column (d)), DTE Electric saved 30,102 MWh under
3 the appliance recycling program. The Company processed 30,871 applications under
4 its appliance recycling program as shown on line 23 of this exhibit.
5

6 **Q. What did DTE Electric spend for the appliance recycling program in 2018?**

7 A. As shown in Exhibit A-8 (line 2, column (e)), the Company spent \$6.1 million on the
8 appliance recycling program. The spend on line 2 primarily includes the customer
9 rebates, third party vendor costs to manage the program, such as call center activities,
10 marketing, rebate processing, pick-up and recycling costs of the appliances.
11

12 **Q. What was the objective of the HVAC program?**

13 A. The objective of the HVAC program was to increase customer demand for energy
14 efficient heating and cooling equipment. In addition, DTE Electric continued to
15 leverage its active trade ally network to maintain the momentum in participation.
16

17 **Q. What measures were offered in the HVAC program?**

18 A. The electric measures offered in the HVAC program included high efficiency central
19 AC units; Electronically Commutated Motors (ECMs); Heat Pumps (Air Source and
20 Ground Source); AC diagnostic tune-ups; Wi-Fi enabled and smart thermostats.
21

22 **Q. What were the typical incentives offered under the HVAC program?**

23 A. The incentive amounts were: \$150-\$400 for Seasonal Energy Efficiency Rating
24 (SEER) 15 and above central AC units; \$250-\$350 for Heat Pumps; \$50 per ECM;
25 \$50 per AC tune-up; and \$100 for thermostats.

Line
No.

1 **Q. What results were achieved for the HVAC program in 2018?**

2 A. As shown in Exhibit A-8 (line 3, column (d)), the Company saved 13,144 MWh under
3 the HVAC program, with most the electric measure savings from the ECM. On line
4 24, it shows that the Company processed 17,864 HVAC customer applications.
5

6 **Q. What did DTE Electric spend for the HVAC program in 2018?**

7 A. As shown in Exhibit A-8 (line 3, column (e)), DTE Electric spent \$4.3 million on the
8 HVAC Program. This amount is approximately \$0.3 million higher than planned
9 spend in 2018. The variation in spend was a result of higher program adoption than
10 anticipated. The spend on line 3 includes the rebates for the HVAC measures, third
11 party vendor costs to manage the program, such as call center activities, rebate
12 processing and fulfillment, field verification activities, and contractor training and
13 support.
14

15 **Q. What was the objective of the multifamily program?**

16 A. The objective of the multifamily program was to produce electric energy savings in
17 multifamily buildings with three or more units through the direct installation of
18 energy saving measures in the individual living units. Energy efficiency education
19 was also delivered to property owners, managers, and individual tenants.
20

21 **Q. What measures were offered in the multifamily program?**

22 A. Typical in-unit measures included: LED lights; LED night lights; programmable
23 thermostats if the unit had electric heat, and energy efficient shower heads, pipe wrap
24 insulation, and energy efficient kitchen and bath aerators if the units had electric
25 water heating.

Line
No.

1 **Q. Were incentive payments directly paid to tenants under the multifamily**
2 **program?**

3 A. No. The multifamily program is a direct-install program, so tenants did not receive
4 incentive payments.

5
6 **Q. What results were achieved for the multifamily program in 2018?**

7 A. As shown in Exhibit A-8 (line 4, column (d)) DTE Electric saved 950 MWh through
8 the multifamily program. Line 25 of this exhibit shows that during 2018, the
9 Company completed 5,111 units.

10

11 **Q. What did DTE Electric spend for the multifamily program in 2018?**

12 A. As shown in Exhibit A-8 (line 4, column (e)), DTE Electric spent \$0.2 million on the
13 multifamily program. This amount was \$1.4 million lower than what the Company
14 had planned to spend in 2018. The variation in spend was a result of a combination
15 of higher than planned market saturation for the program and a change in how
16 properties are classified as low income verses market rate. Program spend on line 4
17 includes the material cost for direct install measures and labor to install those
18 measures, in addition to third party vendor costs to manage the program, such as call
19 center activities, field verification activities, collateral and educational pieces
20 designed for outreach events and program activities.

21

22 **Q. What was the objective of the HEC program?**

23 A. The objective of the HEC program has two parts: 1) provide direct install energy
24 saving measures for single-family homes; and 2) during the installation process

Line
No.

1 provide a customer specific energy saving consultation, identifying energy saving
2 opportunities that are specific to the individual home.

3

4 **Q. What measures were offered in the HEC program?**

5 A. Typical measures included: LEDs; LED night lights; programmable and smart
6 thermostats; energy efficient shower heads, energy efficient kitchen and bath
7 aerators, and pipe wrap insulation. Measures related to hot water savings and pipe
8 wrap with electric energy savings were only claimed if customer had an electric water
9 heater. Thermostats were installed for customers with electric heat.

10

11 **Q. Were incentive payments directly paid to homeowners or tenants under the**
12 **HEC program?**

13 A. No. The HEC program is a direct-install program, so homeowners or tenants did not
14 receive incentive payments.

15

16 **Q. What results were achieved for the HEC program in 2018?**

17 A. As shown in Exhibit A-8 (line, column (d)) DTE Electric saved 8,288 MWh through
18 the HEC program. Line 26 of this exhibit shows that during 2018, the Company
19 completed 11,257 units.

20

21 **Q. What did DTE Electric spend for the HEC program in 2018?**

22 A. As shown in Exhibit A-8 (line 5, column (d)), DTE Electric spent \$4.0 million on the
23 HEC program. This amount was \$1.2. million higher than planned spend. The
24 variation in spend was a result of the program finding more market rate participation
25 and lower low income customer program participation than planned. Program spend

Line
No.

1 on line 5 includes the material cost for direct install measures and labor to install
2 those measures, in addition to third party vendor costs to manage the program, such
3 as call center activities, field verification activities, collateral and educational pieces
4 designed for outreach events and program activities.

5

6 **Q. What was the objective of the School program?**

7 A. The objectives of the School Program are primarily to help develop and encourage a
8 culture of energy efficiency in elementary students, teachers, schools, and families
9 throughout the DTE Energy service territory through both public and private schools
10 and to deliver real, measurable energy savings. Each participating teacher and
11 student received a kit filled with energy-efficient technologies and a guide with
12 information on energy resources and energy saving tips. Students are instructed to
13 install all products with adult supervision in their residence. Instructional materials
14 have been designed to correlate with to the State of Michigan math and science
15 curriculum for 4th through 6th grade students.

16

17 **Q. What measures were offered in the School program?**

18 A. Measures provided included were LEDs, LED night lights, energy efficient shower
19 heads, hot water pipe wrap, energy efficient kitchen and bath aerators. Measures
20 related to hot water savings with electric energy savings were only claimed if the
21 home had an electric water heater.

22

23 **Q. Were incentive payments directly paid to homeowners or tenants under the**
24 **School program?**

Line
No.

1 A. No. The School program distributes the energy savings measures directly to the
2 students and they do not incur any costs.

3

4 **Q. What results were achieved for the School program in 2018?**

5 A. As shown in Exhibit A-8 (line 6, column (d)) DTE Electric saved 3,365 MWh
6 through the School program. Line 27 of this exhibit shows that during 2018, the
7 Company distributed approximately 27,144 kits.

8

9 **Q. What did DTE Electric spend for the School program in 2018?**

10 A. As shown in Exhibit A-8 (line 6, column (e)), DTE Electric spent \$0.8 million on the
11 School program. This amount was \$0.3 million less than planned spend. The
12 variation in spend was a result of the Company being able to contract the program
13 for less money than planned. Program spend on line 6 includes the material cost for
14 measures included in the kit, labor to assemble kits and deliver them to the school
15 and costs related to delivering the educational component of the program. This is in
16 addition to third party vendor costs to manage the program, such as call center
17 activities, field verification activities, collateral and educational pieces designed for
18 outreach events and program activities.

19

20 **Q. What was the objective of the On-Line Energy Audit program?**

21 A. The objective of the On-Line Energy Audit program includes two parts: 1) at no cost
22 to the participant, provide an online survey for customers to complete and provides
23 customer specific home energy saving recommendations; and 2) after the
24 completions of the survey, a free energy efficiency kit is mailed to the customer that

Line
No.

1 includes easy to install energy savings measures that the customer can install
2 themselves.

3

4 **Q. What measures were offered in the On-Line Energy Audit program?**

5 A. The measures mailed in the kit included: LED bulbs; LED night lights; and may have
6 also included an energy efficient showerhead, energy efficient kitchen and bath
7 aerators, and pipe wrap insulation. Measures included in the kit were based on
8 whether customer's water heater was fueled by DTE Energy. The measures related
9 to pipe wrap or hot water savings with electric energy savings were only claimed if
10 the home had an electric water heater.

11

12 **Q. Were incentive payments directly paid to homeowners or tenants under the On-**
13 **Line Energy Audit program?**

14 A. No. The On-Line Energy Audit program mails the energy savings measures at no
15 cost to the participant, so homeowners or tenants did not receive incentive payments.

16

17 **Q. What results were achieved for the On-Line Energy Audit program in 2018?**

18 A. As shown in Exhibit A-8 (line 7, column (d)) DTE Electric saved 3,052 MWh
19 through the On-Line Energy Audit program. Line 28 of this exhibit shows that during
20 2018, the Company delivered 17,147 kits to customers.

21

22 **Q. What did DTE Electric spend for the On-Line Energy Audit program in 2018?**

23 A. As shown in Exhibit A-8 (line 7, column (e)), DTE Electric spent \$0.4 million on the
24 On-Line Energy Audit program. This amount was \$0.7 million lower than what the
25 Company had planned to spend in 2018. The variation in spend was a result of cost

Line
No.

1 savings related to managing the program internally, reducing the size of the program
2 and using some inventory from the previous year. Program spend on line 7 includes
3 the material cost for the measures, mailing costs, and kit assembly and processing
4 costs, in addition to third party vendor costs to support the program, such as
5 marketing, program participation and energy savings tracking.
6

7 **Q. What was the objective of the Behavior program?**

8 A. The objective of the Behavior program was to encourage customers to save energy
9 by receiving a behavior modification treatment. DTE employed three different
10 behavior modification treatments: 1) Home Energy Reports (HER); 2) Smartphone
11 Behavior Application; and 3) Real Time Data Add-on to Smartphone Behavior
12 Application.
13

14 **Q. What was the objective of HER treatment?**

15 A. The HER treatment encouraged randomly select customers to be more energy
16 efficient by the means of social competition and social norming. Encouragement was
17 provided by way of a printed HER that displayed the customer's energy usage in
18 comparison to average energy usage of approximately 100 similar homes (as
19 determined by factors such as square footage, type of home, and heating fuel) and a
20 second comparison with the most efficient similar homes nearby (the top 20%). The
21 HER also contained the customer's individual ranking within the similar home set,
22 energy savings tips, and promotions for other energy efficiency programs.
23

24 **Q. How were the Home Energy Reports delivered to the customer?**

25 A. The customer was sent a HER via the USPS and an abbreviated email version of the
26 report was sent to customers if an email address was available.

Line
No.

1 **Q. What was the objective of the Smartphone Behavior Application treatment?**

2 A. The Smartphone Behavior Application treatment encouraged self-select customers to
3 be more energy efficient by providing customers with access to a variety of
4 information and tools designed to motivate customers to take energy saving actions.
5

6 **Q. How was the Smartphone Behavior Application provided to the customer?**

7 A. Various marketing, outreach and advertising channels were used to increase customer
8 awareness and encourage them to opt-in to participating in this program by
9 downloading the mobile application to either their iPhone or Android smartphone
10 device.
11

12 **Q. What was the objective of Real Time Data Add-on to Smartphone Behavior**
13 **Application treatment?**

14 A. Customers that were receiving the Smartphone Behavior Application were then able
15 to receive an enhanced treatment by providing usage data in real-time. This provided
16 for immediate and better insight into the customer's energy consumption, facilitating
17 a deeper engagement in the behavior treatment. The Real Time Data Add-on to
18 Smartphone Behavior Application treatment was achieved by self-selected customers
19 requesting an additional piece of hardware that is connected to the home internet.
20 This enables an enhanced treatment by displaying both high resolution energy
21 consumption history and real-time household electric energy consumption. The other
22 aspects from the Smartphone Behavior Application treatment are unchanged.
23

24 **Q. How was the Real Time Data Add-on to Smartphone Behavior Application**
25 **treatment provided to the customer?**

Line
No.

1 A. Within the Smartphone Behavior Application, authenticated customers have the
2 option to request the Real Time Data Add-on device. A self-installed kit is then
3 mailed to the customer. After the customer connects the device and through some
4 simple steps in the app, the device communicates energy usage with the customer's
5 meter, the customer can receive the Real Time Data Add-on to Smartphone Behavior
6 Application treatment.

7
8 **Q. Were incentive payments directly paid to homeowners or tenants under the**
9 **Behavior program?**

10 A. No.

11

12 **Q. What results were achieved for the Behavior program in 2018?**

13 A. As shown in Exhibit A-8 (line 8, column (d)) DTE Electric saved 62,719 MWh
14 through the Behavior program. Line 29 of this exhibit shows that during 2018, the
15 Company provided HERs to approximately 344,457 customers.

16

17 **Q. What did DTE Electric spend for the Behavior program in 2018?**

18 A. As shown in Exhibit A-8 (line 8, column (e)), DTE Electric spent \$4.0 million on the
19 Behavior program. This amount was \$1.0 million higher than what the Company had
20 planned to spend in 2018. The variation in spend was a result of a change in the fee
21 structure to deliver the Smartphone Behavior Application and Real Time Data Add-
22 on to Smartphone Behavior Application treatment components of the program.
23 Program spend in line 8 includes the printing and mailing costs, software as a service
24 fees, as well as the additional third-party vendor costs to manage and support the
25 program.

Line
No.

1 **Q. What was the objective of the audit and weatherization program?**

2 A. The objective of the audit and weatherization program was two-fold: (1) to encourage
3 comprehensive energy audits, and (2) motivate customers by offering rebates for the
4 installation of qualified weatherization measures in their homes.
5

6 **Q. What measures were offered in the audit and weatherization program?**

7 A. The audit and weatherization program provided weatherization rebates for insulation;
8 window replacement; air sealing; and HVAC measures as part of the comprehensive
9 home performance projects.
10

11 **Q. What were the incentive amounts offered under the audit and weatherization**
12 **program in 2018?**

13 A. Incentive amounts of installed insulation varied between \$25-\$125 based on the type
14 of measure. Window replacement incentives ranged from \$15-\$40. Air infiltration
15 reduction measure incentives ranged from \$75-\$150. HVAC measure incentives
16 ranged from \$50-\$400.
17

18 **Q. What results were achieved for the audit and weatherization program in 2018?**

19 A. As shown in Exhibit A-8 (line 9, column (d)), DTE Electric saved 647 MWh under
20 the audit and weatherization program. Line 30 of this exhibit shows that during 2018,
21 the Company processed 2,788 audit and weatherization rebate applications.
22

23 **Q. What did DTE Electric spend in program cost for the audit and weatherization**
24 **program in 2018?**

Line
No.

1 A. As shown in Exhibit A-8 (line 9, column (e)) DTE Electric spent \$0.7 million on the
2 audit and weatherization program. Program spend on line 9 includes weatherization
3 rebates, as well as third party vendor costs to manage the program, activities such as
4 call center operations, rebate processing and fulfillment, field verification activities,
5 contractor training and support, and community outreach efforts.

6
7 **Q. What was the objective of the Emerging Measures and Approaches program?**

8 A. The objective of this program was to enable the Company to commercialize piloted
9 measures and approaches prior to the next plan filing.

10

11 **Q. What programs were offered in the Emerging Measures and Approaches**
12 **program?**

13 A. The Emerging Measures and Approaches program began foundational design for a
14 Revolving Loan Fund program.

15

16 **Q. What was the objective of the Revolving Loan Fund program?**

17 A. The objective of the program is to provide energy efficiency program participation
18 opportunities for customers with incomes that are above 200% Federal Poverty
19 Levels (FPL) but are below 300% FPL. This program is an attempt to help customers
20 with this level of income overcome the financial barrier to becoming more energy
21 efficient.

22

23 **Q. What is the program design of the Revolving Loan Fund program?**

24 A. The Revolving Loan Fund program will provide a combination of grants and loans
25 to customers to cover the full costs of energy efficiency improvements to their home.

Line
No.

1 The program is designed to have two tiers based on the customer's income as related
2 to FPL.

3

4 1. Customers with incomes over 200% FPL but less than 250% FPL will have
5 customized grant/loan split developed that allows customer to make major
6 energy efficiency upgrades and be annually cash flow neutral between the
7 energy savings and loan payment.

8 2. Customers with incomes over 250% FPL but less than 300% FPL will be
9 provided a grant/loan split of 50% each.

10

11 **Q. What did DTE Electric spend for the Emerging Measures and Approaches**
12 **program spend in 2018?**

13 A. As shown in Exhibit A-8 (line 10, column (e)), DTE Electric spent \$0.2 million on
14 the Emerging Measures and Approaches program. The remaining budget for
15 Emerging Measures and Approaches was transferred to other programs in the
16 portfolio such as Behavior.

17

18 **Q. What was the objective of the Low Income program?**

19 A. The objective of the Low Income program was to provide no cost savings measures
20 and education to income-qualified DTE Electric customers to assist them in reducing
21 their energy use and managing their utility costs. This was achieved through four
22 components.

23

24 The Non-profit Agencies component of the program leveraged the services provided
25 by member agencies of the Michigan Community Action Agency Association,

Line
No.

1 municipalities, counties, public housing commissions, faith-based institutions,
2 community development corporations and nonprofit organizations with existing
3 housing and energy programs. These vast networks of participating organizations
4 not only administer the installation of energy efficiency measures, but also assist DTE
5 Electric in identifying income qualified customers.

6
7 The Multifamily component of the program's objective is to produce immediate
8 energy savings in multifamily buildings with three or more units through the direct
9 installation of energy saving measures in the individual living units, in the same
10 manner as the Multifamily program. As a result of the 2018/2019 EWR Plan
11 settlement agreement, the DTE Electric Low Income Multifamily program increased
12 its spend by \$125,000. This increased spend helped pay for new measures which
13 were added to the in unit and common area direct install program. These new
14 measures were also fully paid for by the program and include refrigerator
15 replacements, occupancy sensors and window air conditioners.

16
17 The HEC component program's objective was two parts: 1) provide direct install
18 energy saving measures for single-family homes; and 2) during the installation
19 process provide a customer specific energy saving consultation, identifying energy
20 saving opportunities that are specific to the individual home. This was delivered in
21 the same manner as the HEC program.

22
23 The Behavior component of the program's objective was to encourage select low
24 income customers to be more energy efficient by the means of social competition and

Line
No.

1 social norming by providing the customer with Home Energy Reports, in the same
2 manner as the Behavior program.

3

4 **Q. What measures were offered in the low income program?**

5 A. The low income program offered various measures including: LEDs; energy star
6 qualified refrigerators, pipe wrap, energy efficient showerheads, kitchen and
7 bathroom aerators to those customers with electric water heating; attic, attic hatch,
8 wall, basement wall, knee wall, band joist, duct and crawl space insulation; air
9 sealing; programmable thermostats, high efficiency furnaces manufactured with
10 ECM's and Home Energy Reports.

11

12 **Q. Were incentive payments directly paid to customers under the low income**
13 **program?**

14 A. No.

15

16 **Q. What results were achieved for the low income program in 2018?**

17 A. As shown in Exhibit A-8 (line 19, column (d)), DTE Electric saved 26,507 MWh
18 through the low income program. In 2018, the Company funded installations for
19 4,511 project requests, which were provided by non-profit agencies. The Company
20 completed direct install measures for 4,568 low income multifamily units and
21 performed HECs to 5,347 low income homes. Further, the company sent HERs to
22 81,477 low income customers. These make up a total of approximately 95,903
23 participants as shown on line 37 of this exhibit.

24

Line
No.

1 **Q. What did DTE Electric spend in program cost for the low income program in**
2 **2018?**

3 A. As shown in Exhibit A-8 (line 19, column (e)), DTE Electric spent \$13.8 million.
4 This amount is \$2.0 million more than what DTE Electric had planned to spend in
5 2018. This overspend is primarily due to an increase in spend in the Non-profit
6 Agencies and Multifamily components of the program. The increased spend in these
7 program components was part of the EWR plan filing settlement and was spent in
8 accordance with said settlement. Program spend on line 19 includes third party
9 vendor costs to manage the program, such as administrative coordination with local
10 agencies, application processing and fulfillment, and field verification activities and
11 internal cost directly associated with administering the residential low income
12 program.

13

14 **Q. What is the basis for the administration and infrastructure amounts shown on**
15 **line 11 of your Exhibit A-8?**

16 A. The amount shown on line 11, column (e) of this exhibit represents the internal
17 administration costs directly associated with the residential EWR programs and
18 includes administration and infrastructure costs that Witness Chubb allocated to the
19 residential EWR programs as shown on page 1, line 7, column (c) of his Exhibit A-
20 16. The approved 2018 EWR Plan had an administration budget of approximately
21 \$3.3 million. DTE Electric spent approximately \$3.0 million more on administration
22 and infrastructure costs than planned. In addition, the higher than planned
23 administration and infrastructure cost spend includes call center, additional
24 informational resources, organization memberships such as: E Source, along with
25 additional research and benchmarking information.

Line
No.

1

Education Program

2

Q. What was the objective of DTE Electric's EWR education program?

3

A. The objective of the EWR education program was to provide DTE Electric residential and business customers with information and resources to help them learn how to utilize energy more efficiently and to better manage their energy costs. The DTE Energy website, mass media, social media, and outreach campaigns such as outbound mail, digital communications, community events and sponsorships are key channels to engage customers with energy efficiency information. In 2018, the Company continued to rely on our website, mass media and outreach campaigns targeting specific customer segments in an effort to increase their awareness of energy efficiency.

12

13

Q. How did DTE Electric implement its Education program in 2018?

14

A. The Company continued to provide energy efficiency education and raised awareness of EWR offerings through traditional mass media channels, community outreach events, sponsorships, digital media including web and social media, and direct outreach to increase awareness among DTE Electric customers. In 2018, the Company utilized target marketing to meet segment specific needs for energy efficiency information.

20

21

Q. What projects and campaigns were performed under the education program in 2018?

22

23

A. The following projects and campaigns were performed under the education program in 2018:

24

25

Line
No.

1 Residential campaigns included radio, television, print, direct outreach, and digital
2 advertising focused on low-cost or no-cost tips, ENERGY STAR appliance tips,
3 heating and cooling messaging while providing estimated energy and money saving
4 opportunities. Recommended temperature settings and other specific behaviors on
5 managing energy use were also given when possible. In addition, we continued to
6 include messages highlighting the non-energy benefits of making energy efficiency
7 improvements in and outside of their home, including improved comfort,
8 convenience, health, and safety.

9
10 Small business campaigns included radio, television, print, direct mail, and digital
11 advertising focusing on low-cost or no-cost tips, and case studies with suggestions
12 that similar businesses could complete for energy efficiency improvements. In
13 addition, we continued to highlight the non-energy benefits of making energy
14 efficiency improvements to increase the comfort, environment, and safety of their
15 business and to improve satisfaction of their customers and employees.

16
17 Events such as the DTE and The Engineering Society of Detroit (ESD) Energy
18 Efficiency Conference, trade associations events, Energy Summit, community
19 festivals and Earth Day events were held for residential and businesses.

20
21 Sports sponsorships with the Detroit Tigers, Detroit Red Wings, Detroit Lions, West
22 Michigan Whitecaps, Grand Rapids Griffins and Traverse City Beach Bums allowed
23 direct activation opportunities to share energy-saving information in a fun and
24 engaging way.

25

Line
No.

1 Sponsorships with business chambers across our service area, the U.S. Green
2 Building Council's Michigan Battle of the Buildings Competition, Small Business
3 Association of Michigan (SBAM) and Detroit 2030 Districts were continued, with
4 the addition of two new outreach efforts through the Ann Arbor 2030 District and
5 Grand Rapids 2030 District to reach businesses.

6
7 Employee outreach through the Company intranet, videos and messaging on internal
8 TV screens, employee events, and monthly and weekly electronic newsletters.

9
10 As in past years, new collateral with a fresh message was created to educate
11 customers on energy efficiency. These included brochures, case studies, giveaways,
12 shade banners, ambassador cards, and energy-saving tips handouts. In addition, a
13 print and digital magazine with in-depth information of how energy efficiency can
14 be applied in businesses was developed in four editions. We also continued to utilize
15 bill inserts, direct mail, email newsletters and digital tools and communications
16 (online calculators, targeted videos, social media posts, and website information) to
17 engage customers in learning.

18

19 **Q. How much did DTE Electric spend for the education programs in 2018?**

20 A. As shown in Exhibit A-8, line 21, column (e), DTE Electric spent \$3.2 million on the
21 education program. Education funds were primarily spent on contracted services,
22 media and materials for the various projects and campaigns implemented as well as
23 on internal administration of the program.

24

Line
No.

1 **Q. How were education program energy savings determined?**

2 A. Education energy savings were determined based on the method prescribed by the
3 Commission's December 4, 2008 Temporary Order in Case No. U-15800. In that
4 order, the Commission determined that EWR education programs may use up to three
5 percent of the annual EWR budget. Any funds spent on education will be deemed to
6 have generated a proportional amount of energy savings per dollar of spend to that of
7 the overall portfolio, up to three percent during each program year. Given the
8 spending completed on education projects and campaigns in 2018, energy savings
9 per Exhibit A-9 were determined based on the above methodology to be 21.4 GWh.

10

11 **Q. Does this conclude your direct testimony?**

12 A. Yes, it does.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

EXHIBIT

OF

JASON KUPSER

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Residential, Low Income and Education Program Cost and Energy Savings

Case No.: U-20366
Exhibit: A-8
Witness: J. Kupser
Page: 1 of 1

Line No.	(a) Description	(b) 2018 Planned		(d) 2018 Actual		(f) Variance - Over / (Under)	
		(c) MWh Savings	(c) Cost (\$000)	(e) 2018 Verified Net Savings	(e) Cost (\$000)	(g) MWh Savings	(g) Cost (\$000)
	Residential	(1)	(1)	(2)	(3)		
1	Residential ENERGY STAR Products	146,741	\$15,097	151,885	\$12,531	5,144	(\$2,566)
2	Residential Appliance Recycling	29,463	\$6,035	30,102	6,071	640	35
3	Residential HVAC	12,053	\$4,034	13,144	4,329	1,091	295
4	Multifamily	2,144	\$1,672	950	243	(1,194)	(1,429)
5	Home Energy Consultation (HEC)	4,690	\$2,798	8,288	3,970	3,597	1,172
6	School Program	2,948	\$1,156	3,365	826	417	(331)
7	On-Line Energy Audit	3,082	\$1,027	3,052	376	(29)	(651)
8	Behavior Programs	65,354	\$2,972	62,719	4,046	(2,635)	1,073
9	Residential Audit and Weatherization	1,473	\$673	647	732	(826)	59
10	Residential Emerging Measures and Approaches	1,346	\$792	-	225	(1,346)	(567)
11	Residential Administration & Infrastructure		\$3,342		6,353		3,011
12	Residential Program Total	269,293	\$39,599	274,152	\$39,700	4,859	\$101
	Low Income						
13	Low Income attributed to Non-profit Agencies	5,621	\$4,957	7,408	\$6,853	1,787	\$1,895
14	Low Income attributed to Multifamily Units	2,216	\$1,439	1,153	2,671	(1,063)	\$1,232
15	Low Income attributed to Home Energy Consultation	6,766	\$4,822	3,291	3,661	(3,475)	(\$1,160)
16	Low Income attributed to Behavior (Home Energy Reports)	8,720	\$294	14,655	212	5,935	(\$81)
17	Low Income Administration & Infrastructure		\$323		355		\$32
18	Low Income Program Total	23,322	\$11,834	26,507	\$13,753	3,185	\$1,919
19							
20	Residential and Low Income Program Totals	292,615	\$51,433	300,659	\$53,453	8,043	\$2,020
21	Education	21,196	\$3,156	21,355	3,222	159	66
		2018 Customer Applications (4)					
22	Residential ENERGY STAR Products	20,586	excludes Energy Star lighting				
23	Residential Appliance Recycling	30,871					
24	Residential HVAC	17,864					
25	Multifamily	5,111	units (excludes low income multifamily units)				
26	Home Energy Consultation (HEC)	11,257	houses (excludes low income houses)				
27	School Program	27,144					
28	On-Line Energy Audit	17,147					
29	Behavior Programs	344,457					
30	Residential Audit and Weatherization	2,788					
31	Residential Emerging Measures and Approaches	-					
32	Residential Program Total	477,225					
33	Low Income attributed to Non-profit Agencies	4,511					
34	Low Income attributed to Multifamily Units	4,568					
35	Low Income attributed to Home Energy Consultation	5,347					
36	Low Income attributed to Behavior (Home Energy Reports)	81,477					
37	Low Income Program Total	95,903					
38	Residential and Low Income Program Totals	573,128					

Note:
(1) U-18262, Detroit Edison's Amended EO Plan, Exhibit A-4, Columns (e) and (f)
(2) Exhibit A-13, Column (j)
(3) Exhibit A-3 p 2, Column (d)
(4) Company Records

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Education Program Savings Calculation

Case No.: U-20366
Exhibit: A-9
Witness: J. Kupser
Page: 1 of 1

	(a)	(b)	(c)
Line No.	Source	Item	Amount
1	U-18262, DTE Electric EWR Plan Exhibit A-4, Col. (e), Line 35	Program Target in MWh	706,721
2	Exhibit A-16, p.1, Column (f) Line 9 + Line 12	Program Spend	\$ 106,629,458
3	Line 1 / Line 2	MWh/\$ of Spend	0.006628
4	Exhibit A-3, p. 2, Column (d), Line 34, Plus Exhibit A-3, p. 4, Column (d), Line 30	Education Spend	\$ 3,222,048
5	Line 3 * Line 4	Education Savings MWh	<u>21,355</u>

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

QUALIFICATIONS

AND

DIRECT TESTIMONY

OF

ALISON J. JAWOROWSKI

DTE ELECTRIC COMPANY
QUALIFICATIONS OF ALISON J. JAWOROWSKI

Line
No.

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

2 A. My name is Alison Jaworowski. My business address is: One Energy Plaza, Detroit,
3 MI 48226. I am employed by DTE Electric Company (DTE Electric or Company).

4

5 **Q. On whose behalf are you testifying?**

6 A. I am testifying on behalf of DTE Electric.

7

8 **Q. What is your educational background?**

9 A. I graduated from The University of Michigan, Dearborn MI, with a Bachelor of
10 Business Administration Degree in Accounting. I obtained a Master of Business
11 Administration from Wayne State University, Detroit MI, with a focus in IT
12 Management Information Systems.

13

14 **Q. What is your work experience?**

15 A. I was hired by DTE Electric Company in April 2003 as an IT Analyst in the
16 Information Technology Department. In this role, I was responsible for budgeting,
17 forecasting and capital approvals for IT infrastructure projects. I have held several
18 positions of increasing responsibility within the company.

19

20 In 2007, I was promoted to Principal Financial Analyst, Michigan Consolidated Gas
21 Operations, Decision Support. In this role I supported the Gas Transmission and
22 Storage Operations throughout the state of Michigan. I was responsible for
23 budgeting, forecasting and Six Sigma weekly reporting of all financial transactions
24 related to operations.

25

Line
No.

1 In 2009, I joined the Energy Waste Reduction team as a Principal Financial Analyst
2 during the initial launch of the Energy Efficiency Program. I was responsible for
3 structuring the accounting system, developing monthly financial reporting in addition
4 to designing financial and regulatory models.

5
6 In 2011, I was promoted to a Marketing Analyst within the EWR business unit,
7 assigned to the Evaluation, Measurement & Verification team. I was responsible for
8 management of the Commercial & Industrial and Residential energy efficiency
9 program portfolio's impact and process evaluations. I was involved in the research
10 and development of the DTE gas and electric energy efficiency baseline study and
11 potential study. I served as a member of the EWR Evaluation subcommittee and the
12 EWR Technical subcommittee at the Michigan Public Service Commission.

13
14 In 2016, I was promoted to Principal Marketing Specialist in support of the
15 Commercial and Industrial Program. In this role I piloted and launched the
16 midstream commercial lighting program.

17
18 **Q. What are your current job responsibilities?**

19 A. As a Principal Marketing Specialist assigned to the EWR Commercial and Industrial
20 program, I am responsible for program management of the C&I Electric Program and
21 the C&I Electric Self Direct Program. My role includes management of the
22 implementation and incentive budget, oversight of all related activities, program
23 design, marketing, contract management and regulatory duties.

24

Line
No.

1 **Q. Are you a member of any professional organizations?**

2 A. Yes. I am a member of the Association of Energy Services Professionals, Midwest
3 Energy Efficiency Alliance Midwest LUMEN utility group, and utility member of
4 Design Lights Consortium. I have served as an expert speaker on utility midstream
5 programs and small business programs at both national and regional conferences.

6

7 **Q. Have you previously provided testimony or supported cases before the Michigan**
8 **Public Service Commission (Commission)?**

9 A. I have provided support of the DTE Electric 2012, 2013, 2015, 2016, 2017
10 reconciliation cases. (U-17282, U-17602, U-18023, U-18332, and U-20029
11 respectively).

DTE ELECTRIC COMPANY
DIRECT TESTIMONY OF ALISON J. JAWOROWSKI

Line
No.

1 **Q. What is the purpose of your testimony?**

2 A. The purpose of my testimony is to present the results of DTE Electric's 2018 EWR
3 C&I programs. I will also describe the impact of the electric Self-Direct program
4 and present the 2018 Self-Direct Report. My testimony will describe the following:

5 1) The overall implementation of EWR C&I programs;

6 2) The 2018 performance of DTE Electric's EWR C&I programs, and how the
7 customers were made aware of the C&I program.

8 3) The measures and incentives for the C&I prescriptive program, the \$14.5 million
9 the Company spent on the program, and the 188,168 MWh of energy savings
10 achieved under the C&I prescriptive program;

11 4) The measures, the energy savings achieved and incentives for the C&I component
12 of the Multifamily program and the Energy Star Retail Lighting program;

13 5) The measures, the energy savings achieved and incentives for the C&I Retro
14 Commissioning program, the Business Energy Consultation program and
15 commercial Midstream Lighting program;

16 6) The measures and incentives for the C&I non-prescriptive program, the \$15.1
17 million the Company spent on the program, and the 106,629 MWh of energy
18 savings achieved under the C&I non-prescriptive program;

19 7) Discuss the C&I Emerging Measures and Approaches offerings and results;

20 8) Discuss the continued implementation of the Strategic Energy Plan;

21 9) The impact of the Self-Directed plans and the cost to administer that program.

22

23 **Q. Are you sponsoring any exhibits in this proceeding?**

24 A. Yes. I am sponsoring the following exhibits:

Line
No.

1	<u>Exhibit</u>	<u>Description</u>
2	A-10	Commercial & Industrial Program Cost and Energy Savings
3	A-11	2018 Annual Report on Self-Directed Customer EWR Plans to the
4		MPSC

5

6 **Q. Were these exhibits prepared by you or under your direction and supervision?**

7 A. Yes, they were.

8

9 **2018 EWR C&I Portfolio Program Summary**

10 **Q. What was the overall performance of DTE Electric's EWR C&I programs in**
11 **2018?**

12 A. DTE Electric exceeded its C&I energy savings goal in 2018. The EWR C&I
13 programs achieved 370,596 MWh of savings. The energy savings exceeded the
14 planned electric energy savings by 13,013 MWh, as shown on Exhibit A-10, column
15 (f), line 11, and will be discussed in more detail in this testimony.

16

17 **Q. How did DTE Electric implement its EWR C&I programs?**

18 A. DTE Electric has retained DNV-GL as its implementation contractor (IC) for the C&I
19 prescriptive & non-prescriptive programs since 2009. DNV-GL currently provides
20 operational support including trade ally training, application review and processing,
21 rebate fulfillment, operations call center, tracks program results, and trade ally
22 satisfaction surveys for the program. Navigant supplies the customer satisfaction
23 surveys for the program.

24

Line
No.

1 **Q. How did DTE Electric inform customers about the C&I program portfolio?**

2 A. DTE Electric uses several marketing channels to inform its business customers about
3 the energy efficiency program. Key marketing channels include DTE Energy
4 Account Managers that are directly responsible for business relationships with
5 assigned C&I customers, Energy Partnership & Services' Energy Managers and trade
6 allies who were marketing energy efficiency technologies directly to business
7 customers. DTE Electric also uses the annual DTE Energy/ Engineering Society of
8 Detroit Energy Conference to promote the program. Other marketing materials and
9 mediums used were TV and radio advertisement, DTE Energy website, other training
10 seminars, technical support, press releases and periodicals. Throughout the year,
11 program presentations were made to customers; professional
12 associations/organizations; city, state, and federal government agencies; and vendors,
13 contractors, engineering and architecture firms.

14

15 **2018 EWR C&I Prescriptive Program**

16 **Q. What was the objective of the EWR C&I prescriptive program?**

17 A. The C&I prescriptive program provides predetermined measures and incentives that
18 are in the Michigan Energy Measures Database (MEMD) to business customers for the
19 installation of energy efficient equipment. These incentives were designed to
20 encourage C&I business customers to install energy efficient measures in their existing
21 facilities.

22

23 **Q. What measures were included in the C&I prescriptive program?**

24 A. The C&I prescriptive program included more than 400 prescriptive measures from
25 the MEMD. The primary measures implemented include LED lighting fixtures &

Line
No.

1 lamps, control systems, motors and variable speed drives, food service and
2 refrigeration equipment, HVAC equipment and other common energy efficient
3 measures.

4

5 **Q. What incentives were offered under the C&I prescriptive program?**

6 A. EWR C&I incentive levels varied for the list of MEMD prescriptive measures. For
7 example, incentives for LED lighting fixtures ranged from \$1.00 to \$340 per fixture,
8 variable frequency drives for process pumps were \$60 per horsepower, high efficient
9 pumps were \$10 per horsepower and Unitary and Split Air Conditioning systems
10 incentives ranged from \$4 - \$10 per ton.

11

12 **Q. How were the electric prescriptive program energy savings calculated?**

13 A. The C&I electric prescriptive energy savings are calculated based on the deemed
14 savings for each type of measure within the prescriptive program. Measures are
15 specific devices or practices that reduce the amount of electricity used when
16 installed in a business. The deemed energy savings for this program were
17 determined from the state-approved MEMD and have been validated by Company
18 Witness Brannan.

19

20 **Q. What results were achieved in the EWR C&I prescriptive program?**

21 A. As shown in Exhibit A-10, line 1, column (d), DTE Electric achieved 188,168 MWh
22 reductions under the C&I prescriptive program. The electric energy savings
23 exceeded the plan by 44,173 MWh as shown in Exhibit A-10, line 1, column (f).
24 These C&I prescriptive energy reductions are based on deemed energy savings for
25 each type of measure within the MEMD. The C&I Energy Star Retail Lighting and

Line
No.

1 Multi-family common areas, Exhibit A-10, lines 4 & 5 combined, column (d,)
2 contributed an additional savings of 16,730 MWh towards the overall C&I
3 prescriptive savings. A measure is defined as a specific electric product that when
4 installed in a business customer facility, reduces the amount of electricity used. The
5 deemed energy savings for these measures are selected from the state-approved
6 MEMD and have been validated by Company Witness Ms. Brannan. As shown in
7 Exhibit A-10 for 2018, 2,882 customer applications were processed in the C&I
8 prescriptive program, column (b), line 12, and for the Energy Star® Retail Lighting
9 & Multifamily Common Areas customer participation was 186,509, column (b) sum
10 of lines 15 and 16.

11

12 **Q. What did DTE Electric spend on the EWR C&I prescriptive program?**

13 A. As shown in Exhibit A-10, line 1, column (e), DTE Electric spent approximately
14 \$14.5 million on the C&I prescriptive program. Spend, as used in this testimony,
15 refers to the O&M and capital expenditures by DTE Electric in implementing the
16 C&I program. It includes the implementation costs, customer incentives and
17 marketing costs. The EWR Plan approved for 2018 had an anticipated C&I
18 prescriptive budget of approximately \$13.3 million. DTE Electric spent
19 approximately \$1.2 million more than the plan for the C&I prescriptive program. The
20 prescriptive overspend was used to provide incentives for customer projects which
21 exceeded the budgeted plan.

22

23 **Q. Why does the Multifamily program have a C&I component?**

24 A. Energy savings and costs for measures installed in multifamily common areas are
25 included in the C&I prescriptive program because they are commercial facilities.

Line
No.

1 Property managers and building owners were encouraged to install energy efficient
2 equipment in their facility common areas such as hallways, stairwells, lobbies and
3 parking lots by providing them specific incentives for those measures.

4

5 **Q. What measures were offered in common areas of the Multifamily program?**

6 A. The measures included in the Multifamily common areas are found in the MEMD.
7 Examples of common area measures that are included were interior lighting
8 replacement and occupancy sensors.

9

10 **Q. What incentives were offered for common area measures in the Multifamily**
11 **program?**

12 A. The incentive levels varied based on the type of energy efficient equipment or
13 retrofits that the property managers or building owners installed. The incentive
14 amounts varied between lower cost lighting products to higher cost measures such as
15 HVAC systems.

16

17 **Q. Are there unique challenges in marketing energy efficient measures to the**
18 **Multifamily vertical market?**

19 A. Yes, penetrating the multifamily market with energy efficient measures is
20 challenging since decision-makers of these properties are often hesitant to invest in
21 energy saving products when the benefits are shared among the tenants and property
22 owners, but the investment is wholly made by the owner. However, installing energy
23 efficient measures as an investment helps multifamily property owners and managers
24 enhance the value and marketability of their properties while reducing their energy-
25 related operating expenses.

Line
No.

1 **Q. What C&I Multifamily Common Area results were achieved?**

2 A. DTE Electric's multifamily commercial customers saved 1,791 MWh by installing
3 energy efficient measures in their common areas, which is included in the C&I program
4 energy savings on line 5, column (d) of Exhibit A-10.

5

6 **Q. What did DTE Electric spend on the C&I component of the Multifamily**
7 **program?**

8 A. DTE Electric spent approximately \$0.2 million on the C&I component of multifamily
9 program on line 5, column (e) of Exhibit A-10. The spend includes common area
10 measures only and includes implementation costs to maintain the C&I component of
11 the program, such as call center activities, rebate processing and fulfillment for
12 common areas, field verification activities, collateral and educational pieces designed
13 for outreach events and program activities, and contractor training and support.

14

15 **Q. What was the objective of the C&I Energy Star® Retail Lighting Program?**

16 A. The C&I Energy Star® Retail Lighting program provided business customers with
17 the opportunity to purchase Energy Star® rated energy efficient lighting products at
18 discounted prices from retail stores to install in their businesses.

19

20 **Q. What results were achieved for the C&I component of the Energy Star® Retail**
21 **Lighting program?**

22 A. DTE Electric saved 14,939 MWh through the C&I component of the Energy Star®
23 Retail Lighting program, which is included in the C&I program energy savings on line
24 4, column (d) of Exhibit A-10.

25

Line
No.

1 **Q. What did DTE Electric spend for the C&I component of the Energy Star®**
2 **Retail Lighting program?**

3 A. DTE Electric spent approximately \$0.3 million on the C&I component of Energy
4 Star® Retail Lighting program on line 4, column (e) of Exhibit A-10. This spend
5 includes educational materials and the incentives applied to Energy Star® rated
6 lighting products at participating retailers.

7

8 **2018 EWR C&I Retro-Commissioning Program**

9 **Q. What was the objective of the Retro-Commissioning program?**

10 A. Retro-Commissioning targets commercial buildings by providing a detailed energy
11 audit and evaluation that identifies operational low cost/no cost recommendations.
12 Property managers and building owners could then implement these
13 recommendations and reduce their operational energy consumption. Customers are
14 expected to have a building management system, to provide a nominal commitment
15 and to implement recommendations that have an 18-month simple payback or less.
16 In addition to the operational energy saving recommendations, the Retro-
17 Commissioning evaluation report provides customers with recommendations for
18 energy efficient capital investments that the customer could implement and receive
19 an incentive through the Prescriptive or Non-Prescriptive offerings. Due to the
20 complexities of this program, understanding that most projects span multiple EWR
21 program years coupled with low adoption levels of low cost/no cost operational
22 measures, this program wasn't cost effective, and therefore is being re-engineered as
23 a pilot.

24

25

Line
No.

1 **Q. What results were achieved for the Retro-Commissioning program?**

2 A. DTE Electric saved 1,209 MWh through the Retro-Commissioning program, which is
3 included in the C&I program energy savings on line 6, column (d) of Exhibit A-10.

4
5 **Q. What did DTE Electric spend on the Retro-Commissioning program?**

6 A. DTE Electric spent (\$0.001) on the Retro-Commissioning program on line 6, column
7 (e) of Exhibit A-10. As stated above, the complex nature of this program and non-
8 cost effective results required the program to be re-engineered as a pilot.

9
10 This spend was \$1.1 million under plan and used to fund the Business Energy
11 Consultation program and the Mid-Stream Lighting program. The additional funding
12 requirements were the result of expanding the Business Energy Consultation program
13 and commercializing the Mid-Stream Lighting program.

14
15 **2018 EWR C&I Business Energy Consultation Program**

16 **Q. What was the objective of the Business Energy Consultation program?**

17 A. The objective of the BEC program is to educate small business customers about
18 energy efficiency options and opportunities. The outreach team helps the small
19 business customer understand that they can control their operating and maintenance
20 costs and provides them with best practice recommendations to help them begin their
21 energy efficiency journey.

22
23 **Q. What measures were offered for the Business Energy Consultation Program?**

24 A. The BEC program targets small business customers by providing a walk-through
25 energy assessment evaluation, 3-6 prescriptive direct install measures such as a

Line
No.

1 programmable thermostat, LED screw in lamps, and a report outlining the findings
2 of the walk-through evaluation. The BEC energy assessment report will provide
3 customers with best practice energy efficient recommendations which the small
4 business customer could implement and receive an incentive through either the
5 Prescriptive or Non-Prescriptive offering.

6
7 **Q. What results were achieved for the Business Energy Consultation program?**

8 A. DTE Electric saved 7,350 MWh through the Business Energy Consultation program,
9 shown on line 7, column (d) of Exhibit A-10.

10
11 **Q. What did DTE Electric spend on the Business Energy Consultation program?**

12 A. DTE Electric spent \$1.7 million on the Business Energy Consultation program,
13 shown on line 7, column (e) of Exhibit A-10.

14
15 **2018 EWR C&I Midstream Lighting Program**

16 **Q. What was the objective of the Midstream Lighting program?**

17 A. The Midstream Lighting program is a simplified marketing approach that targets
18 lighting distributors that provide a point of purchase incentive to the customer for
19 purchasing and installing energy efficient LED products. Partnering with the lighting
20 distributor channel allows for greater flexibility and market insight. Customers and
21 trade allies go to lighting distributors for their expertise on various technical lighting
22 applications of the ever-changing lighting market. By targeting the lighting
23 distributor channel, one can focus on fewer players that can impact a greater number
24 of downstream customers. Successful midstream programs expect to change the
25 distributor channel product stocking habits to include more energy efficient lighting

Line
No.

1 products which they can then sell to their customers. DTE Electric's Midstream
2 Lighting program has an all LED product mix that includes; A Line and PAR lamps,
3 2 and 4-foot LED linear tube, wall mounted, exterior wall packs and occupancy
4 sensors. All LED products included in the midstream lighting program must be either
5 Design Lights Consortium (DLC) or Energy Star® rated.

6
7 **Q. What results were achieved for the Midstream Lighting program?**

8 A. DTE Electric saved 44,639 MWh through the C&I Midstream Lighting program,
9 shown on line 8, column (d) of Exhibit A-10.

10
11 **Q. What did DTE Electric spend on the Midstream Lighting program?**

12 A. DTE electric spent \$3.7 million on the Midstream Lighting program, shown on line
13 8, column (e) of Exhibit A-10.

14
15 **2018 EWR C&I Non-Prescriptive Program**

16 **Q. What was the objective of the C&I non-prescriptive program?**

17 A. The C&I non-prescriptive program provided custom incentives to C&I customers for
18 the installation of innovative and unique energy efficiency equipment and controls
19 that decrease the consumption of electricity.

20
21 **Q. What measures were included in the C&I non-prescriptive program?**

22 A. The C&I non-prescriptive program components include custom measures and
23 Request for Proposal (RFP), which are special offerings designed to increase
24 customer participation. Examples of C&I non-prescriptive program measures
25 implemented could include food service, HVAC, process systems, extended hours

Line
No.

1 use interior and exterior lighting systems, agricultural business offering and
2 compressed air systems.

3

4 **Q. Were any measures excluded from the C&I non-prescriptive program?**

5 A. Yes. Measures that were not eligible for a non-prescriptive incentive included fuel
6 switching (e.g. electric to gas or gas to electric), changes in operational and/or
7 maintenance practices or simple control modifications not involving capital costs,
8 on-site electricity generation, projects that involve peak-shifting and not kWh
9 savings, projects involving renewable energy and projects in which the payback did
10 not meet the C&I non-prescriptive requirements.

11

12 **Q. What incentives were offered under the C&I non-prescriptive program?**

13 A. Measure incentives were based on twelve months engineering calculated energy
14 savings times \$0.05 per kilowatt-hour. For projects to qualify for the non-
15 prescriptive incentive, a pre and post inspection were required, and the projects
16 needed to have a simple payback of a minimum one year up to a maximum of eight
17 years. Additionally, incentives were capped at 50% of the project cost.

18

19 **Q What electric reduction results were achieved in the C&I non-prescriptive**
20 **program?**

21 A. As shown in Exhibit A-10, line 2, column (d), DTE Electric's C&I non-prescriptive
22 program offering achieved 106,629 MWh of reduced electric use. The electric
23 energy savings were 54,864 MWh lower than the plan due to lower than expected
24 participation as shown in Exhibit A-10, line 2, column (f). In total, 843 C&I non-

Line
No.

1 prescriptive customer applications were processed during the program year, as shown
2 on line 13, column (b) of Exhibit A-10.

3

4 **Q. What did DTE Electric spend on the C&I non-prescriptive program?**

5 A. As shown in Exhibit A-10, line 2, column (e), DTE Electric spent approximately
6 \$15.2 million on the C&I non-prescriptive program. The non-prescriptive program
7 spend includes customer incentives, program implementation and marketing costs.
8 The EWR Plan had an anticipated budget spend of approximately \$17.7 million. C&I
9 non-prescriptive spend was approximately \$2.5 million less than planned as shown
10 in Exhibit A-10, line 2, column (g). The non-prescriptive program under spend was
11 allocated to the C&I prescriptive program.

12

13 **2018 EWR C&I Emerging Measures & Approaches Programs**

14 **Q. What C&I Emerging Measures and Approaches were developed and offered to**
15 **DTE Electric customers?**

16 A. In the 2018 EWR program year, one C&I Emerging Measures and Approaches
17 offering was available for DTE Electric's business customers, the Midstream Food
18 Service program. The offering targeted business customers, providing incentives on
19 food service equipment at the point of sale through distributor discounts. Some
20 examples of equipment eligible for the incentives include Energy Star® commercial
21 solid door refrigerators and freezers, hot holding cabinets and ice machines. This
22 program was developed as a pilot offering in previous program years and was moved
23 into the emerging measure and approaches classification for 2018.

24

Line
No.

1 **Q. What were the Emerging Measures and Approaches program results?**

2 A. As shown in Exhibit A-10, line 3, column (d), the Emerging Measures & Approaches
3 commercialized program, the Midstream Food Service program, had a savings of 864
4 MWh. These savings were 5,572 MWh lower than planned savings due to lower than
5 anticipated customer adoption as shown in Exhibit A-10, line 3, column (f). The
6 Emerging Measures and Approaches program spend includes customer incentives,
7 implementation costs and marketing costs. As shown in Exhibit A-10, line 3, column
8 (e), DTE Electric spent approximately \$0.3 million on the C&I Emerging Measures
9 and Approaches offerings. The Emerging Measures and Approaches spent
10 approximately \$(0.9) million less than the approved Plan, as shown in Exhibit A-10,
11 line 3, column (g). The underspend funded the Business Energy Consultation
12 program and the Midstream Lighting program. As shown in Exhibit A-10, line 14,
13 column (b), 139 customers participated in the C&I portfolio through the Emerging
14 Measures and Approaches commercialized programs.

15

16 **Q. Has DTE Electric continued to implement the C&I Strategic Energy Plan with**
17 **its business customers?**

18 A. Yes, in 2016 DTE Electric created and implemented the Strategic Energy Plan (SEP)
19 to assist all C&I customers. In 2018, DTE electric completed twelve (12) customer
20 Strategic Energy Plans in various vertical markets. The vertical markets were
21 manufacturing, public assembly/entertainment, drinking/wastewater treatment,
22 health care/services, industrial process, office, lodging and government/municipality.

23

24 The Strategic Energy Plan is a comprehensive energy assessment that is designed to
25 provide customers with the necessary information and knowledge to implement an

Line
No.

1 energy efficiency plan to meet their needs. DTE Electric also continued to assist our
2 customers through Business Energy Consultation program participation, energy
3 assessments for medium-large customers, and conducted C&I energy efficiency
4 workshops and trade ally training.

5
6 **2018 EWR C&I Administration & Infrastructure**

7 **Q. What is the basis for the administration & infrastructure amounts shown on line**
8 **10 of your Exhibit A-10?**

9 A. The amount shown in Exhibit A-10, line 10, column (e), approximately \$3.2 million,
10 represents internal administration and infrastructure costs directly associated with the
11 overall C&I program portfolio implementation. It also includes administration and
12 infrastructure costs that Company Witness Chubb allocated to the C&I program as
13 shown in Exhibit A-16, Page 1 of 4 on line 7, columns (d) and (e). The 2018 Plan
14 had an administration & infrastructure budget of approximately \$2.8 million. DTE
15 Electric spent approximately \$0.4 million more than planned on administration and
16 infrastructure costs. The spend was used to fund technology and infrastructure
17 program improvements.

18
19 **2018 EWR Self-Directed Program**

20 **Q. How were C&I customers made aware of their eligibility to file their own Self-**
21 **Directed energy efficiency plan?**

22 A. For the 2018 program, DTE Electric placed a bill message on all commercial customer
23 bills notifying them about the program and how to subscribe to the program. All
24 existing self-directed customers were sent personalized letters to inform them it was
25 time to re-apply. Account managers followed up with their customers after the letters

Line
No.

were sent out to address customer questions. The program information was also placed on the DTE Energy internet site along with the required energy plan templates for customers to use to apply to the program.

Q. What was the number of customers who participated in the Self-Directed program?

A. For the 2018 program year, five (5) customers participated in the EWR electric Self-Directed program, as shown on line 20 of Exhibit A-10. The 5 customers that participated in the electric Self-directed program achieved 5,008 MWh of electric use reduction.

Q. What is the impact of Self-Directed plans to DTE Electric's energy savings?

A. The table below is a summary of the 2018 energy savings projected by customers choosing to self-direct their energy efficiency plans. These planned energy savings, which are shown in Exhibit A-11, line 7, column (g), have been added to DTE Electric's total 2018 C&I achieved energy savings and carried forward to Exhibit A-10, line 6, column (d).

Year	2018
Self-Direct Planned Energy Savings	5,008 MWh
Primary Meters	172
Secondary Meters	81

Q. Why is DTE Electric incorporating the projected energy savings from the plans of Self-Directed customers into the Company's 2018 actual energy savings instead of incorporating the actual energy savings reported by these customers?

Line
No.

1 A. As discussed by Company Witness Mr. Boladian, and per Section 93 (7) of Public
2 Act 295 (PA 295), as amended by PA 342, "Projected energy savings from measures
3 implemented under a self-directed plan shall be attributed to the relevant provider's
4 energy optimization programs for the purposes of determining annual incremental
5 energy savings achieved." Therefore, as instructed by Witness Boladian, I have
6 included the projected energy savings from self-directed customers' plans as part
7 of the total energy savings achieved by C&I customers.

8

9 **Q. How were the required energy reductions for these customers determined?**

10 A. Self-Directed customers determined their energy reductions by multiplying their
11 annual consumption by the percentage factor specified in PA 295. The designated
12 energy savings factor for 2018 was 1.0%.

13

14 **Q. Are customers required to submit reports of their Self-Directed activities?**

15 A. Yes. As of December 14, 2010, Section 93 (9) PA 295 requires customers who are
16 self-directing their energy efficiency plans to file a brief report every year to show
17 their plan's progress and provide sufficient data to allow their energy provider and
18 the Commission to develop reliable estimates of the energy savings they are
19 achieving. DTE Electric has received four customers' 2018 annual report. These
20 customers' results have been incorporated into the 2018 Annual Report on Self-
21 Direct and were included in Exhibit A-11.

22

23 **Q. How many of the five customers that chose to continue to self-direct their energy**
24 **efficiency plan during 2018 achieved their energy savings goal for the reporting**
25 **period?**

Line
No.

1 A. Four customers reported that they achieved or exceeded their energy saving goals for
2 the annual reporting period, as shown on Exhibit A-11, page 4.

3

4 **Q. What was the cost to administer the Self-Directed program?**

5 A. The cost to administer the Self-Directed program for 2018 was \$100,000. These
6 costs are included in the C&I cost as shown in Exhibit A-10, on line 9, column
7 (e). The under spent Self-Direct program administration costs were used to
8 support the C&I Emerging Measures and Approaches programs.

9

10 **Q. What information does the 2018 Annual Report on Self-Directed Customer**
11 **energy efficiency plans report contain?**

12 A. The report consists of a brief written report and one schedule identified as Exhibit A-
13 11. The schedule is on page 4 of the report and provides a summary of information
14 from customers that have implemented a self-directed customer energy optimization
15 plan.

16

17 **Q. Does this complete your direct testimony?**

18 A. Yes, it does.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

EXHIBITS

OF

ALISON JAWOROWSKI

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Commercial & Industrial Program Cost and Energy Savings

Case No.: U-20366
Exhibit: A-10
Witness: A. Jaworowski
Page: 1 of 1

Line	(a)	(b)	(c)	(d)	(e)	(f)	(g)
		2018 Planned (1)		2018 Actual		Variance - Over / (Under)	
No.	Description	MWh Savings	Cost (\$000)	2018 Verified Net Savings	Cost (\$000)	MWh Savings	Cost (\$000)
		(1)	(1)	(2)	(3)		
1	C&I Prescriptive	143,995	\$13,342	188,168	\$14,528	44,173	\$1,186
2	C&I Non-Prescriptive	161,493	\$17,654	106,629	15,161	(54,864)	(2,492)
3	C&I Emerging Measures and Approaches	6,435	\$1,203	864	319	(5,572)	(884)
4	Energy Star Retail Lighting	7,904	\$661	14,939	329	7,035	(332)
5	Multifamily Common Areas	2,635	\$502	1,791	244	(844)	(258)
6	Retro-Commissioning	7,021	\$1,061	1,209	(1)	(5,812)	(1,062)
7	Business Energy Consultation	5,269	\$580	7,350	1,724	2,080	1,143
8	Midstream Lighting	15,809	\$2,131	44,639	3,685	28,830	1,554
9	Self Direct	7,021	\$156	5,008	100	(2,014)	(56)
10	Administration & Infrastructure		\$2,794		3,177		383
11	Total	357,583	\$40,085	370,596	\$39,267	13,013	(\$818)
		2018 Customer Applications (4)					
12	C&I Prescriptive	2,882					
13	C&I Non-Prescriptive	843					
14	C&I Emerging Measures and Approaches (5)	139					
15	Energy Star Retail Lighting	186,467					
16	Multifamily Common Areas	42					
17	Retro-Commissioning	4					
18	Business Energy Consultation	1,953					
19	Midstream Lighting	8,858					
20	Self Direct	5					
21	Total	201,193					

Notes:

- (1) U-18262, Detroit Edison's Amended EO Plan, Exhibit A-4, Columns (e) and (f)
- (2) Exhibit A-13, Column (j)
- (3) Exhibit A-3 p 4, Column (d)
- (4) Company Records
- (5) Includes Midstream Food Service

DTE Electric Company

2018 Annual Report on Self-Directed Customer Energy Waste Reduction Plans to the Michigan Public Service Commission

DTE ELECTRIC pursuant to Section 93(9) of PA 295 of 2008, submits this annual report regarding Customer's implementing Self Directed Customer Energy Optimization Plans.

Section 93(9) of Public act 295 of 2008 provides: "An electric provider shall provide an annual report to the commission that identifies customers implementing self-directed energy optimization plans and summarizes the results achieved cumulatively under those self-directed plans. The commission may request additional information from the electric provider. If the commission has sufficient reason to believe the information is inaccurate or incomplete, it may request additional information from the customer to ensure accuracy of the report."

In addition, the Michigan Public Service Commission in Attachment E of its December 4, 2008 temporary Order in Case No. U-15800 provided: "An electric provider shall provide an annual report to the commission identifying customers that have implemented self-directed energy optimization plans and summarize the results achieved under those self-directed plans. i) The provider's annual report to the commission will also list those customers who have failed to meet their portion of the annual performance standard. ii) The commission may request additional information from the provider or customer that describes the reasons for failing to meet the annual performance standard. iii) The commission, at its discretion, may request a contested case hearing involving those customers identified as failing to meet their portion of the annual performance standard. iv) This annual report for self-direct information may be combined with the provider's annual report submitted to the commission relating to actions taken by the provider to comply with the energy optimization standards. (However, please note that as provided in MCL 460.1191(2), the December 4, 2008 temporary order will be effective for no more than one year).

The chart below shows the planned aggregated Self Directed Customer Energy Optimization Plan results for 2018. Further, the following spreadsheet indicates the customers that implemented self-directed energy optimization plans. Certain customer specific information has been removed to maintain customer confidentiality. The results for the 2018 self-directed program are summarized in the chart below.

Description		2018
Planned Incremental Self-Directed Energy Savings		5,008 MWh
Achieved Incremental Self-Directed Energy Savings		5,008 MWh
Primary Meters		172
Secondary Meters		81

There were a total of five customers who participated in the 2018 self-direct program. 4 of the 5 of participating customers submitted annual reports, in compliance with the program requirements. Of the Self-Direct customer plans for 2018, 4 of the 5 customers met or exceeded their total required savings targets.

The administrative expenses for the 2018 self-direct program were \$100,000.

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Commercial & Industrial Program Self Direct

Case No.: U-20366
Exhibit: A-11
Witness: A. Jaworowski
Page: 4 of 4

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Line No.	Summary of the 2018 DTE Electric Self-Directed Program							
	Customers		Total meters associated to the customers Self Direct efforts		Annual Report Summary			
		Term of Self Direct			Supplied an Annual report	Did not supply an Annual report	2018 MWH Savings Planned	2018 MWH Savings achieved
		(YEARS)	Total Primary meters	Total Secondary meters				
1	Customer 1	5	6	4	✓		331	331
2	Customer 2	5	4	0	✓		70	70
3	Customer 3	3	32	26	✓		1,711	1,711
4	Customer 4	2	91	46	✓		2,085	2,085
5	Customer 5	3	39	5		✓	811	0
7	Totals:		172	81	4	1	5,008	4,197

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission’s own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

QUALIFICATIONS

AND

DIRECT TESTIMONY

OF

DEBBIE BRANNAN

DTE ELECTRIC COMPANY
QUALIFICATIONS OF DEBBIE BRANNAN

Line
No.

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

2 A. My name is Debbie Brannan. My business address is Navigant Consulting, Inc.
3 (Navigant) 1375 Walnut Ave., Suite 100, Boulder, CO 80302. I am a Director in
4 Navigant's Energy practice. Navigant is the independent energy program evaluation
5 contractor for DTE Electric Company (DTE Electric or Company).

6

7 **Q. On whose behalf are you testifying?**

8 A. I am testifying on behalf of DTE Electric.

9

10 **Q. What is your educational background?**

11 A. I have a doctorate degree in Economics from the University of Colorado Boulder.

12

13 **Q. What is your professional experience?**

14 A. I have been working in the energy industry for ten years, and specifically evaluating
15 energy efficiency programs for six years. I currently serve as Director-in-charge of
16 DTE Electric's portfolio evaluation and have conducted dozens of evaluations of
17 energy efficiency programs such as the programs currently being offered by DTE
18 Electric and have supported the development of testimony and/or compliance filings
19 in Michigan, Massachusetts, New York, Arizona and Hawaii. In Michigan, I had a
20 leading role in supporting the development of Craig McDonald's testimony in the
21 Company's 2013, 2014, 2015, and 2016 Energy Optimization (EO) Reconciliation
22 Cases (No. U-17602, U-17832, U-18023, and U-18332 respectively) and in the DTE
23 Gas Company's 2013, 2014, 2015, and 2016 EO Reconciliation Cases (No. U-17608,
24 U-17841, U-18024, and U-18338 respectively).

25

Line
No.

1 **Q. What are your current job responsibilities?**

2 A. I direct energy efficiency and demand response program strategy and evaluation
3 assignments for clients throughout the United States. In this role, I have overall
4 responsibility for directing the technical data analytics, engineering, and market
5 analysis evaluation efforts spanning all program types and customer segments.

6

7 **Q. Have you previously provided expert witness testimony before the Michigan**
8 **Public Service Commission (Commission)?**

9 A. Yes, I provided testimony in the Company's 2017 Energy Waste Reduction (EWR)
10 Reconciliation Case (No. U-20029) and in the DTE Gas Company's 2017 EWR
11 Reconciliation Case (No. U-20035).

DTE ELECTRIC COMPANY
DIRECT TESTIMONY OF DEBBIE BRANNAN

Line
No.

1 **Q. What is the purpose of your testimony in this proceeding?**

2 A. The purpose of my testimony is to verify DTE Electric's 2018 EWR program energy
3 savings calculations. The purpose of the verification is to confirm the energy savings
4 claimed by DTE Electric and provide revised estimates where necessary. My
5 testimony (1) describes the verification process that was performed for DTE
6 Electric's EWR programs; (2) states the verified energy and coincident peak demand
7 savings achieved for the 2018 EWR programs; and (3) verifies the accuracy of the
8 performance incentive attributes.

9

10 **Q. Were there any significant changes in the evaluation process used for program**
11 **year 2018 compared to program year 2017?**

12 A. No. The evaluation process used the same approaches and methods as had been used
13 in program years 2012, 2013, 2014, 2015, 2016, and 2017.

14

15 **Q. Are you sponsoring any exhibits in this proceeding?**

16 A. Yes. I am sponsoring the following exhibits:

<u>Exhibit</u>	<u>Description</u>
A-12	2018 Energy Waste Reduction Validation Sample Selection
A-13	2018 Energy Waste Reduction Energy Savings
A-14	2018 Energy Waste Reduction Demand Savings
A-15	2018 Energy Waste Reduction Performance Incentive Attributes

22

23 **Q. Were these exhibits prepared by you or under your supervision?**

24 A. Yes, they were.

25

Line
No.

1

Verification Process for Prescriptive Programs

2

Q. How were the 2018 EWR prescriptive program verified energy savings determined?

3

4 A. Verified energy savings for 2018 EWR prescriptive programs were determined
5 using a three-step approach: (1) the audit of reported EWR gross savings as reported
6 by DTE Electric compared to the values in the Michigan Energy Measures Database
7 (MEMD), including a review of a statistically valid sample of applications to
8 determine the audited gross savings; (2) application of the 2016 Installation Rate
9 Adjustment Factor (IRAF) to determine verified gross savings, with a few exceptions
10 as described below; and (3) application of appropriate NTGR to each program to
11 determine verified net savings.

12

13 The audit step consists of two phases. In the first phase of the audit, DTE Electric
14 program tracking data (from their Energy Optimization Program Tracker (EOPT)),
15 were compared to the Implementation Contractor (IC) program tracking data to check
16 for inconsistencies. Program tracking data consists of information about program
17 participants, the number, type and size of energy efficiency measures installed,
18 installation date, paid incentives, and expected energy and demand savings. Once
19 the program tracking data were compared and deemed consistent, DTE Electric's
20 energy savings calculations were checked for use of the correct MEMD algorithm
21 and associated inputs, or savings values. The second phase audit validation consisted
22 of a review of a statistically significant sample of incentive applications for each
23 EWR program, where applicable, to verify consistency with the data entered into
24 program tracking databases. The findings from both phases were then used to
25 calculate the total audited gross program savings.

Line
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- 1 Once the audited gross savings were calculated, the Evaluation Team applied
2 measure-level IRAF values to determine verified gross savings. IRAF values were
3 developed via market research techniques including online surveys, telephone
4 interviews and site visits to determine whether the measures listed in the program
5 database for each customer were in place and in use. These procedures were agreed
6 upon in the EWR Collaborative Evaluation Workgroup meetings, and were used in
7 the reconciliation results presented in previous years. Exceptions include:
8
9 1. Accounting for the delayed installation of lighting for programs that do not
10 directly install lighting measures (in 2018 this applies to ENERGY STAR
11 Lighting, Schools, On-Line Energy Audit, and Energy Efficiency Assistance –
12 Distribution only).
13
14 2. Applying an IRAF of 1.00 to new measures during the first two program years -
15 in 2018 this applies to: clothes dryers, and pool pumps in ENERGY STAR
16 Products; Tier 2 advanced power strips, occupancy sensors, and shower start
17 measures introduced in ENERGY STAR – Online Market Place; and heat pumps
18 introduced in Residential HVAC.
19
20 3. For programs that offer a measure through another program but with a unique
21 delivery mechanism, an IRAF of 1.00 is applied for the first year.
22 a. In 2018, this applies to furnace tune-ups and refrigerators/freezers
23 introduced in Multifamily, and high bay and low bay LED lighting
24 introduced in Midstream Lighting.

Line
No.

1 b. The Commercial & Industrial (C&I) Midstream Food Service Program
2 (captured in C&I Emerging Measures and Approaches) was first introduced
3 in 2017 and received an IRAF of 1.00 at that time. In 2018, the IRAF
4 evaluated in 2017 is applied.

5

6 4. Pipe wrap was introduced into the School Program in 2018. The measure is
7 delivered through a similar delivery channel as the On-Line Energy Audit Program,
8 and does not offer distinctly different attributes as the existing pipe wrap measure
9 in this program. However, the evaluated measure-level IRAF values have
10 historically been higher for the School Program relative to the On-Line Energy
11 Audit Program. Therefore, the Evaluation Team applied an IRAF of 0.45, nine
12 points higher than the On-Line Energy Audit Program pipe wrap IRAF evaluated
13 in program year 2016 (the average difference between the two programs' historic
14 evaluated measure-level IRAF values).

15

16 5. For Tier 2 and Tier 3 Thermostats delivered by Residential programs, and
17 thermostats delivered by C&I programs no IRAF value was applied as savings
18 represent verified net savings.

19

20 Finally, a deemed NTGR of 0.92 was applied to the verified gross savings for all
21 measures except:

22 1. The delayed installation of standard CFLs distributed through the ENERGY
23 STAR Lighting Program to which the deemed NTGR of 0.82 was applied as
24 agreed upon by the EWR Collaborative Workgroup.

25

Line
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1 2. Standard and reflector LEDs in the ENERGY STAR Lighting Program to
2 which the deemed NTGR of 0.90 was applied as approved by the Commission
3 in Case No. U-18262.

4 3. Low Income, Pilots and Education to which a deemed NTGR of 1.00 was
5 applied as approved in the Company's EWR Plan Case No. U-18262 (the
6 EWR Plan active in 2018).

7 4. Finally, a NTGR of 1.00 is applied to: (1) Tier 1 Thermostats delivered by
8 C&I programs; (2) Tier 2 and Tier 3 Thermostats delivered by Residential
9 programs; as savings represent verified net savings.

10

11 Thus, the verified net savings include any adjustments for inconsistencies in program
12 tracking data, corrections for MEMD algorithms and inputs, corrections based on any
13 errors found in the application sample, as well as the application of IRAF and NTGR
14 values.

15

16 **Q. What was the basis for the approach used to validate program savings for**
17 **prescriptive programs?**

18 A. The approach developed for the validation of EWR program savings is based on the
19 Fall 2009 savings validation recommendations from the EWR Collaborative
20 Evaluation Workgroup, which include Data Tracking Validation and Application
21 Tracking Validation as described below.

22

Line
No.

1 **Phase I - Data Tracking Verification for Prescriptive Programs**

2 **Q. What was the first step of the Phase I verification process?**

3 A. The first step in the Phase I verification process was to compare DTE Electric's
4 program data to the data gathered by the ICs. Program savings, incentives, and
5 quantities were analyzed for the DTE Electric and the IC databases. This analysis
6 checked for consistency between DTE Electric and the IC. Any data entry errors or
7 other discrepancies were corrected.

8
9 **Q. How did the Evaluation Team ensure all savings claimed by DTE Electric**
10 **occurred in 2018?**

11 A. As part of the database review, invoice dates were assessed. The invoice date was
12 assumed to be the date at which an incentive was processed and therefore the date of
13 installation, sale or shipment of a measure. The review verified that all measures
14 with savings attributed to program year 2018 were installed in 2018 based on invoice
15 date.

16
17 **Q. What was the second step in the Phase I verification process?**

18 A. The second step in the Phase I verification process was to recalculate savings totals
19 for the measures in DTE Electric's program tracking database using the appropriate
20 savings value or algorithm from the DTE Electric measures database. The measures
21 database is described below. This step was taken to ensure no entry or calculation
22 errors occurred and to double check DTE Electric's program-level total savings
23 estimates. The recalculated savings estimates were then compared to the DTE
24 Electric EOPT.

25

Line
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1 **Q. What is the DTE Electric measures database?**

2 A. The measures database consists of a list of measures included in the MEMD with
3 corresponding savings values, algorithms, and assumptions and a DTE Electric
4 measure identification number.

5

6 **Q. Did you consider unit-level savings assumptions as part of the savings
7 verification process?**

8 A. Yes. The unit-level savings assumptions (e.g., kWh savings per ton of installed
9 HVAC cooling capacity) contained in the DTE Electric measures database were
10 compared to corresponding assumptions from the MEMD. The unit-level savings
11 assumptions are specific to a particular technology (e.g., high efficiency HVAC unit),
12 building type, and weather zone. They are expressed in terms of energy savings (e.g.,
13 kWh) per unit of measure used to describe the technology (e.g., tons of HVAC
14 cooling capacity). In instances where DTE Electric's savings assumptions did not
15 match the MEMD value, the MEMD value was assumed to be correct. Once
16 differences in the unit-level savings assumptions were identified and corrected,
17 program savings were recalculated based on MEMD unit-level assumptions.

18

19 **Q. How are custom measures handled during the second step of the Phase I
20 validation process?**

21 A. Given that custom measure savings are not included in the MEMD, these measures
22 were individually reviewed and validated. In 2018 this applied to selected measures
23 in ENERGY STAR, Energy Efficiency Assistance, Midstream Lighting, Multifamily
24 Common Area, and C&I Prescriptive programs. In general, there are two types of
25 custom measures in these programs, each of which is based on MEMD measures and

Line
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savings values, including (1) measures with assumptions tailored to the project site (e.g., site-specific hours of use), and (2) measures with weather-sensitive inputs based on average program participation. In both cases, assumptions for custom measures are reviewed and validated.

Phase II - Application Verification for Prescriptive Programs

Q. Which programs have applications that are reviewed and verified?

A. The Evaluation Team reviews and verifies applications for programs with a paper (or non-electronic) application in which database transcription errors may be introduced. In 2018, the Evaluation Team reviewed applications for the following programs, ENERGY STAR, Multifamily, Energy Efficiency Assistance, and C&I Prescriptive.

Q. How were the application samples chosen?

A. The Evaluation Team requested applications for each program, where applicable, using a stratified sampling approach. Using this approach, the population (i.e., all applications for a given program) is divided into separate groups and a random sample is then drawn from each group. Each program sample was stratified by application type. For example, within the ENERGY STAR Products Program, there are different application types for appliances as opposed to thermostats. As a result, in general, application type equates to a particular end-use such as lighting and HVAC.

Sampling was based on an equal probability of an application or database entry containing an error. The errors could be in transferring data to the database or applying inappropriate measure savings based on the information reported in the

Line
No.

1 applications. For example, weather-sensitive measures require specific details
2 regarding the dwelling in which they are installed (e.g., age of home, weather zone).
3 The samples were chosen to achieve a 90% confidence level and 10% precision rate
4 for the energy savings estimates for program. For programs with no significant
5 changes and stable IRAFs, the samples are designed to attain the targeted precision
6 over a rolling three year period. This means that the Evaluation Team can conclude
7 with 90% confidence that the actual energy savings value for the population is +/-
8 10% of the validated number. This level of confidence adheres to industry standards.

9

10 Exhibit A-12 titled “2018 Energy Waste Reduction Validation Sample Selection”
11 shows the sample frame (i.e., the level at which the sample was drawn) and size for
12 each EWR program (prescriptive and custom, where applicable).

13

14 **Q. Were separate samples taken for gas versus electric applications?**

15 A. The samples were drawn to simultaneously meet the statistical precision criteria for
16 gas and electric measures. The sampling approach used for the review of program
17 applications explicitly accounts for savings from both fuel types.

18

19 **Q. What information was checked for in the statistical review of the applications?**

20 A. The applications were reviewed and checked against the DTE Electric EOPT to
21 confirm all information was correct and the correct measure savings (i.e., the savings
22 associated with a particular piece of equipment, such as a clothes washer or HVAC
23 system) were assigned. The Evaluation Team checked customer information, as well
24 as project-level information to ensure consistency with the DTE Electric database.
25 Project-level information includes measure types installed, location installed (i.e.,

Line
No.

1 apartment or common space), quantity by measure (i.e., the number of measures
2 installed or removed), per-unit energy and demand savings, install dates, and
3 incentive amount.

4

5 **Q. What types of errors did this review identify?**

6 A. Two types of errors were examined, random errors and systematic errors. Random
7 errors refer generally to error of transcription or data entry (“typo”) to an individual
8 record. Systematic errors refer to similar errors that are made on many records.

9

10 A realization rate was calculated for each application based on errors or omissions
11 identified as part of the review. The Evaluation Team then tested the hypothesis that
12 the mean realization rate was equal to 100% with a realization rate of 100% indicating
13 no discrepancies between reported and validated savings. If the sample mean did not
14 significantly differ from 100%, the sample program tracking data was adjusted as
15 necessary to correct any errors found in the sample of applications. If the sample
16 mean did differ significantly from 100%, then the mean Phase II realization rate for
17 the sample was applied to the savings for the sampled population as determined in
18 Phase I of the verification process (i.e., the findings were extrapolated to the entire
19 population). The difference in realization rate was deemed to be significant when a
20 two-tailed t-test indicated the sample mean realization rate was significantly different
21 from 100% at the 90% confidence level.

22

23 **Q. What was done after the review of the applications was completed?**

24 A. After reviewing applications, DTE Electric’s total audited gross program savings
25 were recalculated based on the adjusted program tracking data.

Line
No.

1 **Q. Did the results of your Phase I and Phase II audit activities change DTE**
2 **Electric's savings values?**

3 A. Yes, the Audited Gross Realization Rates (Audited Gross Savings/Utility Reported
4 Savings) were 100% for energy (MWh) and 100% for coincident peak demand.
5 Exhibit A-13, titled "2018 Energy Waste Reduction Energy Savings," shows the
6 Audited Gross Realization Rates by program in column (e) for energy. Exhibit A-
7 14, titled "2018 Energy Waste Reduction Demand Savings," shows the Audited
8 Gross Realization Rates by program in column (e) for coincident peak demand.

9

10 **Determination of Verified Gross Savings for Prescriptive Programs**

11 **Q. How were 2018 verified gross savings determined for prescriptive programs?**

12 A. Verified gross energy savings for the 2018 EWR prescriptive programs were
13 determined by applying the appropriate IRAF values, as discussed above, for each
14 program to determine the verified gross savings.

15

16 **Q. What was the basis for the approach used in the determination of verified gross**
17 **savings?**

18 A. The approach developed for the determination of verified gross savings is based on
19 recommendations from the EWR Collaborative Evaluation Workgroup.

20

21 **Q. How were the IRAF values developed?**

22 A. As part of the 2016 program year evaluation of DTE Electric's EWR programs, the
23 Evaluation Team verified the installation and operation of individual program
24 measures based on responses to participant online surveys, telephone surveys or site
25 inspections. In general, the Evaluation Team first asked customers to confirm the

Line
No.

1 specific measures they received based on program records. The Evaluation Team
2 then divided the number of measures verified by the respondent by the number
3 reported in the program tracking data to develop the first component of the IRAF
4 (Installation Factor #1). Where applicable, The Evaluation Team followed up with a
5 question about whether the measure was still installed and operating. Based on this
6 question, the Evaluation Team developed Installation Factor #2, which is the number
7 of measures in use divided by the number of verified measures. We then developed
8 a measure-specific IRAF for each respondent by multiplying the two factors. Average
9 IRAF values were developed at the program level. Measure-level IRAF values were
10 then applied to the measure-specific 2018 audited gross savings for that program to
11 calculate the verified savings for the program.

12

13 Calculating the IRAF for ENERGY STAR lighting required a different methodology
14 because, as an upstream program, individual participants cannot be identified. The
15 lighting IRAF was developed by using the Evaluation Team's 2017 baseline study
16 results from onsite verifications of first year installation rates. Then, consistent with
17 the Department of Energy's Uniform Methods Project, we added in delayed
18 installations from bulbs sold in 2016 and 2017, but not installed within those program
19 years. The Evaluation Team also accounts for delayed installations for the Schools,
20 Energy Efficiency Assistance (distribution only) and the On-Line Energy Audit
21 programs. For non-lighting measures, the 2016 non-lighting measure-level IRAF
22 were calculated and applied.

23

24 IRAF not only represents the verified installation but also the operation of program
25 measures. The part-use factor (PUF) represents verification of operation. A PUF was

Line
No.

1 applied to Tier 1 programmable thermostats reflecting the portion of thermostats
2 where the programmable feature had been overridden, as well as refrigerators and
3 freezers reflecting the seasonal or otherwise intermittent use of the appliance prior
4 to being replaced.

5

6 An IRAF of 1.00 is also applied to new measures if the measure is being delivered
7 through a new delivery channel or is targeting a new market *and* the measure offers
8 distinctly different attributes from existing measures offered through the program
9 (i.e., enhanced customer acceptance and is a significant improvement in
10 performance). In 2018, this applies to clothes dryers, and pool pumps in ENERGY
11 STAR Products; Tier 2 advanced power strips, occupancy sensors, and shower start
12 measures introduced in the ENERGY STAR – Online Market Place; and heat pumps
13 introduced in Residential HVAC.

14

15 An IRAF of 1.0 is applied to programs that offer a measure through another program
16 but with a unique delivery mechanism, this applies to furnace tune-ups and
17 refrigerators/freezers introduced in Multifamily, and high bay and low bay LED
18 lighting introduced in Midstream Lighting.

19

20 The C&I Midstream Food Service Program (captured in C&I Emerging Measures
21 and Approaches) was first introduced in 2017 and received an IRAF of 1.00 at that
22 time. In 2018, the IRAF evaluated in 2017 is applied.

23

24 Pipe wrap was introduced into the School Program in 2018. The measure is delivered
25 through a similar delivery channel as the On-Line Energy Audit Program, and does

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1 not offer distinctly different attributes as the existing pipe wrap measure in this
2 program. However, the evaluated measure-level IRAF values have historically been
3 higher for the School Program relative to the On-Line Energy Audit Program.
4 Therefore, the Evaluation Team applied an IRAF of 0.45, nine points higher than the
5 On-Line Energy Audit Program pipe wrap IRAF evaluated in program year 2016
6 (the average difference between the two programs' historic evaluated measure-level
7 IRAF values).

8

9 An IRAF is not applied to Tier 2 and Tier 3 Thermostats delivered by Residential
10 programs and thermostats delivered by C&I programs as savings represent verified
11 net savings.

12

13 **Q. How was dual fuel savings accounted for?**

14 A. For those programs that offered measures that produce both electric and gas savings,
15 the Evaluation Team applied the fuel-specific IRAF to both the gas and electric
16 savings.

17

18 **Q. How were low-income savings for the Home Energy Consultation and Multi-**
19 **family programs verified?**

20 A. The Evaluation Team reviewed and verified low-income savings calculations for the
21 Home Energy Consultation and Multifamily Programs. If a participant had a low-
22 income designation in the DTE billing system, the participant was located within a
23 low-income qualified census tract as designated by the U.S. Department of Housing
24 and Urban Development (HUD), and/or the participant resided in an income-
25 qualified multifamily dwelling meeting HUD or State Housing Development

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1 Authority (MSHDA) guidelines, savings were attributed to the low-income
2 component.

3
4 The Evaluation Team verified the designation of census tracts as low-income per
5 HUD guidelines, and for Multifamily, reviewed and verified properties (not located
6 in a low-income census tract) designated low-income due to participation in a federal
7 or state affordable housing program (such as HUD and MSHDA).

8

9 **Determination of Verified Net Savings for Prescriptive Programs**

10 **Q. How were 2018 verified net savings determined for Prescriptive programs?**

11 A. Once the verified gross savings were determined, the deemed NTGR was applied to
12 calculate the verified net savings values. These verified net savings represent the
13 official savings achieved by DTE Electric's EWR programs that are used to
14 determine the Company's performance versus mandated targets. For all prescriptive
15 programs except low income, pilots, and education, the deemed NTGR for 2018 was
16 0.92, except for standard CFLs which have a deemed NTGR of 0.82, and standard
17 and reflector LEDs which have a deemed NTGR of 0.90 for bulbs distributed through
18 the ENERGY STAR Lighting Program. A NTGR is not applied to Tier 2 and Tier 3
19 thermostats delivered through residential programs, and Tier 1 thermostats delivered
20 through C&I programs, as savings represent verified net savings. In accordance with
21 procedures developed through the EWR collaborative, low income program
22 components, pilots and education were assigned a NTGR of 1.00.

23

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1 **Verification Process for Custom (Non-Prescriptive) Programs**

2 **Q. Does the approach for determining verified energy savings for 2018 EWR**
3 **custom programs differ from the approach used for prescriptive programs?**

4 A. Yes. Programs delivering custom measures or measures included in the Behavior
5 Resource Manual (BRM) require a different approach than the one outlined above to
6 determine verified energy savings. In 2018, this applies to the Residential Behavior
7 programs (which includes the Home Energy Report Program and the DTE Insight
8 App Program), the C&I Non-Prescriptive programs, and the Retro-Commissioning
9 Program.

10

11 **Q. How were verified energy savings determined for the Residential Behavior**
12 **Program?**

13 A. The Residential Behavior Program includes both the Home Energy Report Program
14 and the DTE Insight App Program. The Home Energy Report Program delivers
15 measures that are included in the BRM. As a result, verification included a review of
16 program tracking data, review of DTE Electric billing and AMI data, and a review of
17 calculations to ensure the BRM savings values were applied correctly. The BRM
18 does not include a measure for the DTE Insight App Program. As a result, a custom
19 evaluation using program tracking data and DTE Electric billing and AMI data were
20 used to conduct a billing analysis to estimate verified net savings.

21

22 **Q. How were verified energy savings determined for the Home Energy Report**
23 **Program?**

24 A. For the Home Energy Report Program, average per participant savings are included
25 in the BRM. Verified energy savings were determined through the validation of

Line
No.

1 average annual energy use using billing data, and the number of active participants.
2 The average per participant savings values included in the BRM represent verified
3 net savings. Therefore, no separate IRAF value or NTGR value is applied.

4

5 **Q. How were low-income savings calculated for the Home Energy Report**
6 **Program?**

7 A. Low-income savings for the Home Energy Report Program were determined based
8 on a participant's zip code. Specifically, participants located in a zip code identified
9 by the Company as a low-income zip code (based on whether average income using
10 the Company's demographic data was below 200% of the Federal poverty line) were
11 considered low-income participants, and the savings associated with these
12 participants were attributed to the low-income program. The Evaluation Team did
13 not verify assignment of zip codes to low-income.

14

15 **Q. How were verified energy savings determined for the DTE Insight App**
16 **Program?**

17 A. For the DTE Insight App Program, verified net savings were estimated using
18 regression analysis with pre-program matching. Using billing data, a matched
19 comparison group was selected to serve as the counterfactual for participants during
20 the program period. Regression analysis was used to estimate average per participant
21 savings which were then adjusted down to remove savings associated with program
22 uplift. As the regression analysis using billing data and a comparison group, the
23 estimate of average per participant savings represents net savings. Therefore, no
24 separate IRAF value or NTGR value is applied.

25

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1 **Q. How were verified energy savings determined for the C&I Non-Prescriptive**
2 **programs and the Retro-Commissioning Program?**

3 A. For the C&I Non-Prescriptive programs and the Retro-Commissioning Program
4 verified net savings were determined through a three-step approach: (1) the audit of
5 program tracking data as reported by DTE Electric; (2) and calculation of a
6 Realization Rate (RR) based on an engineering review of project files, site visits, and
7 analysis of metering data of a statistically valid sample of projects to determine
8 verified gross savings; and (3) application of appropriate NTGR to determine verified
9 net savings.

10

11 1. The first step of the verification process is a Data Tracking Verification. DTE
12 Electric program tracking data (from EOPT), were compared to the IC program
13 tracking data to check for inconsistencies. Program tracking data consists of
14 information about program participants, the number, type and size of energy
15 efficiency measures installed, installation date, paid incentives, and expected
16 energy and demand savings. This analysis checked for consistency between DTE
17 Electric's EOPT and the IC database. Any data entry errors or other discrepancies
18 were corrected.

19

20 2. The second step of the verification process began with an engineering review of
21 a statistically valid sample of project files. Once project files are reviewed, for
22 projects selected for site visits, field engineers verified installations and
23 determined any differences in parameters from those in the project files. In some
24 cases, field engineers also gathered operational data by installing data loggers,
25 performing site measurements, and verifying other operating parameters. Any

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adjustments made as a result of the visits and review of project files are then reflected in the calculation of verified gross savings. A Realization Rate (RR) is calculated by dividing verified energy savings by utility reported gross savings.

3. Finally, a deemed NTGR of 0.92 was applied to the verified gross savings.

Thus, the verified net savings include any adjustments for inconsistencies in program tracking data, corrections based on engineering review of project files and site visits, as well as the application of NTGR values.

Q. How was the sample for project files and site visits chosen?

A. Custom projects were selected for engineering review and site visits using a stratified random sampling approach, by energy savings. Using this approach, the population of custom projects is divided into separate groups (or strata) based on energy savings, and then a random sample is selected from each stratum. The sample was chosen to achieve a 90% confidence level and 10% precision rate for the energy savings estimates at the program level.

For programs with no significant changes and stable RRs, the samples are designed to attain the targeted precision over a rolling three year period. This means the Evaluation Team can conclude with 90% confidence that the actual energy savings value for the population is +/-10% of the validated number. This level of confidence adheres to industry standards.

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1 1. For C&I Non-Prescriptive, the sample was chosen to achieve a 90%
2 confidence level and 10% precision rate for the energy savings estimates
3 using a three year rolling average (i.e., over a three year period) since RRs
4 have been stable historically and there were no substantial program changes
5 in 2018. This target level of confidence and sampling approach adheres to
6 industry standards.

7

8 2. For Retro-commissioning, there were only four completed projects in 2018,
9 therefore, the projects were sampled and reviewed using a census approach.

10

11 Exhibit A-12 titled “2018 Energy Waste Reduction Validation Sample Selection”
12 shows the sample frame (i.e., the level at which the sample was drawn) and size for
13 each EWR program (prescriptive and custom).

14

15 **Q. Were separate samples taken for gas versus electric projects?**

16 A. The samples were drawn to simultaneously meet the statistical precision criteria for
17 gas and electric measures. The sampling approach used for the review of project files
18 explicitly accounts for savings from both fuel types.

19

20 **Q. How did the Evaluation Team ensure all savings claimed by DTE Electric**
21 **occurred in 2018?**

22 A. As part of the database and project file reviews, invoice dates were assessed. The
23 invoice date was assumed to be the date at which an incentive was processed and
24 therefore the date of installation, sale or shipment of a measure. The review verified

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1 all measures with savings attributed to program year 2018 were installed in 2018
2 based on invoice date.

3

4 **Q. What was the basis for the approach used to validate program savings for**
5 **custom programs?**

6 A. The approach used to verify savings for custom programs adhere to industry
7 evaluation protocols including – the International Performance Measurement and
8 Verification Protocol (IPMVP) and the Department of Energy’s Uniform Methods
9 Project (UMP).

10

11 **2018 Verified Net Energy and Demand Savings**

12 **Q. Are these same calculations performed for the determination of demand savings**
13 **as well as for energy savings?**

14 A. Yes, the same calculations were performed for both energy and demand savings. The
15 results are presented in Exhibits A-13 and A-14. Exhibit A-13 illustrates the
16 adjustments made at each step of the verification process for energy savings. Exhibit
17 A-14 shows the corresponding information for demand savings. Line and column
18 references for the two exhibits are identical.

19

20 **Q. How are the verified net energy and demand savings associated with ENERGY**
21 **STAR lighting presented within the residential and commercial sectors?**

22 A. The Evaluation Team verified all savings associated with ENERGY STAR lighting
23 under the ENERGY STAR Products Program. The final savings numbers presented
24 are results that were broken down by sector after the verification process was
25 completed. Exhibit A-13 provides the total verified net savings associated with the

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1 ENERGY STAR Products Program split between the residential and C&I sectors
2 (line 1 presents savings for the residential sector and line 26 presents savings
3 associated with the C&I sector). Exhibit A-14 provides the same information for
4 demand savings.

5
6 **Q. What are the verified net energy and demand savings associated with the EWR
7 Residential (excluding low-income) programs for 2018?**

8 A. Exhibit A-13 shows the total 2018 verified net energy savings and Exhibit A-14
9 shows the verified coincident demand savings from EWR Residential programs
10 excluding low-income, as well as totals at the portfolio level. As shown on line 11,
11 column (j) of these exhibits, the Evaluation Team validated the DTE Electric
12 Residential EWR programs, excluding low-income, produced verified net annual
13 savings in 2018 of 274,152 MWh and demand savings of 48.19 MW, as summarized
14 in Table 1.

15

16 **Table 1: Final 2018 Verified Net Annual EWR Residential Program Savings**

EWR Residential Program	Verified Net Annual MWh Savings	Verified Net Demand Savings (MW)
ENERGY STAR Products	151,885	16.76
Appliance Recycling	30,102	3.61
HVAC	13,144	2.39
Multifamily	950	0.10
Home Energy Consultation	8,288	0.84
Audit and Weatherization	647	0.32
School	3,365	0.29
On-Line Energy Audit	3,052	0.26
Behavior Programs	62,719	23.61
Residential Total	274,152	48.19

17

Line
No.

1 **Q. What were the savings achieved in low-income households?**

2 A. Residential low-income net verified savings were determined to be 26,507 MWh and
3 6.68 MW including the savings from the Energy Efficiency Assistance program as
4 well as low-income components of the Multifamily, Home Energy Consultation
5 (HEC), and Residential Behavior programs (specifically, Home Energy Report
6 program).

7
8 **Q. What are the verified savings associated with the EWR C&I programs for 2018?**

9 A. As shown in Table 2 below, the Evaluation Team verified the DTE Electric C&I
10 EWR programs, excluding self-direct, produced verified net annual savings of
11 approximately 365,588 MWh and 50.62 MW in 2018. Emerging Measures &
12 Approaches includes the C&I Midstream Food Service Program.

13

14 **Table 2: Final 2018 Verified Net Annual EWR C&I Program Savings**

EWR C&I Program	Verified Net Annual MWh Savings	Verified Net Demand Savings (MW)
Prescriptive	188,168	25.26
Non-Prescriptive	106,629	13.05
Retro-Commissioning	1,209	0.00
Business Energy Consultation	7,350	1.26
Mid-Stream Lighting	44,639	8.02
ENERGY STAR Retail Lighting	14,939	2.78
Multifamily Common Area	1,791	0.08
Emerging Measures & Approaches	864	0.17
C&I excluding self-direct Total	365,588	50.62
Self Direct	5,008	0.69
Total C&I Including self-direct	370,596	51.31

15

16 Neither the Evaluation Team nor DTE Energy independently reviewed the savings
17 for the self-direct customers. The inclusion of self-direct energy savings brings the

Line
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1 C&I total energy savings to 370,596 MWh, as shown on line 30, column (j) of Exhibit
2 A-13. Demand savings for self-direct customers were determined by applying the
3 ratio of peak demand reduction to energy savings for all C&I programs without self-
4 direct to the energy savings achieved by self-direct customers, resulting in 0.69 MW
5 being added to Exhibit A-14 for self-direct customers. Total Demand savings for
6 C&I customers totaled 51.31 MW.

7

8 **Q. What is the overall conclusion based on the Evaluation Team's evaluation**
9 **processes as they pertain to DTE Electric's 2018 EWR program?**

10 A. The Evaluation Team has reviewed DTE Electric's 2018 savings claims and verifies
11 DTE Electric's net verified savings claims are accurate.

12

13 **2018 Performance Incentive**

14 **Q. What additional tasks did the Evaluation Team perform for the 2018 program**
15 **year to verify the Performance Incentive calculations?**

16 A. There were two key performance incentive attributes that required verification.

17 (1) Determination of base energy savings required that the Evaluation Team
18 calculate first-year savings

19 (2) Determination of lifetime savings required that the Evaluation Team multiply
20 total first-year savings by the weighted average measure life. The weighted
21 average measure life is calculated by weighting measure life by lifetime verified
22 net savings.

23

Line
No.

1 **Q. What are DTE Electric's EWR achievements relative to performance**
2 **incentives?**

3 A. Table 3 summarizes DTE Electric's performance relative to the metrics established
4 in the EWR Plan applicable to 2018. More detail is provided in Exhibit A-15. In
5 summary, as documented below, DTE Electric exceeded every performance attribute
6 for 2018.

7

8 **Table 3: DTE Electric's EWR 2018 Performance Summary**

Performance Incentive Attribute	Achieved
Base Energy Savings 1.00% – 1.50% first-year verified net electric savings relative to Legislative Minimum Requirement (471,024 MWh)	727,907 MWh
Lifetime Energy Savings 1.00% – 1.50% lifetime verified net electric savings relative to target (5,181,264 MWh)	10,956,959 MWh

9

10 DTE Electric achieved first year savings of 727,907 MWh; this includes verified net
11 electric savings associated with the self-direct program, as well as pilots and
12 education. This exceeds 1.50% of the legislative minimum requirement.

13

14 DTE Electric achieved lifetime savings of 10,956,959 MWh, calculated by
15 multiplying the weighted average measure life for the portfolio (15.05) by total first
16 year savings.

17

18 **Q. Does this complete your direct testimony?**

19 A. Yes, it does.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

EXHIBITS

OF

DEBBIE BRANNAN

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
2018 Energy Waste Reduction Validation Sample Selection

Case No.: U-20366
Exhibit: A-12
Witness: D. Brannan
Page: 1 of 1

		Number of Unique Applications	Sample Size
Residential Portfolio	Residential ENERGY STAR Products		
	Appliances		
	Clothes Washers	5,174	9
	Dehumidifier	1,447	8
	AC	149	6
	Thermostats	15,733	30
	Clothes Dryer	1,045	8
	Pool Pump	113	8
	Lighting	n/a	n/a
	Consumer Electronics ¹	14	9
	Appliance Recycling	n/a	n/a
	Heating, Ventilation & Air Conditioning (HVAC)	n/a	n/a
	Multifamily	219	12
	Home Energy Consultation (HEC)	n/a	n/a
	Audit and Weatherization	n/a	n/a
	School Program	n/a	n/a
	On-Line Energy Audit	n/a	n/a
	Behavior Programs		
	Home Energy Report	n/a	n/a
	DTE Insight	n/a	n/a
	Emerging Measures and Approaches	n/a	n/a
	Low Income attributed to Energy Efficiency Assistance		
	Weatherization	2,196	8
	Test and Tune	1,004	11
	Refrigerator Recycling	2,755	27
	Lighting Kits	n/a	n/a
	Residential Program Subtotal	23,894	90
C&I Portfolio	Prescriptive	3,869	87
	Non-Prescriptive		
	Custom and RFP		
	Very Large Electric (>=10,000,000 kWh)	3	3
	Large Electric (>=600,000 kWh to <10,000,000)	83	16
	Medium Electric (>=125,000 kWh to <600,000 kWh)	394	14
	Small Electric (>=10,000 kWh to <125,000 kWh)	2,787	17
	Tiny Electric (<10,000 kWh)	1,473	0
	Large Gas (>30,000 Mcf)	4	4
	Small Gas (<30,000 Mcf) ³	28	25
	Idiosyncratic ⁴	8	6
	Retro-Commissioning	4	4
	Mid-Stream Lighting	n/a	n/a
	Energy Star Retail Lighting	n/a	n/a
	Multifamily Common Areas	n/a	n/a
	Emerging Measures and Approaches ⁵	n/a	n/a
	C&I Subtotal	8,653	176
	TOTAL PORTFOLIO	32,547	266

n/a = program did not have customer applications or applications were not reviewed

¹ Refers to the number of unique invoices that were audited, not a count of individual measure records.

² Multifamily Low Income is not sampled separately from the Residential Multifamily program

³ Includes seven projects that were implemented in 2017, but sampled in 2018

⁴ Eight PY2017 projects were determined to be unrepresentative of the overall population and were included in a strata of their own, reported here as 'Idiosyncratic'

⁵ Includes C&I Mid-Stream Food Service program

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
2018 Energy Waste Reduction Energy Savings
(MWh)

Case No.: U-20366
Exhibit: A-13
Witness: D. Brannan
Page: 1 of 1

Line No.	(a) Description	(b) Source	(c) 2018 Utility Reported Gross Annual MWh Savings	(d) Database Review: 2018 Phase I Audited Gross Annual MWh Savings	(e) Application Review: 2018 Phase II MWh Adjusted	(f) Audited Gross Realization Rate	(g) 2018 Audited Gross Savings	(h) Installation Rate Adjustment Factor	(i) 2018 Verified Gross Savings	(j) Net-to-Gross Ratio	(k) 2018 Verified Net Savings
<u>Residential Programs</u>											
1	Residential ENERGY STAR Products		171,502	171,506	0	100%	171,506	0.98	168,568	0.82/0.90/0.92/1.00	151,885
2	Appliance Recycling		37,058	37,058	0	100%	37,058	0.88	32,720	0.92	30,102
3	Heating, Ventilation & Air Conditioning (HVAC)		14,215	14,139	0	99%	14,139	1.00	14,187	0.92/1.00	13,144
4	Multifamily		1,470	1,250	0	85%	1,250	0.83	1,032	0.92/1.00	950
5	Home Energy Consultation (HEC)		9,379	9,408	0	100%	9,408	0.96	8,989	0.92/1.00	8,288
6	Audit and Weatherization		720	703	0	98%	703	1.00	703	0.92/1.00	647
7	School Program		5,278	5,278	0	100%	5,278	0.69	3,657	0.92	3,365
8	On-Line Energy Audit		4,400	4,400	0	100%	4,400	0.75	3,318	0.92	3,052
9	Behavior Programs ¹		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	62,719
10	Emerging Measures and Approaches		0	0	0	0%	0	0.00	0	0.00	0
11	Residential Program Subtotal	Sum L1 - L10	244,023	243,744	0	100%	243,744		233,174		274,152
<u>Low Income Programs</u>											
14	Low Income attributed to Energy Efficiency Assistance		8,381	8,381	0	100%	8,381	0.88	7,408	1.00	7,408
15	Low Income attributed to Multifamily Units		1,300	1,379	0	106%	1,379	0.84	1,153	1.00	1,153
16	Low Income attributed to Home Energy Consultation		3,496	3,465	0	99%	3,465	0.95	3,291	1.00	3,291
17	Low Income attributed to Behavior		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	14,655
18	Low Income Program Subtotal	Sum L14 - L17	13,177	13,225	0	100%	13,224		11,852		26,507
<u>Commercial Programs</u>											
21	Prescriptive		210,839	210,856	0	100%	210,856	0.97	204,530	0.92/1.00	188,168
22	Non-Prescriptive ²		126,764	126,765	0	100%	126,765	0.91	115,901	0.92	106,629
23	Retro-Commissioning		1,253	1,253	0	100%	1,253	1.05	1,314	0.92	1,209
24	Business Energy Consultation		11,075	11,067	0	100%	11,067	0.72	7,975	0.92/1.00	7,350
25	Mid-Stream Lighting		54,716	54,716	0	100%	54,716	0.89	48,520	0.92	44,639
26	Energy Star Retail Lighting		17,046	17,042	0	100%	17,042	0.98	16,667	0.82/0.90/0.92	14,939
27	Multifamily Common Areas		1,806	1,947	0	108%	1,947	1.00	1,947	0.92	1,791
28	Emerging Measures and Approaches ³		939	939	0	100%	939	1.00	939	0.92	864
29	Self Direct ⁴		5,008	5,008	0	100%	5,008	1.00	5,008	1.00	5,008
30	C&I Program Subtotal	Sum L21 - L29	429,445	429,592	0	100%	429,592		402,801		370,596
32	Total	L11 + L18 + L30	686,645	686,561	0	100%	686,560		647,827		671,255

Note: Totals may not match due to rounding.

¹ Includes Home Energy Report and Residential DTE Insight App

² Includes C&I Custom and C&I RFP programs

³ Includes C&I Mid-Stream Food Service program

⁴ Self Direct energy savings were not evaluated by DTE nor Navigant

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
2018 Energy Waste Reduction Demand Savings
(MW)

Case No.: U-20366
Exhibit: A-14
Witness: D. Brannan
Page: 1 of 1

	(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Line No.	Description	Source	2018 Utility Reported Gross Annual MW Savings	Database Review: 2018 Phase I Audited Gross Annual MW Savings	Application Review: 2018 Phase II MW Adjusted	Audited Gross Realization Rate	2018 Audited Gross Savings	Installation Rate Adjustment Factor	2018 Verified Gross Savings	Net-to-Gross Ratio	2018 Verified Net Savings
	<u>Residential Programs</u>										
1	Residential ENERGY STAR Products		18.80	18.80	0.00	100%	18.80	0.99	18.63	0.90	16.76
2	Appliance Recycling		4.45	4.45	0.00	100%	4.45	0.88	3.93	0.92	3.61
3	Heating, Ventilation & Air Conditioning (HVAC)		2.57	2.57	0.00	100%	2.57	1.01	2.60	0.92	2.39
4	Multifamily		0.14	0.13	0.00	94%	0.13	0.83	0.11	0.92	0.10
5	Home Energy Consultation (HEC)		0.94	0.95	0.00	100%	0.95	0.97	0.92	0.92	0.84
6	Audit and Weatherization		0.36	0.35	0.00	96%	0.35	1.00	0.35	0.92	0.32
7	School Program		0.47	0.47	0.00	100%	0.47	0.67	0.32	0.92	0.29
8	On-Line Energy Audit		0.38	0.38	0.00	100%	0.38	0.75	0.29	0.92	0.26
9	Behavior Programs ¹		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	23.61
10	Emerging Measures and Approaches		0.00	0.00	0.00	0%	0.00	n/a	0.00	n/a	0.00
11	Residential Program Subtotal	Sum L1 - L10	28.13	28.10	0.00	100%	28.10		27.13		48.19
	<u>Low Income Programs</u>										
14	Low Income attributed to Energy Efficiency Assistance		0.66	0.66	0.00	100%	0.66	0.85	0.57	1.00	0.57
15	Low Income attributed to Multifamily Units		0.14	0.15	0.00	106%	0.15	0.84	0.13	1.00	0.13
16	Low Income attributed to Home Energy Consultation		0.34	0.33	0.00	99%	0.33	0.97	0.32	1.00	0.32
17	Low Income attributed to Behavior		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	5.67
18	Low Income Program Subtotal	Sum L14 - L17	1.14	1.15	0.00	100%	1.15		1.01		6.68
	<u>Commercial Programs</u>										
21	Prescriptive		26.68	28.30	0.00	106%	28.30	0.97	27.45	0.92	25.26
22	Non-Prescriptive ²		13.40	13.41	0.00	100%	13.41	1.06	14.18	0.92	13.05
23	Retro-Commissioning		0.00	0.00	0.00	100%	0.00	1.00	0.00	0.92	0.00
24	Business Energy Consultation		1.85	1.88	0.00	102%	1.88	0.73	1.37	0.92	1.26
25	Mid-Stream Lighting		9.32	9.17	0.00	98%	9.17	0.95	8.71	0.92	8.02
26	Energy Star Retail Lighting		3.18	3.18	0.00	100%	3.18	0.98	3.11	0.90	2.78
27	Multifamily Common Areas		0.08	0.08	0.00	103%	0.08	1.00	0.08	0.92	0.08
28	Emerging Measures and Approaches ³		0.18	0.18	0.00	101%	0.18	1.00	0.18	0.92	0.17
29	Self Direct ⁴		0.69	0.69	0.00	100%	0.69	1.00	0.69	1.00	0.69
30	C&I Program Subtotal	Sum L21 - L29	55.39	56.90	0.00	100%	56.90		55.77		51.31
32	Total ⁵	L11 + L18 + L30	84.66	86.15	0.00	100%	86.15		83.91		106.18

Note: Totals may not match due to rounding.

¹ Includes Home Energy Report and Residential DTE Insight App

² Includes C&I Custom and C&I RFP programs

³ Includes C&I Mid-Stream Food Service program

⁴ Self Direct demand savings are determined by applying the ratio of Verified Net Peak Demand Savings from all C&I programs excluding Self Direct (sum Lines 21 - 28, Col. J) to Verified Net Electric Savings from all C&I programs excluding Self Direct (A-15, sum Lines 21 - 28, Col.C) to the Self Direct Verified Net Electric Savings (A-15,Line 29, Col. J). Self Direct energy savings were not evaluated by DTE nor Navigant

⁵ Total Demand Savings excludes Pilot and Education MW savings (Pilots achieved 5.58 MW and Education achieved 3.38 MW)

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
2018 Energy Waste Reduction Performance Incentive Attributes

Case No.: U-20366
Exhibit: A-15
Witness: D. Brannan
Page: 1 of 1

Line No.	Description	Source	2018 Verified Net Savings MWh
	(a)		
	(b)		
	(c)		
	<u>Residential Programs</u>		
1	Residential ENERGY STAR Products		151,885
2	Appliance Recycling		30,102
3	Heating, Ventilation & Air Conditioning (HVAC)		13,144
4	Multifamily		950
5	Home Energy Consultation (HEC)		8,288
6	Audit and Weatherization		647
7	School Program		3,365
8	On-Line Energy Audit		3,052
9	Behavior Programs ¹		62,719
10	Emerging Measures and Approaches		0
11	Residential Program Subtotal	Sum L1 - L10	274,152
	<u>Low Income Programs</u>		
14	Low Income attributed to Energy Efficiency Assistance		7,408
15	Low Income attributed to Multifamily Units		1,153
16	Low Income attributed to Home Energy Consultation		3,291
17	Low Income attributed to Behavior		14,655
18	Low Income Program Subtotal	Sum L14 - L17	26,507
	<u>Commercial Programs</u>		
21	Prescriptive		188,168
22	Non-Prescriptive ²		106,629
23	Retro-Commissioning		1,209
24	Business Energy Consultation		7,350
25	Mid-Stream Lighting		44,639
26	Energy Star Retail Lighting		14,939
27	Multifamily Common Areas		1,791
28	Emerging Measures and Approaches ³		864
29	Self Direct ⁴		5,008
30	C&I Program Subtotal	Sum L21 - L29	370,596
32	Total without Non-Standard	L11 + L18 + L30	671,255
34	Savings from Pilots	A2	35,297
35	Savings from Education	A3	21,355
36	Total First Year Savings	L32 + L34 + L35	727,907
38	Weighted Average Measure Life ⁵		15.05
39	Total Lifetime Savings⁶		10,294,787

Note: Totals may not match due to rounding.

¹ Includes Home Energy Report and Residential DTE Insight App

² Includes C&I Custom and C&I RFP programs

³ Includes C&I Mid-Stream Food Service program

⁴ Self Direct energy savings were not evaluated by DTE nor Navigant

⁵ Weighted average measure life based on first year savings

⁶ Total lifetime savings calculated by multiplying total first year savings by the weighted average measure life (Line 38, Col. C)

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

QUALIFICATIONS

AND

DIRECT TESTIMONY

OF

JAMES L. CHUBB

DTE ELECTRIC COMPANY
QUALIFICATIONS OF JAMES L. CHUBB

Line
No.

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

2 A. My name is James L. Chubb. My business address is One Energy Plaza, Detroit, MI
3 48226-1221. I am employed by DTE Energy Corporate Services LLC, within the
4 Controllers Organization.

5

6 **Q. On whose behalf are you testifying?**

7 A. I am testifying on behalf of DTE Electric Company (DTE Electric or the Company).

8

9 **Q. What is your educational background?**

10 A. I graduated from Wayne State University with a Bachelor of Science in Accounting.
11 In addition, I received a Master of Business Administration degree from Wayne State
12 University.

13

14 **Q. What is your work experience?**

15 A. I was hired by the Company in January 2000 on the Professional Opportunity
16 Program (POP). In early 2000, I worked in Distribution Finance as my first rotation
17 in the program. In July 2000, I began a new rotation in Regulated Marketing. I
18 supported the Strategic Marketing Process, an effort to identify key customers and to
19 enhance the customer experience. In January 2001, I began working in Technology
20 Investments, my third rotation. I was taken off the POP in 2001 and hired
21 permanently into the Technology Investments group. As a financial analyst in
22 Technology Investments, I was part of a team that evaluated early-stage alternative
23 energy companies that were of strategic interest to the Company.

24

Line
No.

1 In early 2005, I was promoted to Principal Supervisor in our Asset Management
2 group. My primary responsibility was leading a team tasked to clean up the asset
3 records to facilitate the transfer of assets into SAP. I was also responsible for
4 initiating and monitoring capital projects and maintaining proper accounting
5 throughout the project lifecycle.

6
7 In early 2006, I returned to Technology Investments as a Project Manager. My
8 responsibilities were similar to those during my initial tenure with the group, with an
9 expanded role in writing position papers and investment deal development.

10
11 In May 2007, I was assigned to Enterprise Performance Management. The group
12 was responsible for overseeing the Performance Excellence Process. I was
13 responsible for reviewing and tracking savings opportunities and continuous
14 improvement initiatives provided by DTE Gas Company (DTE Gas) and managing
15 and presenting improvements to senior leadership.

16
17 In June 2009, I was assigned to Distribution Operations as a Principal Financial
18 Analyst. My primary responsibilities included providing financial support to the
19 Joint Use team and the V.P. of Distribution Operations. I was responsible for
20 preparing the O&M budget for all Distribution Operations and facilitating forecasting
21 for the organization. I also maintained expense tracking and reporting for the
22 Restoration and Line Clearance Trackers.

23
24 In December 2011, I was assigned to the DTE Electric Consolidating team. My
25 primary responsibility was O&M and Capital reporting for the Company. I also

Line
No.

supported O&M, Capital and Cash forecasting and maintenance of the Long-Term Corporate Model.

In December 2012, I became Principal Supervisor in the Controllers Group, supporting Regulated Marketing for Energy Optimization (EO). I led the finance team that provided budgeting, forecasting, and reporting on the performance of the DTE Electric and DTE Gas EO programs.

In January 2014, I was assigned as the Principal Supervisor in the Controllers Group, supporting Business Planning & Development. I was responsible for leading a finance team which provided budgeting, forecasting, reporting and analysis on the performance of Business Planning & Development business units.

After a brief departure from the Company in October 2016, I returned in November 2017 as Principal Financial Analyst in Distribution Operations. I was the financial lead responsible for Rate Case support. In November 2018, I transferred to Energy Waste Reduction (EWR) Finance.

Q. What is your current position?

A. I am currently a Principal Supervisor in the Controllers Organization, supporting Business Planning & Development for EWR Finance. My current responsibilities include leading a finance team in providing budgeting, forecasting, reporting and analysis on the performance of the DTE Electric and DTE Gas EWR programs.

Line
No.

1 **Q. Are you a member of any professional organizations?**

2 Yes. I am a member of the Financial Industry Regulatory Authority (FINRA). FINRA
3 protects investors by maintaining fairness in the U.S. capital markets. I am also a
4 member of the Michigan Association of Certified Public Accountants.

5

6 **Q. Have you previously sponsored testimony in cases before the Michigan Public**
7 **Service Commission (Commission)?**

8 A. Yes. I have provided testimony in the DTE Electric 2012 EO Reconciliation Case (U-
9 17282). I also provided testimony in the DTE Gas 2012 EO Reconciliation Case (U-
10 17288).

DTE ELECTRIC COMPANY
DIRECT TESTIMONY OF JAMES L. CHUBB

Line
No.

1 **Q. What is the purpose of your testimony in this proceeding?**

2 A. The purpose of my testimony is to present the 2018 financial results for DTE
3 Electric's EWR program by each customer class: residential, commercial, and
4 industrial (C&I) secondary, and C&I primary. This information is used by Company
5 Witness Mr. Lacey in the calculation of the over/(under) cost recovery by customer
6 class, as shown on Exhibit A-18. I also present the mechanism that is used to allocate
7 costs to each of the customer classes. My testimony covers the following:

8 1) Brief description of the revenue and program costs included within each customer
9 class.

10 2) Types of costs that are capitalized and the method in which these capitalized costs
11 are amortized.

12 3) The calculation and utilization of allocation factors used to assign pilot program
13 costs; education and awareness program costs; low income program costs;
14 administrative and infrastructure costs; and evaluation, measurement &
15 verification (EM&V) costs to each customer class.

16

17 **Q. Are you sponsoring any exhibits in this proceeding?**

18 A. Yes. I am sponsoring the following exhibits:

<u>Exhibit</u>	<u>Description</u>
A-16	Surcharge Revenue, Program Costs, and Plant Balance (By Class and Total)
A-17	Allocation Factors

23

24 These exhibits are presented in a manner consistent with DTE Electric's previous
25 EWR reconciliation cases approved by the Commission.

Line
No.

1 **Q. Were these exhibits prepared by you or under your supervision?**

2 A. Yes, they were.

3

4 **Q. Where did you get the data displayed on your exhibits?**

5 A. DTE Electric's EWR revenues and expenses are separately identified and recorded
6 in the Company's billing and accounting systems. The revenues identified on my
7 exhibits are the actual results from the Commission approved EWR surcharges billed
8 to DTE Electric's customers in 2018. The expenses shown in my exhibits reflect the
9 amounts recorded by the Company and identified as EWR expenses during 2018. In
10 this case, Company Witnesses Mr. Boladian, Mr. Kupser and Ms. Jaworowski
11 explain and support the details related to each type of EWR expense. Some of the
12 EWR expenses are not recorded directly to a customer class. Later in my testimony,
13 I will support how the Company allocates these expenses to each of the following
14 customer classes: Residential, C&I Primary and C&I Secondary.

15

16 **Q. What is the purpose of the information shown on Exhibit A-16?**

17 A. Exhibit A-16 shows the 2018 financial results pertaining to: surcharge revenue,
18 program expenses, capitalized program costs, amortization of capitalized costs and
19 the 2018 year end plant balance for each customer class. Page 1 of this exhibit is a
20 summary of the full year financial results for all customer classes and pages 2 through
21 4 provide monthly detail of the 2018 financial results by individual customer class.
22 This information is utilized by Witness Lacey for purposes of calculating DTE
23 Electric's over/(under) cost recovery amounts for each customer class on Exhibit A-
24 18.

25

Line
No.

1 **Q. What does line 1 of Exhibit A-16 entitled “Surcharge Revenue” represent?**

2 A. The surcharge revenue on line 1 in Exhibit A-16 represents the amount billed in 2018
3 to each of the customer classes through the EWR surcharges.

4

5 **Q. What is included in these surcharge revenue values?**

6 A. The surcharge values include both base EWR surcharge revenue and EWR
7 performance incentive revenue. The total billed revenues within Exhibit A-16 are
8 provided to Witness Lacey so he can allocate the total EWR revenue amounts
9 between base surcharge revenue and performance incentive revenue by customer
10 class.

11

12 **Q. What does line 3 of Exhibit A-16 entitled “Program Costs Expensed” represent?**

13 A. The program costs expensed on line 3 in Exhibit A-16 represents the direct program
14 costs expensed during 2018. Direct program costs include customer incentives and
15 rebates, and third-party implementation contractor (IC) costs. Witness Kupser
16 provides detail regarding the types of costs associated with EWR residential
17 programs and Witness Jaworowski provides detail regarding the types of costs
18 associated with EWR C&I programs.

19

20 **Q. What does line 4 of Exhibit A-16 entitled “Pilot Programs” represent?**

21 A. The pilot programs costs on line 4 in Exhibit A-16 represent services, materials and
22 administrative costs associated with the EWR pilot programs. Witness Boladian
23 provides detail regarding the costs associated with EWR pilot programs.

24

Line
No.

1 **Q. What does line 5 of Exhibit A-16 entitled “Education and Awareness Programs”**
2 **represent?**

3 A. The education and awareness programs costs on line 5 in Exhibit A-16 represent
4 services, materials and administrative costs associated with customer education and
5 awareness. Witness Kupser provides detail regarding the types of costs associated
6 with EWR education and awareness programs.

7

8 **Q. What does line 6 of Exhibit A-16 entitled “Low Income Programs” represent?**

9 A. The low income programs costs on line 6 in Exhibit A-16 represent customer
10 incentive (grants), third party administrator costs and administrative costs associated
11 with low income programs. Witness Kupser provides detail regarding the types of
12 costs associated with low income programs.

13

14 **Q. What does line 7 of Exhibit A-16 entitled “Administrative and Infrastructure”**
15 **represent?**

16 A. The administration and infrastructure costs on line 7 in Exhibit A-16 represent
17 internal EWR labor costs, information technology (IT) activities, and products,
18 materials, and services such as EWR consultants. These administration and
19 infrastructure costs are associated with the program costs that are both expensed and
20 capitalized.

21

22 **Q. What does line 8 of Exhibit A-16 entitled “Evaluation, Measurement, and**
23 **Verification” represent?**

24 A. The EM&V costs on line 8 in Exhibit A-16 represent the activities associated with
25 the third-party evaluation of energy savings realized and achievement of other EWR

Line
No.

1 program goals associated with the performance incentive. In addition, administrative
2 costs associated with EM&V are also included on line 8. Witness Boladian provides
3 detail regarding the types of costs associated with EM&V.

4

5 **Q. What does line 10 of Exhibit A-16 entitled “Program Costs Unitized” represent?**

6 A. The program costs unitized on line 10 in Exhibit A-16 represent customer incentives
7 and rebates, and third-party IC costs deemed to be capitalized. Costs incurred were
8 deemed to be capital based on the capitalization policy described in the Company’s
9 Amended EO Plan, Case No. U-15806 approved by the Commission on June 3, 2010
10 (Amended EO Plan).

11

12 **Q. What criteria did DTE Electric use in 2018 to determine which costs would be**
13 **capitalized?**

14 A. For 2018, capitalized costs under the capitalization policy included measures that
15 result in the installation of a tangible asset with an economic life greater than one
16 year and with a total incentive cost for that measure of \$10,000 or more.

17

18 **Q. What does line 11 of Exhibit A-16 entitled “Construction Work in Progress”**
19 **represent?**

20 A. The construction work in progress costs on line 11 in Exhibit A-16 represent an
21 estimate of approved costs deemed to be capital but not unitized by year-end.

22

Line
No.

1 **Q. What does the Amortization Expense that is shown on line 13 of Exhibit A-16**
2 **represent?**

3 A. The amortization expense on line 13 in Exhibit A-16 represents the amortization
4 associated with program costs capitalized during 2013 through 2018. Capitalized
5 costs are amortized over a five year amortization period with costs being amortized
6 for a half year period in the year that the costs were incurred and the final year the
7 costs are fully amortized. This is consistent with the policy established in the
8 Company's Amended EO Plan Case No. U-15806.

9

10 **Q. What does the Plant Balance section on lines 15 through 21 of Exhibit A-16**
11 **represent?**

12 A. The plant balance section on lines 15 through 21 in Exhibit A-16 represents the
13 capitalized cost components utilized by Witness Lacey in deriving the return on
14 capitalized costs.

15

16 **Q. What information is shown on Exhibit A-17?**

17 A. This exhibit shows the derivation of the allocation factors used to allocate certain
18 costs to the customer classes. Pilot program costs, education and awareness program
19 costs, low income program costs, administrative and infrastructure costs, and EM&V
20 costs were all allocated to the individual customer classes.

21

22 **Q. Were all of the costs mentioned in the previous response allocated the same way?**

23 A. No. The education and awareness program costs were allocated using different
24 allocation factors than the factors used for allocating the remaining costs. First, the
25 education and awareness program costs were allocated as 90% to the residential class,

Line
No.

1 and 10% to the C&I class based on the methodology approved in DTE Electric's
2 Amended EO Plan Case No. U-15806 as shown on lines 1-10 of Exhibit A-17. The
3 costs allocated to the C&I class were then further allocated between Primary (61.0%)
4 and Secondary (39.0%) classes based on the incentive costs incurred for these classes
5 in 2018. The derivation of the C&I class allocation factors is shown on Exhibit A-
6 17, lines 11-16. This methodology is consistent with DTE Electric's previous EO
7 reconciliation cases approved by the Commission.

8

9 **Q. How were the remaining costs allocated to the customer classes?**

10 A. Pilot program costs, low income program costs, administrative and infrastructure
11 costs and EM&V costs were allocated to each of the customer classes using a two-
12 step allocation process. The first step of the allocation process allocated 51.8% of
13 these costs to the residential class and 48.2% of these costs to the C&I class as shown
14 on lines 1-10 of Exhibit A-17. This first allocation was based on program incentive
15 costs, program implementation costs, direct program administration costs and
16 education and awareness program costs. The costs allocated to the C&I class were
17 further allocated between Primary (61.0%) and Secondary (39.0%) classes based on
18 the incentive costs incurred for these classes in 2018. The derivation of these
19 allocation factors is shown on lines 11-16 on Exhibit A-17. This methodology is
20 consistent with the Company's previous EO reconciliation cases approved by the
21 Commission.

22

23 **Q. How are over or under recovery EWR balances, calculated by Witness Lacey,**
24 **being treated by the Company?**

25 A, DTE Electric calculates the cumulative net amount of base revenues compared to

Line
No.

1 expenses. If the cumulative amount is an over recovery, then a regulatory liability is
2 accrued. If the cumulative amount represents an under recovery, then a regulatory
3 asset is recognized. Witness Lacey provides detail regarding how these balances are
4 calculated and the associated carrying charges recorded by the Company for these
5 balances.

6

7 **Q. Does this conclude your direct testimony?**

8 A. Yes, it does.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

EXHIBITS

OF

JAMES L. CHUBB

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Surcharge Revenue, Program Costs and Plant Balance
By Class and Total

Case No.: U-20366
Exhibit: A-16
Witness: J. L. Chubb
Page: 1 of 4

Line No.	(a) Description	(b) Source	(c) Residential	(d) C&I Secondary	(e) C&I Primary	(f) Total Col (c)+(d)+(e)
1	Surcharge Revenue (5)	A-16 pgs 2-4, L1 Col (p)	\$ 64,449,001	\$ 34,523,065	\$ 16,931,702	\$ 115,903,768
2	Program Expenses:					
3	Program Costs Expensed	A-16 pgs 2-4, L3 Col (p)	\$ 33,347,287	\$ 9,682,331	\$ 11,592,411	\$ 54,622,029
4	Pilot Programs (1)	A-16 pgs 2-4, L4 Col (p)	2,760,286	1,000,847	1,564,371	5,325,505
5	Education and Awareness Programs (2)	A-16 pgs 2-4, L5 Col (p)	2,899,844	125,712	196,493	3,222,048
6	Low Income Programs (3)	A-16 pgs 2-4, L6 Col (p)	7,128,310	2,584,641	4,039,915	13,752,866
7	Administration & Infrastructure	A-16 pgs 2-4, L7 Col (p)	6,352,803	1,239,559	1,937,488	9,529,850
8	Evaluation, Measurement, and Verification (4)	A-16 pgs 2-4, L8 Col (p)	2,779,063	1,007,656	1,575,013	5,361,731
9	Total Program Expenses	Sum of lines 3 through 8	<u>\$ 55,267,593</u>	<u>\$ 15,640,746</u>	<u>\$ 20,905,691</u>	<u>\$ 91,814,030</u>
10	Program Costs Unitized	A-16 pgs 2-4, L10 Col (p)	\$ -	\$ 4,709,506	\$ 10,106,495	\$ 14,816,000
11	Construction Work in Progress	A-16 pgs 2-4, L11 Col (p)	-	(272)	(299)	(572)
12	Total Program Costs Capitalized	Sum of lines 10 and 11	<u>\$ -</u>	<u>\$ 4,709,233</u>	<u>\$ 10,106,195</u>	<u>\$ 14,815,429</u>
13	Amortization Expense	A-16 pgs 2-4, L13 Col (p)	\$ -	\$ 6,216,378	\$ 5,265,606	\$ 11,481,984
14	<u>Plant Balance</u>					
15	Plant in Service	A-16 pgs 2-4, L15 Col (o)	\$ 3,762,277	\$ 48,622,803	\$ 54,430,477	\$ 106,815,558
16	Retired Plant in Service	A-16 pgs 2-4, L16 Col (o)	(3,762,277)	(17,316,708)	(24,717,696)	(45,796,681)
17	Construction Work in Progress	A-16 pgs 2-4, L17 Col (o)	-	(0)	(0)	(0)
18	Gross Plant	Sum of lines 15, 16 & 17	<u>\$ (0)</u>	<u>\$ 31,306,096</u>	<u>\$ 29,712,782</u>	<u>\$ 61,018,877</u>
19	Accumulated Amortization	A-16 pgs 2-4, L19 Col (o)	(3,762,277)	(34,540,635)	(37,839,508)	(76,142,421)
20	Retired Accumulated Amortization	A-16 pgs 2-4, L20 Col (o)	3,762,277	17,316,708	24,717,696	45,796,681
21	Net Plant	Sum of lines 18, 19 & 20	<u>\$ (0)</u>	<u>\$ 14,082,168</u>	<u>\$ 16,590,969</u>	<u>\$ 30,673,137</u>

Note: Administrative costs included above:

(1) Pilot	\$ 949,898
(2) Education and Awareness	802,917
(3) Low Income	255,342
(4) Evaluation, Measurement, and Verification	472,200
Total	<u>\$ 2,480,356</u>

(5) Base EWR surcharge revenue and EWR performance incentive revenue

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Surcharge Revenue, Program Costs and Plant Balance
Residential

Case No.: U-20366
Exhibit: A-16
Witness: J. L. Chubb
Page: 2 of 4

Line No.	(a) Description	(b) Source	(c) 2017 Ending Balance	(d) Jan-18	(e) Feb-18	(f) Mar-18	(g) Apr-18	(h) May-18	(i) Jun-18	(j) Jul-18	(k) Aug-18	(l) Sep-18	(m) Oct-18	(n) Nov-18	(o) Dec-18	(p) Total 2018
1	Surcharge Revenue (1)	WP JC-1, Line 1		\$ 5,345,976	\$ 4,062,971	\$ 3,902,219	\$ 3,774,733	\$ 4,448,681	\$ 5,847,790	\$ 7,710,372	\$ 8,090,194	\$ 6,578,422	\$ 4,734,263	\$ 4,988,784	\$ 4,964,596	\$ 64,449,001
2	Program Expenses:															
3	Program Costs Expensed	WP JC-2, Line 8		\$ 1,835,945	\$ 2,261,844	\$ 2,491,929	\$ 2,733,841	\$ 2,387,799	\$ 2,706,370	\$ 3,371,164	\$ 3,155,577	\$ 2,547,957	\$ 3,981,970	\$ 3,305,531	\$ 2,567,361	\$ 33,347,287
4	Pilot Programs	WP JC-2, Line 9		189,113	157,516	106,513	265,862	182,358	146,368	240,380	153,507	287,252	288,634	275,830	466,954	2,760,286
5	Education and Awareness Programs	WP JC-2, Line 10		71,261	212,347	145,880	347,729	230,635	126,109	225,310	332,008	227,987	566,370	317,686	96,522	2,899,844
6	Low Income Programs	WP JC-2, Line 11		337,749	411,079	487,217	376,337	579,688	386,655	605,747	649,686	644,611	529,111	562,240	1,558,190	7,128,310
7	Administration & Infrastructure	WP JC-2, Line 12		268,335	224,595	764,516	282,178	369,458	295,670	399,077	491,369	524,234	609,837	1,145,291	978,244	6,352,803
8	Evaluation, Measurement, and Verification	WP JC-2, Line 13		210,565	286,914	272,308	201,645	215,965	229,804	140,018	172,326	216,367	359,216	112,720	361,215	2,779,063
9	Total Program Expenses	Sum of Lines 3 through 8		<u>\$ 2,912,966</u>	<u>\$ 3,554,294</u>	<u>\$ 4,268,362</u>	<u>\$ 4,207,592</u>	<u>\$ 3,965,903</u>	<u>\$ 3,890,976</u>	<u>\$ 4,981,696</u>	<u>\$ 4,954,472</u>	<u>\$ 4,448,408</u>	<u>\$ 6,335,138</u>	<u>\$ 5,719,298</u>	<u>\$ 6,028,486</u>	<u>\$ 55,267,593</u>
10	Program Costs Unitized	WP JC-2, Line 4		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
11	Construction Work in Progress	WP JC-2, Line 5		-	-	-	-	-	-	-	-	-	-	-	-	-
12	Total Program Costs Capitalized	Sum of Lines 10 and 11		<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
13	Amortization Expense	WP JC-3, Line 1		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
14	Plant Balance															
15	Plant in Service (2)	Prior Bal. + L10	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277	\$ 3,762,277
16	Retired Plant in Service (3)		(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)
17	Construction Work in Progress	Prior Bal. + L11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Gross Plant	Sum of Lines 15 , 16 & 17	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>
19	Accumulated Amortization (4)	Prior Bal. + L13	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)	(3,762,277)
20	Retired Accumulated Amortization		3,762,277	3,762,277	3,762,277	3,762,277	3,762,277	3,762,277	3,762,277	3,762,277	3,762,277	3,762,277	3,762,277	3,762,277	3,762,277	3,762,277
21	Net Plant	Sum of Lines 18 ,19 & 20	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>	<u>\$ (0)</u>

Notes:

- (1) Base EWR surcharge revenue and EWR performance incentive revenue
(2) 2016 Ending Balance Line 15 col (c) Source: U-18332, Exh A-19 p.2, Line 15, col (o)
(3) 2016 Ending Balance Line 16 col (c) Source: U-18332, Exh A-19 p.2, Line 16, col (o)
(4) 2016 Ending Balance Line 19 col (c) Source: U-18332, Exh A-19 p.2, Line 19, col (o)

Line No.	(a) Description	(b) Source	(c) 2017 Ending Balance	(d) Jan-18	(e) Feb-18	(f) ##	(g) Mar-18	(h) Apr-18	(i) May-18	(j) Jun-18	(k) Jul-18	(l) Aug-18	(m) Sep-18	(n) Oct-18	(o) Nov-18	(p) Dec-18	Total 2018
1	Surcharge Revenue (1)	WP JC-1, Line 2		\$ 2,663,987	\$ 2,413,138	\$ 2,475,621	\$ 2,460,544	\$ 2,777,641	\$ 3,183,718	\$ 3,285,881	\$ 3,568,152	\$ 2,939,798	\$ 2,875,394	\$ 3,049,402	\$ 2,829,787	\$ 34,523,065	
2	Program Expenses:																
3	Program Costs Expensed	WP JC-2, Line 22		\$ 484,115	\$ 683,174	\$ 686,014	\$ 747,143	\$ 778,004	\$ 770,855	\$ 730,934	\$ 697,753	\$ 706,338	\$ 868,684	\$ 1,007,345	\$ 1,521,974	\$ 9,682,331	
4	Pilot Programs	WP JC-2, Line 23		68,570	57,113	38,620	96,398	66,121	53,071	87,159	55,660	104,154	104,655	100,013	169,312	1,000,847	
5	Education and Awareness Programs	WP JC-2, Line 24		3,089	9,206	6,324	15,074	9,998	5,467	9,767	14,393	9,884	24,553	13,772	4,184	125,712	
6	Low Income Programs	WP JC-2, Line 25		122,464	149,053	176,659	136,455	210,188	140,197	219,637	235,568	233,728	191,849	203,861	564,982	2,584,641	
7	Administration & Infrastructure	WP JC-2, Line 26		76,646	53,743	82,629	77,546	58,478	68,037	96,838	87,030	103,820	174,529	304,867	55,395	1,239,559	
8	Evaluation, Measurement, and Verification	WP JC-2, Line 27		76,348	104,032	98,736	73,114	78,306	83,324	50,769	62,483	78,452	130,248	40,871	130,972	1,007,656	
9	Total Program Expenses	Sum of Lines 3 through 8		<u>\$ 831,232</u>	<u>\$ 1,056,320</u>	<u>\$ 1,088,982</u>	<u>\$ 1,145,731</u>	<u>\$ 1,201,096</u>	<u>\$ 1,120,951</u>	<u>\$ 1,195,103</u>	<u>\$ 1,152,888</u>	<u>\$ 1,236,376</u>	<u>\$ 1,494,518</u>	<u>\$ 1,670,729</u>	<u>\$ 2,446,819</u>	<u>\$ 15,640,746</u>	
10	Program Costs Unitized	WP JC-2, Line 18		\$ -	\$ 251,843	\$ 134,569	\$ 116,400	\$ 167,765	\$ 199,604	\$ 185,066	\$ 1,804,603	\$ 158,730	\$ 224,351	\$ 303,721	\$ 1,162,853	\$ 4,709,506	
11	Construction Work in Progress	WP JC-2, Line 19		174,927	(174,927)	-	32,630	(32,630)	(272)	-	-	-	-	(0)	-	(272)	
12	Total Program Costs Capitalized	Sum of Lines 10 and 11		<u>\$ 174,927</u>	<u>\$ 76,916</u>	<u>\$ 134,569</u>	<u>\$ 149,030</u>	<u>\$ 135,135</u>	<u>\$ 199,332</u>	<u>\$ 185,066</u>	<u>\$ 1,804,603</u>	<u>\$ 158,730</u>	<u>\$ 224,351</u>	<u>\$ 303,721</u>	<u>\$ 1,162,853</u>	<u>\$ 4,709,233</u>	
13	Amortization Expense	WP JC-3, Line 2		\$ 529,692	\$ 532,948	\$ 534,293	\$ 535,367	\$ 537,711	\$ 540,565	\$ 440,063	\$ 476,155	\$ 480,123	\$ 487,601	\$ 502,787	\$ 619,073	\$ 6,216,378	
14	Plant Balance																
15	Plant in Service (2)	Prior Bal. + L10	\$ 43,913,298	\$ 43,913,298	\$ 44,165,140	\$ 44,299,710	\$ 44,416,110	\$ 44,583,875	\$ 44,783,479	\$ 44,968,545	\$ 46,773,147	\$ 46,931,877	\$ 47,156,229	\$ 47,459,950	\$ 48,622,803		
16	Retired Plant in Service (3)		(10,608,349)	(10,608,349)	(10,608,349)	(10,608,349)	(10,608,349)	(10,608,349)	(10,608,349)	(17,316,708)	(17,316,708)	(17,316,708)	(17,316,708)	(17,316,708)	(17,316,708)		
17	Construction Work in Progress (4)	Prior Bal. + L11	272	175,199	272	272	32,902	272	0	0	0	0	0	(0)	(0)		
18	Gross Plant	Sum of Lines 15 , 16 & 17	\$ 33,305,221	\$ 33,480,148	\$ 33,557,064	\$ 33,691,634	\$ 33,840,663	\$ 33,975,798	\$ 34,175,130	\$ 27,651,837	\$ 29,456,440	\$ 29,615,170	\$ 29,839,521	\$ 30,143,242	\$ 31,306,096		
19	Accumulated Amortization (5)	Prior Bal. + L13	(28,324,258)	(28,853,950)	(29,386,898)	(29,921,191)	(30,456,558)	(30,994,269)	(31,534,834)	(31,974,897)	(32,451,052)	(32,931,174)	(33,418,776)	(33,921,563)	(34,540,635)		
20	Retired Accumulated Amortization		10,608,349	10,608,349	10,608,349	10,608,349	10,608,349	10,608,349	10,608,349	17,316,708	17,316,708	17,316,708	17,316,708	17,316,708	17,316,708		
21	Net Plant	Sum of Lines 18 ,19 & 20	<u>\$ 15,589,313</u>	<u>\$ 15,234,547</u>	<u>\$ 14,778,515</u>	<u>\$ 14,378,791</u>	<u>\$ 13,992,454</u>	<u>\$ 13,589,878</u>	<u>\$ 13,248,644</u>	<u>\$ 12,993,648</u>	<u>\$ 14,322,096</u>	<u>\$ 14,000,703</u>	<u>\$ 13,737,453</u>	<u>\$ 13,538,387</u>	<u>\$ 14,082,168</u>		

Notes:

- (1) Base EWR surcharge revenue and EWR performance incentive revenue
(2) 2016 Ending Balance Line 15 col (c) Source: U-18332, Exh A-19 p.3, Line 15, col (o)
(3) 2016 Ending Balance Line 16 col (c) Source: U-18332, Exh A-19 p.3, Line 16, col (o)
(4) 2016 Ending Balance Line 17 col (c) Source: U-18332, Exh A-19 p.3, Line 17, col (o)
(5) 2016 Ending Balance Line 19 col (c) Source: U-18332, Exh A-19 p.3, Line 19, col (o)

Line No.	(a) Description	(b) Source	(c) 2017 Ending Balance	(d) Jan-18	(e) Feb-18	(f) Mar-18	(g) Apr-18	(h) May-18	(i) Jun-18	(j) Jul-18	(k) Aug-18	(l) Sep-18	(m) Oct-18	(n) Nov-18	(o) Dec-18	(p) Total 2018
1	Surcharge Revenue (1)	WP JC-1, Line 3		\$ 1,706,475	\$ 1,701,866	\$ 1,703,721	\$ 1,656,921	\$ 1,377,183	\$ 1,251,222	\$ 1,243,426	\$ 1,265,954	\$ 1,242,958	\$ 1,247,100	\$ 1,282,300	\$ 1,252,576	\$ 16,931,702
2	Program Expenses:															
3	Program Costs Expensed	WP JC-2, Line 36		\$ 582,576	\$ 514,324	\$ 642,801	\$ 859,325	\$ 837,856	\$ 1,013,513	\$ 918,428	\$ 725,174	\$ 820,735	\$ 1,025,650	\$ 1,189,405	\$ 2,462,624	\$ 11,592,411
4	Pilot Programs	WP JC-2, Line 37		107,178	89,271	60,365	150,675	103,350	82,953	136,233	86,999	162,798	163,581	156,325	264,642	1,564,371
5	Education and Awareness Programs	WP JC-2, Line 38		4,829	14,389	9,885	23,562	15,628	8,545	15,267	22,497	15,448	38,377	21,526	6,540	196,493
6	Low Income Programs	WP JC-2, Line 39		191,416	232,976	276,127	213,286	328,534	219,134	343,303	368,204	365,328	299,869	318,645	883,092	4,039,915
7	Administration & Infrastructure	WP JC-2, Line 40		119,802	84,003	129,154	121,208	91,404	106,345	151,362	136,032	162,275	272,796	476,522	86,585	1,937,488
8	Evaluation, Measurement, and Verification	WP JC-2, Line 41		119,336	162,606	154,328	114,281	122,396	130,240	79,354	97,664	122,624	203,583	63,883	204,716	1,575,013
9	Total Program Expenses	Sum of Lines 3 through 8		<u>\$ 1,125,137</u>	<u>\$ 1,097,568</u>	<u>\$ 1,272,660</u>	<u>\$ 1,482,338</u>	<u>\$ 1,499,168</u>	<u>\$ 1,560,729</u>	<u>\$ 1,643,947</u>	<u>\$ 1,436,571</u>	<u>\$ 1,649,209</u>	<u>\$ 2,003,857</u>	<u>\$ 2,226,307</u>	<u>\$ 3,908,199</u>	<u>\$ 20,905,691</u>
10	Program Costs Unitized	WP JC-2, Line 32		\$ -	\$ 540,449	\$ 288,783	\$ 249,792	\$ 360,019	\$ 428,346	\$ 397,147	\$ 3,872,638	\$ 340,631	\$ 481,453	\$ 651,780	\$ 2,495,457	\$ 10,106,495
11	Construction Work in Progress	WP JC-2, Line 33		192,169	(192,169)	-	35,846	(35,846)	(299)	-	-	-	-	(0)	-	(299)
12	Total Program Costs Capitalized	Sum of Lines 10 and 11		<u>\$ 192,169</u>	<u>\$ 348,280</u>	<u>\$ 288,783</u>	<u>\$ 285,638</u>	<u>\$ 324,174</u>	<u>\$ 428,047</u>	<u>\$ 397,147</u>	<u>\$ 3,872,638</u>	<u>\$ 340,631</u>	<u>\$ 481,453</u>	<u>\$ 651,780</u>	<u>\$ 2,495,457</u>	<u>\$ 10,106,195</u>
13	Amortization Expense	WP JC-3, Line 3		\$ 396,716	\$ 400,663	\$ 403,551	\$ 406,547	\$ 410,799	\$ 416,916	\$ 341,036	\$ 418,489	\$ 427,005	\$ 443,053	\$ 475,642	\$ 725,188	\$ 5,265,606
14	Plant Balance															
15	Plant in Service (2)	Prior Bal. + L10	\$ 44,323,983	\$ 44,323,983	\$ 44,864,431	\$ 45,153,214	\$ 45,403,006	\$ 45,763,026	\$ 46,191,372	\$ 46,588,519	\$ 50,461,156	\$ 50,801,787	\$ 51,283,240	\$ 51,935,020	\$ 54,430,477	
16	Retired Plant in Service (3)		(19,375,032)	(19,375,032)	(19,375,032)	(19,375,032)	(19,375,032)	(19,375,032)	(19,375,032)	(24,717,696)	(24,717,696)	(24,717,696)	(24,717,696)	(24,717,696)	(24,717,696)	
17	Construction Work in Progress (4)	Prior Bal. + L11	299	192,468	299	299	36,145	299	0	0	0	0	0	(0)	(0)	
18	Gross Plant	Sum of Lines 15 , 16 & 17	\$ 24,949,249	\$ 25,141,418	\$ 25,489,698	\$ 25,778,481	\$ 26,064,119	\$ 26,388,292	\$ 26,816,339	\$ 21,870,823	\$ 25,743,461	\$ 26,084,092	\$ 26,565,545	\$ 27,217,324	\$ 29,712,782	
19	Accumulated Amortization (5)	Prior Bal. + L13	(32,573,902)	(32,970,618)	(33,371,281)	(33,774,832)	(34,181,379)	(34,592,178)	(35,009,094)	(35,350,130)	(35,768,620)	(36,195,625)	(36,638,678)	(37,114,320)	(37,839,508)	
20	Retired Accumulated Amortization		19,375,032	19,375,032	19,375,032	19,375,032	19,375,032	19,375,032	19,375,032	24,717,696	24,717,696	24,717,696	24,717,696	24,717,696	24,717,696	
21	Net Plant	Sum of Lines 18 ,19 & 20	<u>\$ 11,750,380</u>	<u>\$ 11,545,833</u>	<u>\$ 11,493,449</u>	<u>\$ 11,378,681</u>	<u>\$ 11,257,772</u>	<u>\$ 11,171,147</u>	<u>\$ 11,182,278</u>	<u>\$ 11,238,388</u>	<u>\$ 14,692,537</u>	<u>\$ 14,606,163</u>	<u>\$ 14,644,562</u>	<u>\$ 14,820,700</u>	<u>\$ 16,590,969</u>	

Notes:

- (1) Base EWR surcharge revenue and EWR performance incentive revenue
(2) 2016 Ending Balance Line 15 col (c) Source: U-18332, Exh A-19 p.4, Line 15, col (o)
(3) 2016 Ending Balance Line 16 col (c) Source: U-18332, Exh A-19 p.4, Line 16, col (o)
(4) 2016 Ending Balance Line 17 col (c) Source: U-18332, Exh A-19 p.4, Line 17, col (o)
(5) 2016 Ending Balance Line 19 col (c) Source: U-18332, Exh A-19 p.4, Line 19, col (o)

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Allocation Factors

Case No.: U-20366
Exhibit: A-17
Witness: J. L. Chubb
Page: 1 of 1

	(a)	(b)	(c)
Line No.	Allocation 1 - Residential and Commercial & Industrial (C&I) Rate Class Allocation	Actuals	Source
1	Residential (1)	\$ 37,227,181	(6)
2	90% of Education (2)	2,899,844	(6)
3	Total Residential	\$ 40,127,025	Line 1 + Line 2
4	C&I (1)	\$ 36,969,068	(6)
5	10% of Education (2)	322,205	(6)
6	Total C&I	\$ 37,291,273	Line 4 + Line 5
7	Total Residential & C&I	\$ 77,418,298	Line 3 + Line 6
	Allocation Percentage		
8	Residential (3)	51.8%	Line 3 / Line 7
9	C&I (3)	48.2%	Line 6 / Line 7
10	Total	100.0%	Line 8 + Line 9
	<u>Allocation 2 - C&I Primary and C&I Secondary Rate Class Allocation</u>	<u>Company Records</u>	
11	C&I Primary (4)	\$ 15,721,849	(6)
12	C&I Secondary (4)	10,058,465	(6)
13	Total	\$ 25,780,314	Line 11 + Line 12
	Allocation Percentage		
14	C&I Primary (5)	61.0%	Line 11 / Line 13
15	C&I Secondary (5)	39.0%	Line 12 / Line 13
16	Total	100.0%	Line 14 + Line 15

Notes:

- (1) Line 1 & Line 4 are all program incentive costs, program implementation costs and direct program administration costs
- (2) Line 2 & Line 5 are Education costs allocated at the noted percentages in DTE Electric's Amended EO Plan
- (3) Percentages on Lines 8 & 9 were used to allocate Pilot, EM&V, Low Income and administrative costs between Residential & C&I
- (4) Line 11 & Line 12 are incentive costs for C&I Primary and C&I Secondary customers
- (5) Percentages on Lines 14 & 15 were used to allocate Pilot, EM&V, Low Income and administrative costs between C&I Primary & C&I Secondary
- (6) Company Records

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

QUALIFICATIONS

AND

DIRECT TESTIMONY

OF

THOMAS W. LACEY

DTE ELECTRIC COMPANY
QUALIFICATIONS OF THOMAS W. LACEY

Line
No.

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

2 A. My name is Thomas W. Lacey. My business address is One Energy Plaza, Detroit,
3 Michigan, 48226. I am employed by DTE Energy Corporate Services, LLC (DTE
4 Energy or DTE) as a Principal Financial Analyst in the Revenue Requirements
5 Department of the Regulatory Affairs Organization.

6

7 **Q. On whose behalf are you testifying?**

8 A. I am testifying on behalf of DTE Electric Company (DTE Electric or the Company).

9

10 **Q. What is your educational background and business experience?**

11 A. I received a Bachelor of Science Degree in Accounting from Michigan State
12 University in 1981 and a Masters in Business Administration from Wayne State
13 University in 1992. From 1982 until 2001, I was employed by ANR Pipeline
14 Company (ANR) in the Rates and Regulatory Affairs department. I had several
15 positions of increasing responsibilities within the Rates area, ultimately rising to the
16 position of Senior Rates Analyst. During my nineteen years with ANR, I worked on
17 numerous rate proceedings and filings before the Federal Energy Regulatory
18 Commission (FERC) including rate cases (FERC Docket Nos. RP82-80, RP83-79,
19 RP86-169, RP89-161, RS92-1 and RP94-43). My work was primarily in the areas
20 of cost-of-service and rate design. In 2002, I joined DTE as a Financial Analyst in
21 the Load Research department of Regulatory Affairs. I worked in Load Research
22 until December 2005. My responsibilities within Load Research included extensive
23 work on the 2003 Michigan Consolidated Gas Company (MichCon) rate case (U-
24 13898) and The Detroit Edison Company (Detroit Edison) rate filings. In December
25 2005, I accepted my current position.

Line
No.

1 **Q. What are your responsibilities as a Principal Financial Analyst for both DTE**
2 **Electric and DTE Gas?**

3 A. As a Principal Financial Analyst, my responsibilities include the preparation of
4 revenue requirements, cost of service and rate design, testimony, exhibits and
5 workpapers, in cases for both DTE Gas and DTE Electric. I am also responsible for
6 managing certain MPSC filings such as DTE Electric's Renewable Energy Plan
7 (REP) Plan case: U-17793 and DTE Electric's most recent depreciation case U-
8 18150.

9

10 **Q. Have you previously sponsored testimony in cases before the Michigan Public**
11 **Service Commission (MPSC or Commission)?**

12 A. Yes, I have. I have sponsored testimony in the following cases:

13 U-13898 MichCon's 2006 Uncollectible Expense True-up Mechanism and
14 Safety and Training Related Expenditure Report

15 U-15985 MichCon's 2009 General Rate Case Proceeding

16 U-16290 Reconciliation of MichCon's 2010 Energy Optimization (EO)
17 Program

18 U-16730 MichCon's 2011 Updated Energy Optimization Plan

19 U-16730 MichCon 2011 Updated Energy Optimization Plan

20 U-16751 Reconciliation of the MichCon 2011 EO Program

21 U-16999 MichCon 2011 General Rate Case Proceeding

22 U-17288 Reconciliation of the DTE Gas 2012 EO Program

23 U-17602 Reconciliation of the DTE Electric 2013 EO Program

24 U-17608 Reconciliation of the DTE Gas 2013 EO Program

25 U-17632 Reconciliation of the DTE Electric 2013 REP Program

Line
No.

- | | | |
|----|-----------|---|
| 1 | U-17762 | DTE Electric 2016/2017 Energy Optimization Plan |
| 2 | U-17763 | DTE Gas 2016/2017 Energy Optimization Plan |
| 3 | U-17804 | Reconciliation of the DTE Electric 2014 REP Program |
| 4 | U-17832 | Reconciliation of the DTE Electric 2014 EO Program |
| 5 | U-17841 | Reconciliation of the DTE Gas 2014 EO Program |
| 6 | U-18014 | DTE Electric General Rate Case Proceeding |
| 7 | U-18111 | DTE Electric REP Plan Proceeding |
| 8 | U-18248 | DTE Electric Capacity Charge |
| 9 | U-18255 | DTE Electric General Rate Case Proceeding |
| 10 | U-18232 | DTE Electric REP Plan Proceeding |
| 11 | U-20029 | Reconciliation of the DTE Electric 2017 EWR Program |
| 12 | U-20035 | Reconciliation of the DTE Gas 2017 EWR Program |
| 13 | U-20105 | DTE Electric Tax Credit A Proceeding |
| 14 | U-20162 | DTE Electric General Rate Case Proceeding |
| 15 | U-20172 | Reconciliation of the DTE Electric 2017 REP Program |
| 16 | | |
| 17 | Q. | Have you previously testified or submitted testimony in any other regulatory |
| 18 | | proceedings? |
| 19 | A. | Yes. I sponsored testimony in ANR's general rate case in Docket No. RP94-43. I |
| 20 | | testified at a hearing before the FERC in Docket No. RP94-43. |

DTE ELECTRIC COMPANY
DIRECT TESTIMONY OF THOMAS W. LACEY

Line
No.

1 **Q. What is the purpose of your testimony in this proceeding?**

2 A. The purpose of my 2018 Energy Waste Reduction (EWR) reconciliation testimony
3 in this proceeding is to:

4 1) Calculate and support the cumulative EWR program over/(under) cost recovery
5 (based on the comparison of base surcharge revenue vs. defined program costs as
6 discussed later in my testimony) in total and by customer class for the year
7 ending 2018, including carrying costs. I will show that at 2018 year-end, the
8 Company had a cumulative under-recovery of \$12.5 million for all customers,
9 which includes total carrying costs of \$0.1 million. This year-end cumulative
10 total is summarized on Exhibit A-18 and includes a Residential class cumulative
11 over-recovery of \$0.1 million, a Commercial and Industrial (C&I) Secondary
12 class cumulative under-recovery of \$12.0 million, and a C&I Primary class
13 cumulative under-recovery of \$0.6 million.

14 2) Calculate and support the cumulative over/(under) revenue recovery for the
15 2016 performance incentive and propose that any residual balance be netted
16 against the 2018 performance incentive beginning balance. I will show that at
17 the end of the 12-month recovery period approved by the MPSC for collection
18 of the 2016 performance incentive that there was a cumulative over-recovery of
19 \$479,659 for all customers. This year-end cumulative total is summarized on
20 Exhibit A-25 by class and in total.

21 3) Present and support how the Company proposes to recover the 2018 EWR
22 Program Performance Incentive and the residual balances from the 2016
23 performance incentive surcharge. I will calculate the incremental surcharges
24 needed to recover the 2018 performance incentive (combined with the 2016
25 performance incentive residual balance), by class, using the rate design

Line
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1 methodology previously approved by the Commission. In addition to approved
2 EWR base surcharges, customers would pay one incremental 12-month surcharge
3 to recover the proposed 2018 performance incentive, combined with the 2016
4 performance incentive residual balance, as follows:
5

Class	Monthly Consumption level (kWh)	Incremental Monthly Surcharge
Residential	NA	\$0.000707/kWh
C&I Secondary (per meter)	0-850	\$0.16/meter
	851-1,650	\$0.97/meter
	> 1,650	\$4.03/meter
C&I Primary (per meter)	0-11,500	\$13.48/meter
	> 11,500	\$141.24/meter

6

7 **Q. Are you sponsoring any exhibits in this proceeding?**

8 A. Yes. I am sponsoring the following exhibits:

<u>Exhibit</u>	<u>Description</u>
A-18	Summary of Cumulative Over/(Under) Cost Recovery by Class
A-19	Monthly Over/(Under) Cost Recovery
A-20	Allocation of 2018 EWR Surcharge Revenue
A-21	Revenue Allocation Factor Calculations
A-22	Return on Capitalized Costs
A-23	Pre-Tax Rate of Return by Month
A-24	Revenue Conversion Factors
A-25	Performance Incentive Reconciliation

Line
No.

1 A-26 Calculation of Surcharges to Recover Performance Incentive

2 A-27 Billed History of Surcharges

3 A-28 Proposed Tariff Sheets

4

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

6 A. Yes, they were.

7

8 **Calculation of 2018 Cumulative EWR Program Over/(Under) Cost Recovery**

9 **Q. How was DTE Electric's 2018 year-end EWR cumulative over/(under) cost**
10 **recovery calculated?**

11 A. In general, this effort entails comparing 2018 base surcharge revenue to 2018 actual
12 EWR program costs. "Base" surcharge revenue is total EWR actual revenue
13 excluding the revenue recovery for authorized performance incentives. The 2018
14 actual EWR program costs include: O&M expenses, pre-tax return on capitalized
15 costs and return of capitalized costs (amortization) plus carrying charges on
16 over/(under) recovered balances. Specifically, DTE Electric's 2018 year-end
17 cumulative EWR over/(under) cost recovery amount is calculated on a class specific
18 basis and is the net combination of: 1) the 2017 ending over/(under) cost recovery
19 balance (i.e. 2018 beginning balance); 2) the incremental 2018 EWR program
20 over/(under) cost recovery and 3) 2018 carrying charges. DTE Electric's 2018 year-
21 end EWR program over/(under) cost recovery was calculated on a monthly basis as
22 a comparison of the actual program costs incurred to actual billed base surcharge
23 revenue. Carrying charges were calculated based on the average monthly cumulative
24 over/(under) recovery balance.

25

Line
No.

1 **Q. What is DTE Electric's 2018 year-end cumulative EWR over/(under) cost**
2 **recovery balance in total and for each customer class?**

3 A. As summarized on Exhibit A-18, DTE Electric's EWR Program was under-recovered
4 by \$12.5 million at 2018 year-end. As shown on line 10 of Exhibit A-18, the
5 Residential class was over-recovered by \$0.1 million; the C&I Secondary class was
6 under-recovered by \$12.0 million; and the C&I Primary class was under-recovered
7 by \$0.6 million.

8

9 **Q. How are the class-specific over/(under) recoveries (referenced above) derived**
10 **within Exhibit A-18 entitled "Summary of Cumulative Over/(Under) Cost**
11 **Recovery by Class"?**

12 A. Exhibit A-18 shows DTE Electric's 2018 year-end summary of the cumulative EWR
13 over/(under) cost recovery balances by customer class (columns c through e) and in
14 total (column f). Line 1 shows the 2018 beginning over/(under) recovery balances
15 inclusive of accrued interest through the end of 2017. These over/(under) recovery
16 balances are as of December 31, 2017 and were approved by the Commission in its
17 order on December 20, 2018 in the Company's 2017 EWR Reconciliation Case (Case
18 No. U-20029). Line 2 represents the actual 2018 base surcharge revenue. Line 4
19 represents the actual 2018 program costs that were expensed (O&M expenses). Line
20 5 shows the 2018 pre-tax return on the program costs that were capitalized. Line 6
21 shows the amortization of the capitalized costs. Line 7 shows the total program costs
22 for 2018 which is a summation of lines 4 through 6. The 2018 cumulative year-end
23 EWR program over/(under) cost recovery is shown on line 8 as the sum of lines 1
24 and 2 minus line 7. Line 9 shows the carrying charges calculated on the EWR
25 program over/(under) cost recovery shown on line 8. Line 10 shows the 2018 year-

Line
No.

1 end cumulative EWR program over/(under) cost recovery including carrying charges.
2 These amounts are carried forward from column (o) of the respective customer class
3 monthly detail pages 1-3 of Exhibit A-19.
4

5 **Q. What is shown on Exhibit A-19 entitled “Monthly Over/(Under) Cost**
6 **Recovery”?**

7 A. Exhibit A-19 is a three-page exhibit which shows the calculation, on a monthly basis, of
8 the 2018 EWR program over/(under) cost recovery for the three customer classes
9 (Residential, C&I Secondary and C&I Primary). This exhibit also calculates the carrying
10 charges on the monthly cumulative over/(under) cost recovery. Page 1 of Exhibit A-19
11 shows the calculation of the over(under)-recovery for the Residential class. Page 2 of
12 Exhibit A-19 shows the calculation of the over(under)-recovery for the C&I Secondary
13 class. Page 3 of Exhibit A-19 shows the calculation of the over(under)-recovery for the
14 C&I Primary class. Lines 1 through 6 show the same revenue and program costs
15 information as Exhibit A-18 lines 2 through 7, but on a monthly basis. Line 7 of Exhibit
16 A-19 shows the monthly and total over/(under) recovery for calendar year 2018. Lines
17 9 through 12 calculate the average program over/(under) cost recovery balance that is
18 used to calculate the monthly carrying charges shown on lines 14 and 15. The beginning
19 balance for January 2018 on line 9, column (c) is the 2017 year-end balance. Line 16
20 reflects the 2018 cumulative over/(under) cost recovery balance which is the sum of the
21 program over/(under) cost recovery ending balance (line 11) and the cumulative carrying
22 charges (line 15). Line 18 shows the monthly short term interest rate that is used in
23 deriving the carrying charges.
24

Line
No.

1 **Q. What is the source of the line 1 base surcharge revenue data used in calculating**
2 **the over/ (under) cost recovery amounts on Exhibit A-19?**

3 A. The actual 2018 base surcharge revenues shown on line 1 are calculated on Exhibit A-
4 20. Exhibit A-20, which is discussed in more detail later in my testimony, allocates
5 the total 2018 EWR actual billed surcharge revenue provided by Company Witness
6 Mr. Chubb between the program's EWR performance incentive revenue and the base
7 surcharge revenue designed to recover the program costs.

8

9 **Q. What is the source of the cost data used in calculating the over/ (under) cost**
10 **recovery amounts on Exhibit A-19?**

11 A. The cost amounts shown on lines 3 and 5, O&M expenses and Return of Asset
12 respectively are supported by Witness Chubb on Exhibit A-16. The pretax return on
13 capitalized costs shown on line 4 was calculated on my Exhibit A-22.

14

15 **Q. How was the pretax return on capitalized costs shown on line 4 of Exhibit A-19**
16 **calculated?**

17 A. The pretax return on capitalized costs shown on line 4 of Exhibit A-19 is calculated
18 on Exhibit A-22 by multiplying the average capitalized costs amount by the pre-tax
19 rate of return.

20

21 **Q. How are carrying charges on Exhibit A-19 calculated?**

22 A. Monthly carrying charges are calculated on line 14 of Exhibit A-19 by multiplying
23 the simple average of the cumulative over/(under) recovery month end balances
24 shown on line 12 by DTE Electric's monthly short-term incremental borrowing rate

Line
No.

1 on line 18. The monthly rates shown on line 18 are based on the actual annual interest
2 rates shown on line 17 as provided to me by DTE's Treasury Department.

3

4 **Q. Are the carrying charges compounded monthly?**

5 A. No, carrying charges are not added to the monthly program over/(under) cost
6 recovery balance. Carrying charges are only compounded on an annual basis.

7

8 **Q. What is shown on Exhibit A-22?**

9 A. Exhibit A-22 is a three-page exhibit that calculates average capitalized costs and the
10 pretax return on capitalized costs on a monthly basis, for each of the three customer
11 classes. The calculated pretax return on capitalized costs is shown on line 4 of this
12 exhibit and carried forward to Exhibit A-19, line 4 for the respective customer
13 classes. Page 1 of the exhibit reflects the calculated amounts for the Residential class.
14 Page 2 of the exhibit reflects the calculated amounts for the C&I Secondary class.
15 Page 3 of the exhibit reflects the calculated amounts for the C&I Primary class.

16

17 **Q. How are average capitalized costs derived?**

18 A. Capitalized costs are computed as gross capitalized costs less accumulated
19 amortization and less accumulated deferred taxes as shown on lines 6 through 10 of
20 Exhibit A-22. Column (c) of Exhibit A-22 shows the 2017 year-end balance for these
21 components while columns (d) through (o) show the 2018 month-end balances for
22 these same components. Line 11 represents the average capitalized costs balances
23 that are based on a simple average of the beginning and ending month balances. Line
24 9 shows the monthly balances for accumulated deferred income taxes, are calculated

Line
No.

1 by adjusting the prior month's balance by the monthly change, which were provided
2 by Company Witness Biel and come from lines 5, 10 and 15, of her Exhibit A-29.

3

4 **Q. What is the basis for the pre-tax rate of return you are using to calculate the**
5 **return on capitalized costs?**

6 A. Exhibit A-23 titled "Pre-Tax Rate of Return by Month" shows the calculation of DTE
7 Electric's pre-tax rate of return on permanent capital for each month and serves as
8 the basis for the pre-tax rate of return used on Exhibit A-22. For 2018 this rate of
9 return reflects the rate of return on equity and the debt to equity ratio authorized in
10 the Company's general rate case U-18014. The Commission's January 31, 2017
11 Order in DTE Electric's Case No. U-18014 at page 66 approved the 10.1% rate of
12 return on equity and approved the 50% / 50% debt to equity ratio. The monthly long-
13 term debt component has been updated to reflect actual 2018 monthly values obtained
14 from DTE's Treasury Department. The revenue conversion factors used to calculate
15 the pre-tax rates are derived on Exhibit A-24.

16

17 **Base Surcharge Revenue Determination**

18 **Q. Why is it necessary to allocate EWR surcharge revenue on Exhibit A-20,**
19 **"Allocation of 2018 EWR Surcharge Revenue"?**

20 A. Since all currently approved EWR surcharges are billed to customers as one charge
21 (for 2018 this is the summation of the base surcharge and the 2016 performance
22 incentive surcharge discussed later in my testimony), the revenues are recorded on
23 the Company's books in total. Pages 2 through 4 of Exhibit A-20 show the allocation
24 of the total 2018 billed EWR surcharge revenue (supported by Witness Chubb on
25 Exhibit A-16) between the base surcharge revenue and the 2016 performance

Line
No.

incentive revenue by class. Page 1, lines 1-4 of this exhibit summarizes the monthly data calculated on pages 2 through 4 of Exhibit A-20 for the three customer classes.

Q. What EWR performance incentive surcharges were authorized for collection in 2018?

A. On December 20, 2017, the Commission authorized the Company to begin billing an incremental surcharge to recover the 2016 EWR performance incentive that was awarded as a result of the 2016 DTE Electric EWR Reconciliation in Case No. U-18332. This surcharge was approved for a 12 month billing period beginning January 1, 2018, and it was added to the base surcharge and billed to customers as one EWR surcharge through December 31, 2018.

Q. How do you allocate the total 2018 billed surcharge revenue for the Residential class?

A. Page 2 of Exhibit A-20 shows the allocation of the total Residential EWR surcharge revenue into the individual surcharge revenue streams of which it is comprised. Total 2018 billed surcharge revenue, line 1, is multiplied by the appropriate allocation factors shown on line 2, resulting in the corresponding performance incentive surcharge revenue shown on line 3.

For the months of January to April 2018, 13.66% of total revenue was allocated as 2016 performance incentive revenue as derived on Exhibit A-21 lines 1 through 3, column (d). For the months of May to December, 2018, 10.74% of total revenue was allocated as 2016 performance incentive revenue as derived on Exhibit A-21 lines 1 through 3, column (f). The Residential base surcharge revenue for 2018 which is

Line
No.

shown on line 4 of Exhibit A-20 is then calculated as the difference between the total 2018 billed surcharge revenue on line 1 and the total performance incentive revenue on line 3.

Q. How were the Residential performance incentive allocation factors, shown on lines 1 and 2 of Exhibit A-21, columns (d) and (f), derived?

A. The allocation factors shown on lines 1 and 2 columns (d) and (f) of Exhibit A-21 are simply the ratio of the individual performance incentive surcharge to the total EWR surcharge in effect for 2018 for the Residential class. As shown on Exhibit A-21, the 2016 performance incentive surcharge was \$0.000464 per kWh during all of 2018, and the 2018 base surcharge was \$0.002932 per kWh (for January-April) and \$0.003858 per kWh (for May-December) resulting in a total surcharge of \$0.003396 and \$0.004322 per kWh in those respective months for the Residential class. The 2016 performance incentive surcharge (line 1 col (c)) divided by the total EWR surcharge (line 3 column (c)) is 13.66% for January to April. The 2016 performance incentive surcharge (line 1 col (e)) divided by the total EWR surcharge (line 3 column (e)) is 10.74% for May to December.

Q. How do you allocate the total C&I Secondary 2018 billed surcharge revenue between the performance incentive revenue and the base surcharge revenue?

A. The total 2018 C&I Secondary billed surcharge revenue is allocated between the 2016 performance incentive revenue and base surcharge revenue similar to the methodology used for the Residential class as described above. However, before the total 2018 EWR billed surcharge revenue could be apportioned between performance incentive revenue and base surcharge revenue, the total 2018 monthly billed

Line
No.

1 surcharge revenue needed to be assigned to the stratified usage levels that make up
2 the EWR C&I Secondary class.

3

4 **Q. Why is it necessary to allocate the total C&I secondary revenue into the**
5 **stratified usage levels shown on Exhibit A-20, page 3?**

6 A. The 2016 performance incentive surcharges represent different percentages of each
7 stratified C&I Secondary usage level's total surcharge, so it was not possible to
8 simply apply one allocation factor for each surcharge to the total C&I Secondary total
9 billed surcharge revenue. Therefore, on lines 2 through 4 of Exhibit A-20 page 3, the
10 total 2018 billed surcharge revenue shown on line 1 is allocated to one of the three
11 C&I Secondary stratified usage levels by applying the respective allocation factor in
12 column (c) of lines 2 through 4. The resultant monthly EWR surcharge revenue
13 shown by usage level in columns (d) through (o) of these lines is then used to derive
14 the 2016 performance incentive revenue for each usage level by applying the
15 appropriate allocation factor in column (c) of lines 6 through 8. The allocation factors
16 were derived on Exhibit A-21.

17

18 For 2018, the allocated performance incentive revenue for 2016 is calculated on lines
19 6 through 8. Line 9 shows the total 2016 performance incentive revenue for all usage
20 levels of the C&I Secondary class.

21

22 The C&I Secondary base surcharge revenue shown on line 10 is then calculated as
23 the difference between the total 2018 billed surcharge revenue, on line 1, and the total
24 performance incentive revenues, on line 9.

25

Line
No.

1 **Q. How were the C&I Secondary consumption level allocation factors derived?**

2 A. The consumption level allocation factors shown in column (c) of lines 2 through 4 of
3 Exhibit A-20 page 3 are derived on columns (d) and (f) of Exhibit A-21, lines 19
4 through 22. The basis for these factors is the EWR surcharge design in the EWR
5 Plan approved by the Commission for 2018. Each consumption level is assumed to
6 have been billed the same percentage of the total class's revenue as set forth in that
7 plan. In 2018, two plans were in effect, U-17762 for January to April, and U-18262
8 for May to December, as a result I calculated a different factor for each time period.
9 For example, line 19, column (d) of Exhibit A-21 shows that of the 2018 EWR base
10 revenue that the company planned to collect from C&I Secondary customers for
11 January-April was 4.33%, from those customers using 0 to 850 kWhs per month.
12 This percentage is then brought forward to Exhibit A-20 page 3, line 2, column (c)
13 and applied to the C&I Secondary class's total 2018 billed surcharge revenue to
14 assign the total billed surcharge revenue attributable to the 0 to 850 kWh usage
15 stratum in that class, for January to April. For the May-December period the
16 equivalent percentage was 4.42%.

17

18 **Q. How were the C&I Secondary performance incentive allocation factors on**
19 **Exhibit A-21 derived?**

20 A. The C&I Secondary performance incentive allocation factors are simply the ratios of
21 the individual performance incentive surcharge to the total EWR surcharge in effect.
22 Columns (d) and (f), lines 4 through 12 of Exhibit A-21 derive the allocation factors
23 for 2018.

24

Line
No.

1 **Q. How do you allocate the total C&I Primary 2018 billed surcharge revenue**
2 **between the performance incentive revenue and the base surcharge revenue?**

3 A. The C&I Primary class total 2018 billed surcharge revenue is allocated between the
4 2016 performance incentive revenue and base surcharge revenue on Exhibit A-20,
5 page 4 using the same methodology described above for the C&I Secondary class.
6 Applying this methodology to the total 2018 billed surcharge revenue for the C&I
7 Primary class shown on line 1 of Exhibit A-20, page 4 results in the 2016
8 performance incentive revenue, and base surcharge revenue shown on, respectively,
9 lines 7 and 8. The respective allocation factors are derived on Exhibit A-21. The
10 C&I Primary consumption level allocation factors are derived on lines 23 and 24 of
11 Exhibit A-21 while the C&I Primary performance incentive revenue allocation
12 factors are derived on lines 13 through lines 18 of Exhibit A-21.

13

14 **Q. What is the purpose of Exhibit A-24?**

15 A. Exhibit A-24 contains the conversion factors that convert debt costs and after-tax
16 return on equity to their pre-tax equivalents.

17

18 **Q. What are the revenue conversion factors shown on Exhibit A-24?**

19 A. Given that DTE Electric's debt costs on line 2 of Exhibit A-23 are reflected on a
20 pretax basis already the debt revenue multiplier as shown on line 9, column (c) of
21 Exhibit A-24 is 1.0000. Revenue collected to cover the Company's equity return is
22 subject to Michigan Corporate Income Taxes (MCIT), Municipal Taxes, and Federal
23 Income Taxes. Line 9, column (d) of Exhibit A-24 shows DTE Electric's current
24 equity revenue multiplier of 1.3495, which means that DTE Electric is required to
25 collect \$1.3495 in order to produce \$1.00 of after-tax income. The revenue

Line
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conversion factors are carried forward to Exhibit A-23 and used in the calculation of pre-tax rate of return.

Performance Incentive

Q. What is the purpose of Exhibit A-25, “Performance Incentive Reconciliation”?

A. The purpose of Exhibit A-25 is to calculate the over/(under) recovery, by class, for the 2016 performance incentive. The recovery period for the 2016 performance incentive surcharge ended December 31, 2018. In the Case U-18332 order, dated December 20, 2017, the MPSC authorized the Company to collect \$13.3 million for its 2016 performance incentive. The surcharge was authorized for 12 months starting January 1, 2018 and ending December 31, 2018.

Q. What is shown on Exhibit A-25, “Performance Incentive Reconciliation”?

A. Line 1 of Exhibit A-25 shows the revenue collected during 2018 as derived in this reconciliation case and shown on Exhibit A-20. In total, the Company collected \$13.8 million of revenue attributed to the 2016 performance incentive (line 1) compared to the \$13.3 million (line 2) that the Company was authorized to recover. This results in a total net over-recovery of the 2016 performance incentive of \$479,659, shown on line 3, column (f). Line 3, columns (c) through (e) show the over/(under) recovery by the respective customer classes.

Q. Is interest included in the performance incentive over/(under) balances?

A. No. On page 11 of the Commission’s order in Case U-16358 the Company was ordered to calculate the performance incentive balances without interest. Therefore, none of the over/(under) recovery balances includes interest.

Line
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1 **Q. How do you recommend the net over recovery balance of \$479,659 for the 2016**
2 **performance incentive be treated?**

3 A. Consistent with the treatment of the residual balances from the 2009 through 2015
4 performance incentives approved by the Commission in Case Nos. U-17282, U-
5 17602, U-17832, U-18023, U-18332 and U-20029 I recommend that the total net
6 over-recovery, be subtracted from the 2018 performance incentive awarded in this
7 case, in order for the Company to eliminate these residuals balances in an expedited
8 manner.

9

10 **Q. How did you calculate the proposed 2018 performance incentive surcharge on**
11 **Exhibit A-26?**

12 A. I calculate the proposed surcharges for recovering the 2018 performance incentive
13 earned on Exhibit A-26 by netting the \$21.3 million performance incentive earned in
14 2018 as supported by Company Witness Mr. Boladian against the \$479,659 over-
15 recovery of the 2016 performance incentive. Lines 1 through 3 show the derivation
16 of the net performance incentive to be recovered by class and in total. Line 4
17 provides the annual billing determinants which is used to calculate the surcharge
18 amounts for each class. For the Residential class the EWR surcharge is volumetric,
19 so the determinant in column (c) is in GWh. For the C&I classes, customers are
20 billed a flat amount per meter each month, so this determinant represents the
21 number of meter counts forecasted to be used for billing in 2020. The total number
22 of C&I Secondary meter counts is allocated between columns (d), (e) and (f), and
23 the total number of C&I Primary meter counts is allocated between columns (g) and
24 (h). The proposed 12-month incremental surcharge for the Residential class is on

Line
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1 line 5, and the 12 month incremental per meter charges for the C&I classes are on
2 line 6.

3

4 **Q. In developing the incremental performance incentive surcharges on Exhibit A-**
5 **26, did you use the same rate design methodology used in previous EWR/EO**
6 **plan and reconciliation cases?**

7 A. Yes, I did. I followed the same rate design methodology that was approved by the
8 Commission in each of the Company's approved EWR/EO plans (U-15806, U-15806
9 amended, U-17049, U-17762 and U-18262) as well as in the 2009 through 2017
10 EWR/EO Reconciliation Cases. For the Residential class, both the proposed
11 incremental surcharge and the currently approved EWR charge are volumetric. For
12 the C&I classes, the proposed incremental surcharge is a per meter per month charge
13 based on total monthly consumption by rate. The per meter charges on Exhibit A-26
14 were designed maintaining the same consumption level break points utilized in the
15 Company's aforementioned plans and reconciliations. The billing determinants used
16 to calculate the surcharge are the energy sales forecast in the 2019 PSCR Plan (Case
17 No. U-20221) for the residential class, and projected meter counts for the C & I
18 classes.

19

20 **Q. How will the 2018 performance incentive EWR surcharge be applied?**

21 A. I am proposing that the incremental surcharges calculated on Exhibit A-26 be added
22 to the approved EWR base surcharges, to be collected over a 12-month period
23 beginning January 1, 2020.

24

Line
No.

1 **Q. What happens at the end of the proposed 12-month performance incentive**
2 **recovery period?**

3 A. At the end of the 12 month proposed recovery period, the EWR surcharge would be
4 reduced by any 2018 performance incentive surcharge amount approved in this case.
5 The Company would then submit revised tariff sheets reflecting the EWR surcharge
6 excluding the 2018 performance incentive component.

7

8 **Q. How will any remaining over/(under) recovery of the performance incentive be**
9 **treated at the end of the proposed 12-month performance incentive collection**
10 **period?**

11 A. Any over/(under) recovery of the 2018 performance incentive will be rolled into any
12 future EWR performance incentive balance. If there is no future EWR performance
13 incentive awarded, the Company will propose, at a future date, an appropriate
14 mechanism for recovery of the over or under performance incentive balance.

15

16 **Q. Will customers who are self-directing an EWR program be subject to this**
17 **performance incentive charge?**

18 A. No, customers who self-direct an EWR plan are only charged to recover the low
19 income program costs, so they will not be charged to recover the 2018 performance
20 incentive. Their meters are not included in the meter counts used to calculate the
21 surcharge.

22

23 **Q. What information is provided on Exhibit A-27?**

24 A. Exhibit A-27 is a four-page exhibit which shows the EWR/EO surcharge rate history
25 by class for the three customer classes (Residential, C&I Secondary and C&I Primary)

Line
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1 and for C&I self-direct customers. Columns (c) through (k) of this exhibit show, by
2 effective date, the surcharges approved by the Commission in every EWR/EO plan or
3 reconciliation case approved for DTE Electric since 2013. The Company will be filing
4 a 2020-2021 EWR plan later this year, so the base EWR surcharge to be effective in
5 January 2020 is not known at this time. For illustrative purposes, Column (k) shows the
6 surcharges that would be in effect in 2020 if the proposed 2018 performance incentive is
7 approved and the current 2018-2019 base surcharge approved on April 12th, 2018 in
8 Case No. U-18262 remained in place during 2020. Prior to the conclusion of this case
9 proceeding and depending on the status of the 2020-2021 EWR Plan, the Company
10 will work with the Commission to provide the updated total surcharge number for
11 2020. The exhibit assumes, as discussed above, that any 2018 performance incentive
12 awarded in this case would be effective for a twelve-month period beginning January
13 1, 2020.

14
15 The source column (b) shows the case number and briefly describes the case type
16 resulting in the surcharges shown in columns (c) through (k). Page 1 of Exhibit A-27
17 shows the Residential EWR/EO surcharge history. Page 2 of shows the EWR/EO
18 surcharge history for the C&I Secondary class. Page 3 shows the EWR/EO surcharge
19 history for the C&I Primary class. Page 4 of shows the EWR/EO surcharge history for
20 those C&I Secondary and Primary customers that are self-directing their own plans.

21
22 **Q. What information is presented on Exhibit A-28?**

23 A. Exhibit A-28 is an illustrative example of the tariff sheet that would be effective upon
24 implementation of the proposed EWR performance incentive surcharges. This tariff
25 sheet is representative of the EWR surcharges that customers would begin to see on

Line
No.

1 their actual bills after the proposed surcharges are implemented; however, it assumes
2 the EWR base surcharges approved in Case No. U-18262 continue to bill in 2020
3 (consistent with the rates shown on Exhibit A-27, column (k)). The actual base
4 surcharges effective in 2020 will be determined in the Company's 2020-2021 EWR
5 Plan, to be filed later this year. As explained earlier in my testimony, the proposed
6 EWR surcharges are the result of adding the 2018-2019 base surcharge approved on
7 April 12th, 2018 in Case No. U-18262 and the incremental surcharge rates calculated
8 on Exhibit A-26.

9

10 I am proposing these surcharges be implemented on a bills rendered basis for all
11 classes.

12

13 **Q. Does this complete your direct testimony?**

14 A. Yes, it does.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

EXHIBITS

OF

THOMAS W. LACEY

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Summary of Cumulative Over/(Under) Cost Recovery by Class
(\$)

Case No.: U-20366
Exhibit: A-18
Witness: T. W. Lacey
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Line No.	(a) Description	(b) Source	(c) Residential	(d) C&I Secondary	(e) C&I Primary	(f) Total Col. (c)+(d)+(e)
<u>Summary</u>						
1	Beginning Over/(Under) Recovery Balance	A-19 pgs 1-3 line 9 col (c)	(1,947,101)	(20,089,752)	12,348,823	(9,688,030)
2	Base Surcharge Revenue	A-19 pgs 1-3 line 1 col (o)	57,029,738	31,140,542	13,910,872	102,081,153
3	2018 Program Costs:					
4	O&M Expenses	A-19 pgs 1-3 line 3 col (o)	54,998,000	15,745,930	21,070,100	91,814,030
5	Pre-Tax Return on Capitalized Costs	A-19 pgs 1-3 line 4 col (o)	(0)	752,864	706,707	1,459,571
6	Return of Capitalized Costs - Amortization	A-19 pgs 1-3 line 5 col (o)	-	6,216,378	5,265,606	11,481,984
7	Total - 2018 Program Costs	Sum lines 4 thru 6	54,998,000	22,715,172	27,042,413	104,755,584
8	Program Over/(Under) Cost Recovery	Line 1 + Line 2 - Line 7	84,637	(11,664,382)	(782,717)	(12,362,461)
9	Carrying Charges	A-19 pgs 1-3 line 15 col (o)	13,889	(328,221)	178,164	(136,168)
10	Cumulative Over/(Under) Cost Recovery	Line 8 + Line 9	98,526	(11,992,603)	(604,553)	(12,498,629)

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Monthly Over/ (Under) Cost Recovery
Residential
(\$)

Case No.: U-20366
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Line No.	(a) Description	(b) Source	(c) Jan-18	(d) Feb-18	(e) Mar-18	(f) Apr-18	(g) May-18	(h) Jun-18	(i) Jul-18	(j) Aug-18	(k) Sep-18	(l) Oct-18	(m) Nov-18	(n) Dec-18	(o) Total 2018
1	Base Surcharge Revenue	A-20, pg 2 Line 4	4,615,548	3,507,842	3,369,054	3,258,986	3,971,081	5,219,984	6,882,605	7,221,649	5,872,178	4,226,003	4,453,199	4,431,609	57,029,738
2	Program Costs:														
3	O&M Expenses	A-16, pg 2 Line 9	2,914,764	3,547,900	4,260,788	4,198,137	3,943,715	3,878,183	4,980,477	4,876,686	4,446,036	6,294,892	5,668,954	5,987,467	54,998,000
4	Pre-tax Return on Capitalized Costs	A-22, pg 1 Line 4	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
5	Return of Asset - Amortization (5-yrs)	A-16, pg 2 Line 13	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Total - Program Costs		2,914,764	3,547,900	4,260,788	4,198,137	3,943,715	3,878,183	4,980,477	4,876,686	4,446,036	6,294,892	5,668,954	5,987,467	54,998,000
7	Monthly Over (Under) Cost Recovery	Line 1 - Line 6	1,700,784	(40,058)	(891,735)	(939,151)	27,366	1,341,801	1,902,127	2,344,963	1,426,142	(2,068,889)	(1,215,754)	(1,555,858)	2,031,738
8	<u>Program Over/(Under) Cost Recovery</u>														
9	Over/(Under) Recovery Beg.Bal.	Line 11 Prior Month (1)	(1,947,101)	(246,317)	(286,375)	(1,178,110)	(2,117,261)	(2,089,895)	(748,094)	1,154,033	3,498,996	4,925,138	2,856,250	1,640,495	(1,947,101)
10	Change in Balance	Line 7	<u>1,700,784</u>	<u>(40,058)</u>	<u>(891,735)</u>	<u>(939,151)</u>	<u>27,366</u>	<u>1,341,801</u>	<u>1,902,127</u>	<u>2,344,963</u>	<u>1,426,142</u>	<u>(2,068,889)</u>	<u>(1,215,754)</u>	<u>(1,555,858)</u>	<u>2,031,738</u>
11	Over/(Under) Recovery Ending Bal.	Line 9 + Line 10	(246,317)	(286,375)	(1,178,110)	(2,117,261)	(2,089,895)	(748,094)	1,154,033	3,498,996	4,925,138	2,856,250	1,640,495	84,637	84,637
12	Over/(Under) Recovery Average Bal.	(Line 9 + Line 11)/2	(1,096,709)	(266,346)	(732,242)	(1,647,685)	(2,103,578)	(1,418,994)	202,970	2,326,515	4,212,067	3,890,694	2,248,373	862,566	
13	<u>Carrying Charges</u>														
14	Carrying Charges, Monthly	L12 x L18	(1,553)	(384)	(1,205)	(3,042)	(3,745)	(2,652)	372	4,173	7,744	7,701	4,536	1,945	13,889
15	Carrying Charges, Cumulative	Cumul. Line 14	(1,553)	(1,937)	(3,142)	(6,184)	(9,929)	(12,581)	(12,209)	(8,036)	(292)	7,409	11,944	13,889	13,889
16	Cumulative Program Over/(Under) Cost Recovery	L11 + L15	(247,870)	(288,312)	(1,181,251)	(2,123,445)	(2,099,824)	(760,674)	1,141,825	3,490,960	4,924,846	2,863,659	1,652,440	98,526	98,526
17	Annual Short Term Interest Rate	(2)	1.6992%	1.7303%	1.9743%	2.2158%	2.1363%	2.2425%	2.2003%	2.1522%	2.2062%	2.3752%	2.4208%	2.7058%	
18	Monthly Short Term Interest Rate	Line 17 / 12 mo.	0.1416%	0.1442%	0.1645%	0.1846%	0.1780%	0.1869%	0.1834%	0.1794%	0.1838%	0.1979%	0.2017%	0.2255%	

Notes:
(1) January 2017 beginning balance is the December 2016 cumulative ending balance approved in U-18332 (A-21 line 10)
(2) Provided by DTE Treasury Department

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Monthly Over/ (Under) Cost Recovery
C&I Secondary
(\$)

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	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Line No.	Description	Source	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Total 2018
1	Base Surcharge Revenue	A-20, pg 3 Line 10	2,360,003	2,137,778	2,193,131	2,179,775	2,523,796	2,892,762	2,985,589	3,242,063	2,671,134	2,612,616	2,770,721	2,571,176	31,140,542
2	Program Costs:														
3	O&M Expenses	A-16, pg 3 Line 9	830,531	1,058,815	1,091,937	1,149,420	1,209,753	1,125,942	1,195,579	1,183,237	1,237,302	1,510,220	1,690,372	2,462,823	15,745,930
4	Pre-tax Return on Capitalized Costs	A-22, pg 2 Line 4	70,323	68,071	65,693	63,509	61,256	59,192	57,537	60,516	63,311	61,688	60,405	61,362	752,864
5	Return of Asset - Amortization (5-yrs)	A-16, pg 3 Line 13	<u>529,692</u>	<u>532,948</u>	<u>534,293</u>	<u>535,367</u>	<u>537,711</u>	<u>540,565</u>	<u>440,063</u>	<u>476,155</u>	<u>480,123</u>	<u>487,601</u>	<u>502,787</u>	<u>619,073</u>	<u>6,216,378</u>
6	Total - Program Costs		1,430,547	1,659,833	1,691,924	1,748,296	1,808,720	1,725,699	1,693,178	1,719,908	1,780,736	2,059,510	2,253,564	3,143,257	22,715,172
7	Monthly Over (Under) Cost Recovery	Line 1 - Line 6	929,457	477,945	501,207	431,478	715,076	1,167,063	1,292,411	1,522,155	890,398	553,106	517,157	(572,081)	8,425,371
8	<u>Program Over/(Under) Cost Recovery</u>														
9	Over/(Under) Recovery Beg.Bal.	Line 11 Prior Month (1)	(20,089,752)	(19,160,296)	(18,682,351)	(18,181,144)	(17,749,665)	(17,034,590)	(15,867,526)	(14,575,116)	(13,052,960)	(12,162,563)	(11,609,457)	(11,092,300)	(20,089,752)
10	Change in Balance	Line 7	<u>929,457</u>	<u>477,945</u>	<u>501,207</u>	<u>431,478</u>	<u>715,076</u>	<u>1,167,063</u>	<u>1,292,411</u>	<u>1,522,155</u>	<u>890,398</u>	<u>553,106</u>	<u>517,157</u>	<u>(572,081)</u>	<u>8,425,371</u>
11	Over/(Under) Recovery Ending Bal.	Line 9 + Line 10	(19,160,296)	(18,682,351)	(18,181,144)	(17,749,665)	(17,034,590)	(15,867,526)	(14,575,116)	(13,052,960)	(12,162,563)	(11,609,457)	(11,092,300)	(11,664,382)	(11,664,382)
12	Over/(Under) Recovery Average Bal.	(Line 9 + Line 11)/2	(19,625,024)	(18,921,323)	(18,431,747)	(17,965,404)	(17,392,127)	(16,451,058)	(15,221,321)	(13,814,038)	(12,607,761)	(11,886,010)	(11,350,878)	(11,378,341)	
13	<u>Carrying Charges</u>														
14	Carrying Charges, Monthly	L12 x L18	(27,789)	(27,283)	(30,325)	(33,173)	(30,962)	(30,743)	(27,909)	(24,776)	(23,179)	(23,526)	(22,899)	(25,656)	(328,221)
15	Carrying Charges, Cumulative	Cumul. Line 14	(27,789)	(55,072)	(85,398)	(118,570)	(149,533)	(180,276)	(208,185)	(232,961)	(256,140)	(279,666)	(302,565)	(328,221)	(328,221)
16	Cumulative Program Over/(Under) Cost Recovery	L11 + L15	(19,188,085)	(18,737,423)	(18,266,541)	(17,868,236)	(17,184,122)	(16,047,803)	(14,783,301)	(13,285,921)	(12,418,703)	(11,889,123)	(11,394,865)	(11,992,603)	(11,992,603)
17	Annual Short Term Interest Rate	(2)	1.6992%	1.7303%	1.9743%	2.2158%	2.1363%	2.2425%	2.2003%	2.1522%	2.2062%	2.3752%	2.4208%	2.7058%	
18	Monthly Short Term Interest Rate	Line 17 / 12 mo.	0.1416%	0.1442%	0.1645%	0.1846%	0.1780%	0.1869%	0.1834%	0.1794%	0.1838%	0.1979%	0.2017%	0.2255%	

Notes:
(1) January 2017 beginning balance is the December 2016 cumulative ending balance approved in U-18332 (A-21 line 10)
(2) Provided by DTE Treasury Department

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Monthly Over/ (Under) Cost Recovery
C&I Primary
(\$)

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Line No.	(a) Description	(b) Source	(c) Jan-18	(d) Feb-18	(e) Mar-18	(f) Apr-18	(g) May-18	(h) Jun-18	(i) Jul-18	(j) Aug-18	(k) Sep-18	(l) Oct-18	(m) Nov-18	(n) Dec-18	(o) Total 2018
1	Base Surcharge Revenue	A-20, pg 4 Line 8	1,457,360	1,453,425	1,455,009	1,415,040	1,101,728	1,000,961	994,724	1,012,746	994,349	997,663	1,025,822	1,002,044	13,910,872
2	Program Costs:														
3	O&M Expenses	A-16, pg 4 Line 9	1,124,040	1,101,468	1,277,279	1,488,104	1,512,700	1,568,531	1,644,690	1,484,008	1,650,656	2,028,401	2,257,009	3,933,214	21,070,100
4	Pre-tax Return on Capitalized Costs	A-22, pg 3 Line 4	53,181	52,467	52,002	51,348	50,720	50,511	50,697	60,440	69,787	69,654	70,249	75,652	706,707
5	Return of Asset - Amortization (5-yrs)	A-16, pg 4 Line 13	<u>396,716</u>	<u>400,663</u>	<u>403,551</u>	<u>406,547</u>	<u>410,799</u>	<u>416,916</u>	<u>341,036</u>	<u>418,489</u>	<u>427,005</u>	<u>443,053</u>	<u>475,642</u>	<u>725,188</u>	<u>5,265,606</u>
6	Total - Program Costs		1,573,937	1,554,598	1,732,832	1,945,998	1,974,219	2,035,958	2,036,423	1,962,937	2,147,448	2,541,108	2,802,900	4,734,054	27,042,413
7	Monthly Over (Under) Cost Recovery	Line 1 - Line 6	(116,576)	(101,173)	(277,823)	(530,958)	(872,491)	(1,034,997)	(1,041,699)	(950,191)	(1,153,099)	(1,543,445)	(1,777,078)	(3,732,010)	(13,131,540)
8	<u>Program Over/(Under) Cost Recovery</u>														
9	Over/(Under) Recovery Beg.Bal.	Line 11 Prior Month (1)	12,348,823	12,232,247	12,131,074	11,853,251	11,322,293	10,449,802	9,414,806	8,373,106	7,422,915	6,269,816	4,726,371	2,949,293	12,348,823
10	Change in Balance	Line 7	<u>(116,576)</u>	<u>(101,173)</u>	<u>(277,823)</u>	<u>(530,958)</u>	<u>(872,491)</u>	<u>(1,034,997)</u>	<u>(1,041,699)</u>	<u>(950,191)</u>	<u>(1,153,099)</u>	<u>(1,543,445)</u>	<u>(1,777,078)</u>	<u>(3,732,010)</u>	<u>(13,131,540)</u>
11	Over/(Under) Recovery Ending Bal.	Line 9 + Line 10	12,232,247	12,131,074	11,853,251	11,322,293	10,449,802	9,414,806	8,373,106	7,422,915	6,269,816	4,726,371	2,949,293	(782,717)	(782,717)
12	Over/(Under) Recovery Average Bal.	(Line 9 + Line 11)/2	12,290,535	12,181,661	11,992,162	11,587,772	10,886,048	9,932,304	8,893,956	7,898,011	6,846,366	5,498,094	3,837,832	1,083,288	
13	<u>Carrying Charges</u>														
14	Carrying Charges, Monthly	L12 x L18	17,404	17,565	19,730	21,397	19,380	18,561	16,308	14,165	12,587	10,883	7,742	2,443	178,164
15	Carrying Charges, Cumulative	Cumul. Line 14	17,404	34,969	54,699	76,096	95,475	114,037	130,344	144,510	157,096	167,979	175,721	178,164	178,164
16	Cumulative Program Over/(Under) Cost Recovery	L11 + L15	12,249,651	12,166,043	11,907,950	11,398,389	10,545,278	9,528,842	8,503,451	7,567,425	6,426,913	4,894,350	3,125,014	(604,553)	(604,553)
17	Annual Short Term Interest Rate	(2)	1.6992%	1.7303%	1.9743%	2.2158%	2.1363%	2.2425%	2.2003%	2.1522%	2.2062%	2.3752%	2.4208%	2.7058%	
18	Monthly Short Term Interest Rate	Line 17 / 12 mo.	0.1416%	0.1442%	0.1645%	0.1846%	0.1780%	0.1869%	0.1834%	0.1794%	0.1838%	0.1979%	0.2017%	0.2255%	

Notes:
(1) January 2017 beginning balance is the December 2016 cumulative ending balance approved in U-18332 (A-21 line 10)
(2) Provided by DTE Treasury Department

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Allocation of 2018 EWR Surcharge Revenue (\$)
All Classes

Case No.: U-20366
Exhibit: A-20
Witness: T. W. Lacey
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Line No.	(a) Description	(b) Source	(c) Residential	(d) C&I Secondary	(e) C&I Primary	(f) Total Col (c)+(d)+(e)
1	Total 2018 Surcharge Revenue	A-20 pgs 2 - 4 line 1	64,449,001	34,523,065	16,931,702	115,903,768
2	2016 Performance Incentive Revenue	A-20 pgs 2-4	7,419,263	3,382,523	3,020,830	13,822,616
3	Base Surcharge Revenue	Line 1 - Line 2	57,029,738	31,140,542	13,910,872	102,081,153
4	Total Surcharge Revenue	Line 2 + Line 3	64,449,001	34,523,065	16,931,702	115,903,768

	(a)	(b)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Line No.	Description	Source	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Total 2018
Residential															
1	Total 2018 Billed Surcharge Revenue	A-16, pg 2 Line 1	5,345,976	4,062,971	3,902,219	3,774,733	4,448,681	5,847,790	7,710,372	8,090,194	6,578,422	4,734,263	4,988,784	4,964,596	64,449,001
2	2016 Performance Incentive Revenue Percentage	A-21, pg 1 Line 1	13.66%	13.66%	13.66%	13.66%	10.74%	10.74%	10.74%	10.74%	10.74%	10.74%	10.74%	10.74%	
3	Total Performance Incentive Revenue	Line 1 x Line 2	730,428	555,129	533,165	515,747	477,600	627,805	827,768	868,545	706,244	508,260	535,584	532,988	7,419,263
4	Residential Base Surcharge Revenue	Line 1 - Line 3	4,615,548	3,507,842	3,369,054	3,258,986	3,971,081	5,219,984	6,882,605	7,221,649	5,872,178	4,226,003	4,453,199	4,431,609	57,029,738

Line No.	(a) Description	(b) Source	(c) Allocation Factor	(d) Jan-18	(e) Feb-18	(f) Mar-18	(g) Apr-18	(h) May-18	(i) Jun-18	(j) Jul-18	(k) Aug-18	(l) Sep-18	(m) Oct-18	(n) Nov-18	(o) Dec-18	(p) Total 2018
Commercial & Industrial (C&I) Secondary																
1	Total 2018 Billed Revenue	A-16, pg 3 Line 1		2,663,987	2,413,138	2,475,621	2,460,544	2,777,641	3,183,718	3,285,881	3,568,152	2,939,798	2,875,394	3,049,402	2,829,787	34,523,065
Total Billed Surcharge Revenue by consumption																
2	0-850 kwh monthly consumption	Line 1 x col (c) (1)	4.33%/4.42%	115,424	104,556	107,263	106,610	122,857	140,818	145,336	157,821	130,029	127,180	134,877	125,163	1,517,934
3	851-1650 monthly consumption	Line 1 x col (c) (1)	8.67%/8.81%	230,848	209,111	214,526	213,219	244,722	280,500	289,501	314,370	259,009	253,335	268,666	249,317	3,027,124
4	> 1650 kwh monthly consumption	Line 1 x col (c) (1)	87.00%/86.77%	2,317,715	2,099,471	2,153,833	2,140,716	2,410,062	2,762,401	2,851,044	3,095,961	2,550,760	2,494,879	2,645,859	2,455,307	29,978,008
5	Total 2017 Billed Surcharge Revenue	Sum of Lines 2 through 4		2,663,987	2,413,138	2,475,621	2,460,544	2,777,641	3,183,718	3,285,881	3,568,152	2,939,798	2,875,394	3,049,402	2,829,787	34,523,065
2016 Performance Incentive Revenue																
6	0-850 kwh monthly consumption	Line 2 x col (c) (2)	11.76%/9.33%	13,579	12,301	12,619	12,542	11,467	13,143	13,565	14,730	12,136	11,870	12,589	11,682	152,222
7	851-1650 monthly consumption	Line 3 x col (c) (2)	11.44%/9.08%	26,411	23,924	24,543	24,394	22,223	25,471	26,289	28,547	23,520	23,005	24,397	22,640	295,362
8	> 1650 kwh monthly consumption	Line 4 x col (c) (2)	11.39%/9.13%	263,994	239,136	245,328	243,834	220,156	252,342	260,439	282,812	233,009	227,904	241,696	224,289	2,934,939
9	Total 2015 Performance Incentive Revenue	Sum of Lines 6 through 8		303,984	275,360	282,490	280,770	253,845	290,956	300,293	326,089	268,665	262,779	278,681	258,611	3,382,523
10	C&I Secondary Base Surcharge Revenue	Line 1 - Line 9		2,360,003	2,137,778	2,193,131	2,179,775	2,523,796	2,892,762	2,985,589	3,242,063	2,671,134	2,612,616	2,770,721	2,571,176	31,140,542

Notes:
(1) The allocation factors on lines 2 -4 column c are brought forward from Exhibit A-21 columns d and f lines 19 - 21 respectively. These factors allocate total class revenue to the indicated monthly consumption levels.

(2) The allocation factors on lines 6 -8 column c:f are brought forward from Exhibit A-21 column d and f lines 4, 7, and 10 respectively. These factors are used to determine the amount of total billed revenue that is allocated to the 2016 Performance Incentive Revenue for each consumption level.

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Allocation of 2018 EWR Surcharge Revenue (\$)
C&I Primary

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Exhibit: A-20
Witness: T. W. Lacey
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Line No.	(a) Description	(b) Source	(c) Allocation Factor	(d) Jan-18	(e) Feb-18	(f) Mar-18	(g) Apr-18	(h) May-18	(i) Jun-18	(j) Jul-18	(k) Aug-18	(l) Sep-18	(m) Oct-18	(n) Nov-18	(o) Dec-18	(p) Total 2018
Commercial & Industrial (C&I) Primary																
1	Total 2018 Billed Surcharge Revenue	A-16, pg 4 Line 1		1,706,475	1,701,866	1,703,721	1,656,921	1,377,183	1,251,222	1,243,426	1,265,954	1,242,958	1,247,100	1,282,300	1,252,576	16,931,702
Total Billed Surcharge Revenue by consumption																
2	0-11,500 monthly consumption	Line 1 x col (c) (1)	0.04%/0.04%	679	677	678	659	558	507	504	513	504	506	520	508	6,815
3	>11,500 monthly consumption	Line 1 x col (c) (1)	99.96%/99.96%	1,705,796	1,701,189	1,703,043	1,656,261	1,376,625	1,250,715	1,242,922	1,265,440	1,242,454	1,246,594	1,281,780	1,252,068	16,924,887
4	Total 2015 Billed Surcharge Revenue	Sum of Lines 2 through 3		1,706,475	1,701,866	1,703,721	1,656,921	1,377,183	1,251,222	1,243,426	1,265,954	1,242,958	1,247,100	1,282,300	1,252,576	16,931,702
2016 Performance Incentive Revenue																
5	0-11,500 monthly consumption	Line 2 x col (c) (2)	14.60%/20.31%	99	99	99	96	113	103	102	104	102	103	106	103	1,230
6	>11,500 monthly consumption	Line 3 x col (c) (2)	14.60%/20.00%	249,015	248,343	248,613	241,784	275,342	250,158	248,600	253,104	248,506	249,334	256,372	250,429	3,019,599
7	Total 2015 Performance Incentive Revenue	Sum of Lines 5 through 6		249,114	248,442	248,712	241,880	275,455	250,261	248,702	253,208	248,608	249,437	256,477	250,532	3,020,830
8	C&I Primary Base Surcharge Revenue	Line 1 - Line 7		1,457,360	1,453,425	1,455,009	1,415,040	1,101,728	1,000,961	994,724	1,012,746	994,349	997,663	1,025,822	1,002,044	13,910,872

Notes:

(1) The allocation factors on lines 2 - 3 column c are brought forward from Exhibit A-21 column d and f lines 23 and 24 respectively. These factors allocate total class revenue to the indicated monthly consumption levels.

(2) The allocation factors on lines 5 -6 column c are brought forward from Exhibit A-21 column d and f lines 13 and 16 respectively. These factors are used to determine the amount of total billed revenue that is allocated to the 2016 Performance Incentive Revenue for each consumption level.

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Revenue Allocation Factor Calculations

Case No.: U-20366
Exhibit: A-21
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	(a)	(b)	(c)	(d)	(e)	(f)
			Factors to allocate total revenue to base revenue or performance incentive revenue January - April		Factors to allocate total revenue to base revenue or performance incentive revenue May - December	
Line No.	Description	Source	Surcharge	% of total	Surcharge	% of total
	Residential		\$/kWh	% of total surcharge design	\$/kWh	% of total surcharge design
1	2016 Performance Incentive	A-27, pg 1, Col (h) and (i)	0.000464	13.66%	0.000464	10.74%
2	2018 Base Surcharge	A-27, pg 1, Col (h) and (i)	<u>0.002932</u>	<u>86.34%</u>	<u>0.003858</u>	<u>89.26%</u>
3	Total EWR Surcharge in effect		0.003396	100.00%	0.004322	100.00%
	Commercial & Industrial (C&I) Secondary Base Surcharge Revenue design		\$/meter/month	% of total surcharge design	\$/meter/month	% of total surcharge design
	0-850 kwh monthly consumption					
4	2016 Performance Incentive	A-27, pg 2, Col (h) and (i)	0.14	11.76%	0.14	9.33%
5	2018 Base Surcharge	A-27, pg 2, Col (h) and (i)	<u>1.05</u>	<u>88.24%</u>	<u>1.36</u>	<u>90.67%</u>
6	Total EO Surcharge in effect		1.19	100.00%	1.50	100.00%
	851-1650 monthly consumption					
7	2016 Performance Incentive	A-27, pg 2, Col (h) and (i)	0.81	11.44%	0.81	9.08%
8	2018 Base Surcharge	A-27, pg 2, Col (h) and (i)	<u>6.27</u>	<u>88.56%</u>	<u>8.11</u>	<u>90.92%</u>
9	Total EO Surcharge in effect		7.08	100.00%	8.92	100.00%
	> 1650 kwh monthly consumption					
10	2016 Performance Incentive	A-27, pg 2, Col (h) and (i)	3.40	11.39%	3.40	9.13%
11	2018 Base Surcharge	A-27, pg 2, Col (h) and (i)	<u>26.45</u>	<u>88.61%</u>	<u>33.82</u>	<u>90.87%</u>
12	Total EO Surcharge in effect		29.85	100.00%	37.22	100.00%
	Commercial & Industrial (C&I) Primary Base Surcharge Revenue design		\$/meter/month	% of total surcharge design	\$/meter/month	% of total surcharge design
	0-11,500 monthly consumption					
13	2016 Performance Incentive	A-27, pg 3, Col (h) and (i)	6.36	14.60%	6.36	20.31%
14	2018 Base Surcharge	A-27, pg 3, Col (h) and (i)	<u>37.20</u>	<u>85.40%</u>	<u>24.95</u>	<u>79.69%</u>
15	Total EO Surcharge in effect		43.56	100.00%	31.31	100.00%
	>11,500 monthly consumption					
16	2016 Performance Incentive	A-27, pg 3, Col (h) and (i)	65.34	14.60%	65.34	20.00%
17	2018 Base Surcharge	A-27, pg 3, Col (h) and (i)	<u>382.25</u>	<u>85.40%</u>	<u>261.34</u>	<u>80.00%</u>
18	Total EO Surcharge in effect		447.59	100.00%	326.68	100.00%
	Commercial & Industrial (C&I) Secondary Base Surcharge Revenue as designed		U-17762 2018 Base Revenue as Planned	% of designed class revenue	U-18232 2018 Base Revenue as Planned	% of designed class revenue
19	0-850 kwh monthly consumption	1/	1,092,921	4.33%	1,444,458	4.42%
20	851-1650 monthly consumption	1/	2,185,842	8.67%	2,877,266	8.81%
21	> 1650 kwh monthly consumption	1/	<u>21,945,814</u>	<u>87.00%</u>	<u>28,335,726</u>	<u>86.77%</u>
22	Total		25,224,577	100.00%	32,657,450	100.00%
	Commercial & Industrial (C&I) Primary Base Surcharge Revenue as designed					
23	0-11,500 monthly consumption	2/	6,483	0.04%	3,576	0.04%
24	>11,500 monthly consumption	2/	<u>16,287,432</u>	<u>99.96%</u>	<u>8,814,497</u>	<u>99.96%</u>
25	Total		16,293,915	100.00%	8,818,073	100.00%

1/- Column (c): U-17762 Exh. A-25, page 4, col. (c) lines 27-29, Column €: U-18262 Exh. A-22, page 4 col. (b) lines 27-29
2/- Column (c): U-17762 Exh. A-25, page 5, col. (c) lines 23-24, Column (e): U-18262 Exh. A-22, page 5 col. (b) lines 23-24

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Line No.	Description	Source	2017 Year -End Balance (1)	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
1	<u>Return on Capitalized Costs</u>														
2	Average Capitalized Costs	Line 11		(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
3	Monthly Pretax Rate of Return	A-23 line 10		0.750%	0.750%	0.750%	0.750%	0.749%	0.749%	0.749%	0.749%	0.749%	0.749%	0.749%	0.749%
4	Return on Capitalized Costs	Line 2 x Line 3		<u>(0)</u>	<u>(0)</u>	<u>(0)</u>	<u>(0)</u>	<u>(0)</u>	<u>(0)</u>	<u>(0)</u>	<u>(0)</u>	<u>(0)</u>	<u>(0)</u>	<u>(0)</u>	<u>(0)</u>
5	<u>Ending Capitalized Costs</u>														
6	Gross Plant	A-16 pg 2 Line 18	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
7	Accumulated Amortization	A-16 pg 2 Line 19 & 20	-	0	0	0	0	0	0	0	0	0	0	0	0
8	Net Plant	Line 6 + Line 7	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
9	Accumulated Deferred Taxes	Prior Bal. - A-29 Line 5	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Ending Capitalized Costs	Line 8 + Line 9	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
11	Average Capitalized Costs	Simple avg of Line 10		(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

Notes:

(1) Values in column (c) are taken from the approved 2017 EWR Reconciliation 2017 ending balance in Case No. U-20029

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Return on Capitalized Costs
C&I Secondary
(\$)

Case No.: U-20366
Exhibit: A-22
Witness: T. W. Lacey
Page: 2 of 3

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Line No.	Description	Source	2017 Year -End Balance (1)	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
1	<u>Return on Capitalized Costs</u>														
2	Average Capitalized Costs	Line 11		9,378,040	9,077,639	8,760,582	8,469,346	8,177,054	7,901,472	7,680,569	8,078,283	8,451,397	8,234,787	8,063,499	8,191,216
3	Monthly Pretax Rate of Return	A-23 line 10		0.750%	0.750%	0.750%	0.750%	0.749%	0.749%	0.749%	0.749%	0.749%	0.749%	0.749%	0.749%
4	Return on Capitalized Costs	Line 2 x Line 3		<u>70,323</u>	<u>68,071</u>	<u>65,693</u>	<u>63,509</u>	<u>61,256</u>	<u>59,192</u>	<u>57,537</u>	<u>60,516</u>	<u>63,311</u>	<u>61,688</u>	<u>60,405</u>	<u>61,362</u>
5	<u>Ending Capitalized Costs</u>														
6	Gross Plant	A-16 pg 3 Line 18	33,305,221	33,480,148	33,557,064	33,691,634	33,840,663	33,975,798	34,175,130	27,651,837	29,456,440	29,615,170	29,839,521	30,143,242	31,306,096
7	Accumulated Amortization	A-16 pg 3 Line 19 & 20	<u>(17,715,909)</u>	<u>(18,245,601)</u>	<u>(18,778,549)</u>	<u>(19,312,843)</u>	<u>(19,848,209)</u>	<u>(20,385,921)</u>	<u>(20,926,486)</u>	<u>(14,658,189)</u>	<u>(15,134,344)</u>	<u>(15,614,467)</u>	<u>(16,102,068)</u>	<u>(16,604,855)</u>	<u>(17,223,928)</u>
8	Net Plant	Line 6 + Line 7	15,589,313	15,234,547	14,778,515	14,378,791	13,992,454	13,589,878	13,248,644	12,993,648	14,322,096	14,000,703	13,737,453	13,538,387	14,082,168
9	Accumulated Deferred Taxes	Prior Bal. - A-29 Line 10	<u>(6,079,832)</u>	<u>(5,987,948)</u>	<u>(5,869,835)</u>	<u>(5,766,307)</u>	<u>(5,666,246)</u>	<u>(5,561,978)</u>	<u>(5,473,599)</u>	<u>(5,407,555)</u>	<u>(5,751,623)</u>	<u>(5,668,382)</u>	<u>(5,600,200)</u>	<u>(5,548,642)</u>	<u>(5,689,482)</u>
10	Ending Capitalized Costs	Line 8 + Line 9	9,509,481	9,246,599	8,908,680	8,612,484	8,326,208	8,027,899	7,775,045	7,586,093	8,570,473	8,332,321	8,137,253	7,989,745	8,392,686
11	Average Capitalized Costs	Simple avg of Line 10		9,378,040	9,077,639	8,760,582	8,469,346	8,177,054	7,901,472	7,680,569	8,078,283	8,451,397	8,234,787	8,063,499	8,191,216

Notes:

(1) Values in column (c) are taken from the approved 2017 EWR Reconciliation 2017 ending balance in Case No. U-20029

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Line No.	Description	Source	2017 Year -End Balance (1)	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
1	<u>Return on Capitalized Costs</u>														
2	Average Capitalized Costs	Line 11		7,091,947	6,996,754	6,934,825	- 6,847,506	- 6,770,615	6,742,644	6,767,557	8,068,108	9,315,868	9,298,094	9,377,580	10,098,723
3	Monthly Pretax Rate of Return	A-23 line 10		0.750%	0.750%	0.750%	0.750%	0.749%	0.749%	0.749%	0.749%	0.749%	0.749%	0.749%	0.749%
4	Return on Capitalized Costs	Line 2 x Line 3		<u>53,181</u>	<u>52,467</u>	<u>52,002</u>	<u>51,348</u>	<u>50,720</u>	<u>50,511</u>	<u>50,697</u>	<u>60,440</u>	<u>69,787</u>	<u>69,654</u>	<u>70,249</u>	<u>75,652</u>
					53,181										
5	<u>Ending Capitalized Costs</u>														
6	Gross Plant	A-16 pg 4 Line 18	24,949,249	25,141,418	25,489,698	25,778,481	26,064,119	26,388,292	26,816,339	21,870,823	25,743,461	26,084,092	26,565,545	27,217,324	29,712,782
7	Accumulated Amortization	A-16 pg 4 Line 19 & 20	<u>(13,198,870)</u>	<u>(13,595,586)</u>	<u>(13,996,249)</u>	<u>(14,399,800)</u>	<u>(14,806,346)</u>	<u>(15,217,146)</u>	<u>(15,634,062)</u>	<u>(10,632,435)</u>	<u>(11,050,924)</u>	<u>(11,477,929)</u>	<u>(11,920,982)</u>	<u>(12,396,625)</u>	<u>(13,121,813)</u>
8	Net Plant	Line 6 + Line 7	11,750,380	11,545,833	11,493,449	11,378,681	11,257,772	11,171,147	11,182,278	11,238,388	14,692,537	14,606,163	14,644,562	14,820,700	16,590,969
9	Accumulated Deferred Taxes	Prior Bal. - A-29 Line 15	<u>(4,582,648)</u>	<u>(4,529,670)</u>	<u>(4,516,103)</u>	<u>(4,486,378)</u>	<u>(4,455,063)</u>	<u>(4,432,627)</u>	<u>(4,435,510)</u>	<u>(4,450,042)</u>	<u>(5,344,667)</u>	<u>(5,322,296)</u>	<u>(5,332,241)</u>	<u>(5,377,861)</u>	<u>(5,836,361)</u>
10	Ending Capitalized Costs	Line 8 + Line 9	7,167,732	7,016,162	6,977,346	6,892,303	6,802,710	6,738,520	6,746,768	6,788,346	9,347,870	9,283,867	9,312,321	9,442,839	10,754,608
11	Average Capitalized Costs	Simple avg of Line 10		7,091,947	6,996,754	6,934,825	6,847,506	6,770,615	6,742,644	6,767,557	8,068,108	9,315,868	9,298,094	9,377,580	10,098,723

Notes:

(1) Values in column (c) are taken from the approved 2017 EWR Reconciliation 2017 ending balance in Case No. U-20029

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Pre-Tax Rate of Return by Month

Case No.: U-20366
Exhibit: A-23
Witness: T. W. Lacey
Page: 1 of 1

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
Line No.	Description	Source	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
1	Debt Ratio	(1)	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%
2	Debt Cost	(2)	4.37%	4.37%	4.37%	4.37%	4.35%	4.35%	4.35%	4.35%	4.35%	4.35%	4.35%	4.35%
3	Revenue Conversion Factor	A-24 Col c, L9	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>
4	Debt Component	L1 x L2 x L3	2.18%	2.18%	2.18%	2.18%	2.17%	2.17%	2.17%	2.17%	2.17%	2.17%	2.17%	2.17%
5	Equity Ratio	(1)	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%
6	Equity Cost	(1)	10.10%	10.10%	10.10%	10.10%	10.10%	10.10%	10.10%	10.10%	10.10%	10.10%	10.10%	10.10%
7	Revenue Conversion Factor	A-24 Col d, L9	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>	<u>1.3495</u>
8	Equity Component	L5 x L6 x L7	6.81%	6.81%	6.81%	6.81%	6.81%	6.81%	6.81%	6.81%	6.81%	6.81%	6.81%	6.81%
9	Annual Pre-Tax Rate of Return	Line 4 + Line 8	<u>9.00%</u>	<u>9.00%</u>	<u>9.00%</u>	<u>9.00%</u>	<u>8.99%</u>	<u>8.99%</u>	<u>8.99%</u>	<u>8.99%</u>	<u>8.99%</u>	<u>8.99%</u>	<u>8.99%</u>	<u>8.99%</u>
10	Monthly Pre-Tax Rate of Return	Line 9/12	<u>0.750%</u>	<u>0.750%</u>	<u>0.750%</u>	<u>0.750%</u>	<u>0.749%</u>	<u>0.749%</u>	<u>0.749%</u>	<u>0.749%</u>	<u>0.749%</u>	<u>0.749%</u>	<u>0.749%</u>	<u>0.749%</u>

Source
(1) Commission Order in DTE Electric's General Rate Case U-18014
(2) Provided by DTE Treasury Department

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Revenue Conversion Factors

Case No.: U-20366
 Exhibit: A-24
 Witness: T. W. Lacey
 Page: 1 of 1

(a)		(b)	(c)	(d)
Line No.	Description	Source	Debt Conversion Percent	Equity Conversion Percent
1	Base		100.00%	100.00%
2	MCIT	(1)	0.00%	5.88%
3	Municipal Tax Base	(L1 - L2)	100.00%	94.12%
4	Municipal Tax Rate	(1)		0.33%
5	FIT Base	(L3 - L4)	100.00%	93.79%
6	FIT Rate	(1)		21.00%
7	FIT Tax	(L5 x L6)	0.00%	19.70%
8	Income	(L5 - L7)	100.00%	74.10%
9	Revenue Conversion Factor (Revenue Multiplier)	(L1 / L8)	1.0000	1.3495
10	Composite Federal, State, and Local Tax Rate	L1 - L8		25.90%

(1) Provided by DTE Tax Department

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Performance Incentive Reconciliation
All Classes
(\$)

Case No.: U-20366
Exhibit: A-25
Witness: T. W. Lacey
Page: 1 of 1

Line No.	(a) Description	(b) Source	(c) Residential	(d) C&I Secondary	(e) C&I Primary	(f) Total Col (c)+(d)+(e)
<u>2016 Performance Incentive</u>						
1	Total 2016 Performance Incentive Revenue	Exhibit A-20, Page 1, Line 2	7,419,263	3,382,523	3,020,830	13,822,616
2	Approved 2016 Performance Incentive Revenue	Order U-18332 (1)	<u>6,953,797</u>	<u>3,619,535</u>	<u>2,769,625</u>	<u>13,342,957</u>
<u>2016 Performance Incentive Over/(Under) recovery</u>						
3		Line 1 - Line 2	<u>\$ 465,466</u>	<u>\$ (237,012)</u>	<u>\$ 251,205</u>	<u>\$ 479,659</u>

(1) U-18332 Exhibit A-29, Line 3

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Calculation of Surcharges to Recover Performance Incentive
(\$)

Case No.: U-20366
Exhibit: A-26
Witness: T. W. Lacey
Page: 1 of 1

Line No.	(a) <u>Description</u>	(b) <u>Source</u>	(c) <u>Residential</u>	(d) <u>C&I Secondary</u>	(e)	(f)	(g) <u>C&I Primary</u>	(h)	(i) <u>Total</u>
1	2018 Performance Incentive	(1)	\$ 10,999,600	\$ 4,091,033			\$ 6,235,259		\$ 21,325,892
2	2016 Performance Incentive Over/(Under) recovery balance	A-25 line 3	<u>465,466</u>	<u>(237,012)</u>			<u>251,205</u>		<u>479,659</u>
3	Total Performance Incentive	Line 1 - Line 2	\$ 10,534,134	\$ 4,328,045			\$ 5,984,054		\$ 20,846,233
			<u>GWh</u>		<u>C&I Secondary Meters Monthly Consumption</u>		<u>C&I Primary Meters Monthly Consumption</u>		
					<u>0-850 kWh</u>	<u>851-1,650 kWh</u>	<u>>1,650 kWh</u>	<u>0-11,500 kWh</u>	<u>>11,500 kWh</u>
4	2020 Billing Determinants	(2)	14,898	1,180,685	393,562	930,922	176	42,350	
5	Residential per kWh Rate for 2018 Performance Incentive	Line 3 / Line 4	\$ 0.000707						
6	C&I Per Meter Monthly Charge for 2018 Performance Incentive			\$ 0.16	\$ 0.97	\$ 4.03	\$ 13.48	\$ 141.24	

(1) Total Spend per Exhibit A-16 for respective rate class X performance incentive % (Exhibit A-6)
(2) Residential per U-20221 (2019 PSCR) Exhibit A-23 Line 10, C&I meters per 2020 customer forecast

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Billed History of Surcharges
Residential

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Line No.	(a) Description	(b) Source	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
			Surcharges in Effect (per kWh)								
1	Surcharge Beginning date		1/1/2013 to 12/31/2013	1/1/2014 to 12/31/2014	1/1/2015 to 12/31/2015	1/1/2016 to 12/31/2016	1/1/2017 to 12/31/2017	1/1/2018 to 4/30/2018	5/1/2018 to 12/31/2018	1/1/2019 to 12/31/2019	1/1/2020 to 12/31/2020
3	Residential Surcharge	(1) U-17049 - Amended Base EO Surcharges	\$ 0.002416	\$ 0.002416	\$ 0.002416	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
4		(2) U-16737 - 2011 Performance Incentive	0.000295	-	-						
5		(3) U-17282 - 2012 Performance Incentive	-	0.000317	-						
6		(4) U-17602 - 2013 Performance Incentive	-	-	0.000342						
7		(5) U-17762- Amended Base EO Surcharge	-	-		0.002932	0.002932				
8		(6) U-17832- 2014 Performance Incentive	-	-		0.000412					
9		(7) U-18023 - 2015 Performance Incentive	-	-	-	-	0.000458				-
10		(8) U-17762 - Base EO Surcharges	-	-	-	-	-	0.002932			
11		(9) U-18332 - 2016 Performance Incentive	-	-	-	-	-	0.000464	0.000464		
12		(10) U-18262 - 2018-2019 Base EWR Surcharge							0.003858	0.003858	0.003858
13		(11) U-20029 - 2017 Performance Incentive	-	-	-	-	-	-	-	0.000629	
14		(12) U-20366 - 2018 Performance Incentive	-	-	-	-	-	-	-	-	0.000707
15											
16											
17	Total Effective Surcharge	Sum of Lines 3 through 16	\$ 0.002711	\$ 0.002733	\$ 0.002758	\$ 0.003344	\$ 0.003390	\$ 0.003396	\$ 0.004322	\$ 0.004487	\$ 0.004565

- (1) Amended Base EO Surcharges Approved December 20, 2012 - billed beginning on January 1, 2013
(2) 2011 Performance Incentive Approved October 31, 2012 - billed beginning on January 1, 2013 (effective thru December 2013)
(3) 2012 Performance Incentive Approved December 6, 2013 - billed beginning on January 1, 2014 (effective thru December 2014)
(4) 2013 Performance Incentive Approved December 4, 2014 - billed beginning on January 1, 2015 (effective thru December 2015)
(5) 2016/2017 Base Surcharge Approved June 3, 2015 - billed beginning January 1, 2016
(6) 2014 Performance Incentive Approved November 5, 2015 - billed beginning on January 1, 2016 (effective thru December 2016)
(7) 2015 Performance Incentive Approved November 22, 2016 - billed beginning on January 1, 2017 (effective thru December 2017)
(8) 2018/2019 Base Surcharge (Reflects 2016/2017 Base Surcharge until 2018/2019 Plan is effective) approved September 15, 2017
(9) 2016 Performance Incentive Approved December 20, 2017 - billed beginning on January 1, 2018 (effective thru December 2018)
(10) 2018/2019 Base Surcharge approved April 12, 2018 - billed beginning May 1, 2018
(11) 2017 Performance Incentive Approved December 20, 2018 - billed beginning on January 1, 2019 (effective thru December 2019)
(12) 2018 Performance Incentive pending approval

Line No.	(a) Description	(b) Source	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Surcharges in Effect (per meter per month)											
1	Surcharge Beginning date		1/1/2013 to 12/31/2013	1/1/2014 to 12/31/2014	1/1/2015 to 12/31/2015	1/1/2016 to 12/31/2016	1/1/2017 to 12/31/2017	1/1/2018 to 4/30/2018	5/1/2018 to 12/31/2018	1/1/2019 to 12/31/2019	1/1/2020 to 12/31/2020
2	Surcharge End Date										
C&I Secondary: Usage of 0 - 850 kWh/month											
3	(1) U-17049 - Amended Base EO Surcharges		\$ 0.64	\$ 0.64	\$ 0.64	\$ -	\$ -	\$ -	\$ -		\$ -
4	(2) U-16737 - 2011 Performance Incentive		0.07	-	-	-	-	-	-		-
5	(3) U-17282 - 2012 Performance Incentive		-	0.10	-	-	-	-	-		-
6	(4) U-17602 - 2013 Performance Incentive		-	-	0.12	-	-	-	-		-
7	(5) U-17762- Amended Base EO Surcharge		-	-	-	1.05	1.05	-	-		-
8	(6) U-17832- 2014 Performance Incentive		-	-	-	0.15	-	-	-		-
9	(7) U-18023 - 2015 Performance Incentive		-	-	-	-	0.14	-	-		-
10	(8) U-17762 - Base EO Surcharges		-	-	-	-	-	1.05	-		-
11	(9) U-18332 - 2016 Performance Incentive		-	-	-	-	-	0.14	0.14		-
12	(10) U-18262 - 2018-2019 Base EWR Surcharge		-	-	-	-	-	-	1.36	1.36	1.36
13	(11) U-20029 - 2017 Performance Incentive		-	-	-	-	-	-	-	0.19	-
14	(12) U-20366 - 2018 Performance Incentive		-	-	-	-	-	-	-	-	0.16
15	Total Effective Surcharge Sum of Lines 3 through 14		\$ 0.71	\$ 0.74	\$ 0.76	\$ 1.20	\$ 1.19	\$ 1.19	\$ 1.50	\$ 1.55	\$ 1.52
C&I Secondary: Usage of 851 - 1,650 kWh/month											
16	(1) U-17049 - Amended Base EO Surcharges		\$ 3.83	\$ 3.83	\$ 3.83	\$ -	\$ -	\$ -	\$ -		\$ -
17	(2) U-16737 - 2011 Performance Incentive		0.40	-	-	-	-	-	-		-
18	(3) U-17282 - 2012 Performance Incentive		-	0.58	-	-	-	-	-		-
19	(4) U-17602 - 2013 Performance Incentive		-	-	0.73	-	-	-	-		-
20	(5) U-17762- Amended Base EO Surcharge		-	-	-	6.27	6.27	-	-		-
21	(6) U-17832- 2014 Performance Incentive		-	-	-	0.92	-	-	-		-
22	(7) U-18023 - 2015 Performance Incentive		-	-	-	-	0.84	-	-		-
23	(8) U-17762 - Base EO Surcharges		-	-	-	-	-	6.27	-		-
24	(9) U-18332 - 2016 Performance Incentive		-	-	-	-	-	0.81	0.81		-
25	(10) U-18262 - 2018-2019 Base EWR Surcharge		-	-	-	-	-	-	8.11	8.11	8.11
26	(11) U-20029 - 2017 Performance Incentive		-	-	-	-	-	-	-	1.12	-
27	(12) U-20366 - 2018 Performance Incentive		-	-	-	-	-	-	-	-	0.97
28	Total Effective Surcharge Sum of Lines 16 through 27		\$ 4.23	\$ 4.41	\$ 4.56	\$ 7.19	\$ 7.11	\$ 7.08	\$ 8.92	\$ 9.23	\$ 9.08
C&I Secondary: Usage Above 1,650 kWh/month											
29	(1) U-17049 - Amended Base EO Surcharges		\$ 16.37	\$ 16.37	\$ 16.37	\$ -	\$ -	\$ -	\$ -		\$ -
30	(2) U-16737 - 2011 Performance Incentive		1.73	-	-	-	-	-	-		-
31	(3) U-17282 - 2012 Performance Incentive		-	2.49	-	-	-	-	-		-
32	(4) U-17602 - 2013 Performance Incentive		-	-	3.11	-	-	-	-		-
33	(5) U-17762- Amended Base EO Surcharge		-	-	-	26.45	26.45	-	-		-
34	(6) U-17832- 2014 Performance Incentive		-	-	-	3.94	-	-	-		-
35	(7) U-18023 - 2015 Performance Incentive		-	-	-	-	3.54	-	-		-
36	(8) U-17762 - Base EO Surcharges		-	-	-	-	-	26.45	-		-
37	(9) U-18332 - 2016 Performance Incentive		-	-	-	-	-	3.40	3.40		-
38	(10) U-18262 - 2018-2019 Base EWR Surcharge		-	-	-	-	-	-	33.82	33.82	33.82
39	(11) U-20029 - 2017 Performance Incentive		-	-	-	-	-	-	-	4.69	-
40	(12) U-20366 - 2018 Performance Incentive		-	-	-	-	-	-	-	-	4.03
41	Total Effective Surcharge Sum of Lines 29 through 40		\$ 18.10	\$ 18.86	\$ 19.48	\$ 30.39	\$ 29.99	\$ 29.85	\$ 37.22	\$ 38.51	\$ 37.85

(1) Amended Base EO Surcharges Approved December 20, 2012 - billed beginning on January 1, 2013
(2) 2011 Performance Incentive Approved October 31, 2012 - billed beginning on January 1, 2013 (effective thru December 2013)
(3) 2012 Performance Incentive Approved December 6, 2013 - billed beginning on January 1, 2014 (effective thru December 2014)
(4) 2013 Performance Incentive Approved December 4, 2014 - billed beginning on January 1, 2015 (effective thru December 2015)
(5) 2016/2017 Base Surcharge Approved June 3, 2015 - billed beginning January 1, 2016
(6) 2014 Performance Incentive Approved November 5, 2015 - billed beginning on January 1, 2016 (effective thru December 2016)
(7) 2015 Performance Incentive Approved November 22, 2016 - billed beginning on January 1, 2017 (effective thru December 2017)
(8) 2018/2019 Base Surcharge (Reflects 2016/2017 Base Surcharge until 2018/2019 Plan is effective) approved September 15, 2017
(9) 2016 Performance Incentive Approved December 20, 2017 - billed beginning on January 1, 2018 (effective thru December 2018)
(10) 2018/2019 Base Surcharge approved April 12, 2018 - billed beginning May 1, 2018
(11) 2017 Preformance Incentive Approved December 20, 2018 - billed beginning on January 1, 2019 (effective thru December 2019)
(12) 2018 Preformance Incentive pending approval

Line No.	(a) Description		(b) Source		(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
					Surcharges in Effect (per meter per month)								
					1/1/2013 to 12/31/2013	1/1/2014 to 12/31/2014	1/1/2015 to 12/31/2015	1/1/2016 to 12/31/2016	1/1/2017 to 12/31/2017	1/1/2018 to 4/30/2018	5/1/2018 to 12/31/2018	1/1/2019 to 12/31/2019	1/1/2020 to 12/31/2020
C&I Primary													
Usage of 0 - 11,500 kWh/month													
3		(1) U-17049 - Amended Base EO Surcharges			\$ 42.74	\$ 42.74	\$ 42.74	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
4		(2) U-16737 - 2011 Performance Incentive			5.17	-	-	-	-	-	-	-	-
5		(3) U-17282 - 2012 Performance Incentive			-	5.38	-	-	-	-	-	-	-
6		(4) U-17602 - 2013 Performance Incentive			-	-	5.26	-	-	-	-	-	-
7		(5) U-17762- Amended Base EO Surcharge			-	-	-	37.20	37.20	-	-	-	-
8		(6) U-17832- 2014 Performance Incentive			-	-	-	5.09	-	-	-	-	-
9		(7) U-18023 - 2015 Performance Incentive			-	-	-	-	5.64	-	-	-	-
10		(8) U-17762 - Base EO Surcharges			-	-	-	-	-	37.20	-	-	-
11		(9) U-18332 - 2016 Performance Incentive			-	-	-	-	-	6.36	6.36	-	-
12		(10) U-18262 - 2018-2019 Base EWR Surcharge			-	-	-	-	-	-	24.95	24.95	24.95
13		(11) U-20029 - 2017 Performance Incentive			-	-	-	-	-	-	-	7.23	-
14		(12) U-20366 - 2018 Performance Incentive			-	-	-	-	-	-	-	-	13.48
15	Total Effective Surcharge	Sum of Lines 3 through 14			<u>\$ 47.91</u>	<u>\$ 48.12</u>	<u>\$ 48.00</u>	<u>\$ 42.29</u>	<u>\$ 42.84</u>	<u>\$ 43.56</u>	<u>\$ 31.31</u>	<u>\$ 32.18</u>	<u>\$ 38.43</u>
C&I Primary													
Usage Above 11,500 kWh/month													
16		(1) U-17049 - Amended Base EO Surcharges			446.29	446.29	446.29	-	-	-	-	-	-
17		(2) U-16737 - 2011 Performance Incentive			53.60	-	-	-	-	-	-	-	-
18		(3) U-17282 - 2012 Performance Incentive			-	56.14	-	-	-	-	-	-	-
19		(4) U-17602 - 2013 Performance Incentive			-	-	54.90	-	-	-	-	-	-
20		(5) U-17762- Amended Base EO Surcharge			-	-	-	382.25	382.25	-	-	-	-
21		(6) U-17832- 2014 Performance Incentive			-	-	-	53.15	-	-	-	-	-
22		(7) U-18023 - 2015 Performance Incentive			-	-	-	-	57.93	-	-	-	-
23		(8) U-17762 - Base EO Surcharges			-	-	-	-	-	382.25	-	-	-
24		(9) U-18332 - 2016 Performance Incentive			-	-	-	-	-	65.34	65.34	-	-
25		(10) U-18262 - 2018-2019 Base EWR Surcharge			-	-	-	-	-	-	261.34	261.34	261.34
26		(11) U-20029 - 2017 Performance Incentive			-	-	-	-	-	-	-	75.68	-
27		(12) U-20366 - 2018 Performance Incentive			-	-	-	-	-	-	-	-	141.24
28	Total Effective Surcharge	Sum of Lines 16 through 27			<u>\$ 499.89</u>	<u>\$ 502.43</u>	<u>\$ 501.19</u>	<u>\$ 435.40</u>	<u>\$ 440.18</u>	<u>\$ 447.59</u>	<u>\$ 326.68</u>	<u>\$ 337.02</u>	<u>\$ 402.58</u>

(1) Amended Base EO Surcharges Approved December 20, 2012 - billed beginning on January 1, 2013
(2) 2011 Performance Incentive Approved October 31, 2012 - billed beginning on January 1, 2013 (effective thru December 2013)
(3) 2012 Performance Incentive Approved December 6, 2013 - billed beginning on January 1, 2014 (effective thru December 2014)
(4) 2013 Performance Incentive Approved December 4, 2014 - billed beginning on January 1, 2015 (effective thru December 2015)
(5) 2016/2017 Base Surcharge Approved June 3, 2015 - billed beginning January 1, 2016
(6) 2014 Performance Incentive Approved November 5, 2015 - billed beginning on January 1, 2016 (effective thru December 2016)
(7) 2015 Performance Incentive Approved November 22, 2016 - billed beginning on January 1, 2017 (effective thru December 2017)
(8) 2018/2019 Base Surcharge (Reflects 2016/2017 Base Surcharge until 2018/2019 Plan is effective) approved September 15, 2017
(9) 2016 Performance Incentive Approved December 20, 2017 - billed beginning on January 1, 2018 (effective thru December 2018)
(10) 2018/2019 Base Surcharge approved April 12, 2018 - billed beginning May 1, 2018
(11) 2017 Preformance Incentive Approved December 20, 2018 - billed beginning on January 1, 2019 (effective thru December 2019)
(12) 2018 Preformance Incentive pending approval

Michigan Public Service Commission
DTE Electric Company
Energy Waste Reduction - 2018 Plan Reconciliation
Billed History of Surcharges
C&I Self Direct

Case No.: U-20366
Exhibit: A-27
Witness: T. W. Lacey
Page: 4 of 4

Line No.	(a) Description	(b) Source	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Surcharges in Effect (per meter per month)										
1	Surcharge Beginning date		1/1/2013 to 12/31/2013	1/1/2014 to 12/31/2014	1/1/2015 to 12/31/2015	1/1/2016 to 12/31/2016	1/1/2017 to 12/31/2017	1/1/2018 to 4/30/2018	5/1/2018 to 12/31/2018	1/1/2019 to 12/31/2019
2	Surcharge End Date									1/1/2020 to 12/31/2020
Commercial Secondary: Usage of 0 - 850 kWh/month										
3		(3) U-17049 Amended Base Surcharges	0.06	0.06	0.06	-	-	-	-	-
4		(4) U-17762- Amended Base EO Surcharge	-	-	-	0.10	0.10	-	-	-
5		(5) U-17762 - Base EO Surcharges	-	-	-	-	-	0.10	-	-
6		(10) U-18262 - 2018-2019 Base EWR Surcharge	-	-	-	-	-	-	0.12	0.12
7	Total Effective Surcharge	Sum of Lines 3 through 6	\$ 0.06	\$ 0.06	\$ 0.06	\$ 0.10	\$ 0.10	\$ 0.10	\$ 0.12	\$ 0.12
Commercial Secondary: Usage of 851 - 1,650 kWh/month										
8		(3) U-17049 Amended Base Surcharges	0.35	0.35	0.35	-	-	-	-	-
9		(4) U-17762- Amended Base EO Surcharge	-	-	-	0.57	0.57	-	-	-
10		(5) U-17762 - Base EO Surcharges	-	-	-	-	-	0.57	-	-
11		(10) U-18262 - 2018-2019 Base EWR Surcharge	-	-	-	-	-	-	0.70	0.70
12	Total Effective Surcharge	Sum of Lines 8 through 11	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.57	\$ 0.57	\$ 0.57	\$ 0.70	\$ 0.70
Commercial Secondary: Usage Above 1,650 kWh/month										
13		(3) U-17049 Amended Base Surcharges	1.49	1.49	1.49	-	-	-	-	-
14		(4) U-17762- Amended Base EO Surcharge	-	-	-	2.53	2.53	-	-	-
15		(5) U-17762 - Base EO Surcharges	-	-	-	-	-	2.53	-	-
16		(10) U-18262 - 2018-2019 Base EWR Surcharge	-	-	-	-	-	-	3.09	3.09
17	Total Effective Surcharge	Sum of Lines 13 through 16	\$ 1.49	\$ 1.49	\$ 1.49	\$ 2.53	\$ 2.53	\$ 2.53	\$ 3.09	\$ 3.09
C&I Primary: Usage of 0 - 11,500 kWh/month										
18		(3) U-17049 Amended Base Surcharges	4.24	4.24	4.24	-	-	-	-	-
19		(4) U-17762- Amended Base EO Surcharge	-	-	-	4.20	4.20	-	-	-
20		(5) U-17762 - Base EO Surcharges	-	-	-	-	-	4.20	-	-
21		(10) U-18262 - 2018-2019 Base EWR Surcharge	-	-	-	-	-	-	5.45	5.45
22	Total Effective Surcharge	Sum of Lines 18 through 21	\$ 4.24	\$ 4.24	\$ 4.24	\$ 4.20	\$ 4.20	\$ 4.20	\$ 5.45	\$ 5.45
C&I Primary: Usage Above 11,500 kWh/month										
23		(1) U-17049 Amended Base Surcharges	41.98	41.98	41.98	-	-	-	-	-
24		(2) U-17762- Amended Base EO Surcharge	-	-	-	42.05	42.05	-	-	-
25		(3) U-17762 - Base EO Surcharges	-	-	-	-	-	42.05	-	-
26		(4) U-18262 - 2018-2019 Base EWR Surcharge	-	-	-	-	-	-	54.77	54.77
27	Total Effective Surcharge	Sum of Lines 23 through 26	\$ 41.98	\$ 41.98	\$ 41.98	\$ 42.05	\$ 42.05	\$ 42.05	\$ 54.77	\$ 54.77

(1) Amended Base EO Surcharges Approved December 20, 2012 - billed beginning on January 1, 2013
(2) 2016/2017 Base Surcharge Approved June 3, 2015 - billed beginning January 1, 2016
(3) 2018/2019 Base Surcharge (Reflects 2016/2017 Base Surcharge until 2018/2019 Plan is effective)
(4) 2018/2019 Base Surcharge approved April 12, 2018 - billed beginning May 1, 2018

M.P.S.C. No. 1 - Electric
DTE Electric Company
(Update EWRS)

Fourteenth Revised Sheet No. C-68.00
Cancels Thirteenth Revised Sheet No. C-68.00

SURCHARGES AND CREDITS APPLICABLE TO DELIVERY SERVICE (Contd.)

C9.6 Energy Waste Reduction Surcharge (EWRS)

On June 2, 2009, in Case No. U-15806, the MPSC authorized the implementation of an Energy Optimization Surcharge (EOS) for electric customers in accordance with the Clean, Renewable, and Energy Efficiency Act, PA295 of 2008. In compliance with PA 342 of 2016, the surcharge has been renamed as the Energy Waste Reduction (EWR) Surcharge. The EWR will be used to fund energy efficiency programs for DTE Electric customers. The EWR rates approved by the MPSC on _____, **2019 in Case No. U-20366** will be effective beginning with bills rendered in **January 2020**. The total EWRS for all residential customers is \$0.00**4565** per kWh. The EWRS for all metered Commercial, Industrial, and Governmental customers is a per meter, per month charge which is based on the total monthly energy consumption by rate as shown in the table below.

<u>Voltage</u>	<u>Monthly Consumption</u>	Customers Without Self Directed Plans Energy Waste Reduction <u>Surcharge</u>	Customers With Self Directed Plans Energy Waste Reduction <u>Surcharge</u>
Secondary	0 – 850 kWh	\$1.52 /meter/month	\$0.12/meter/month
Secondary	851 – 1,650 kWh	\$9.08 /meter/month	\$0.70/meter/month
Secondary	Above 1,650 kWh	\$37.85 /meter/month	\$3.09/meter/month
Primary	0 – 11,500 kWh	\$38.43 /meter/month	\$5.45/meter/month
Primary	Above 11,500 kWh	\$402.58 /meter/month	\$54.77/meter/month

C9.7.6 HOLD FOR FUTURE USE

(Continued on Sheet No. C-69.00)

Issued _____, 2020
D. M. Stanczak
Vice President
Regulatory Affairs

Detroit, Michigan

Effective for bills rendered on
and after January 1, 2020

Issued under authority of the
Michigan Public Service Commission
dated _____, 2019
in Case No. U-20366

M.P.S.C. No. 1 - Electric
DTE Electric Company
(Update EWR)

Forty-Seventh Revised Sheet No. C-70.00
Cancels Forty-Sixth Revised Sheet No. C-70.00

(Continued from Sheet No. C-69.00)

C9 SURCHARGES AND CREDITS APPLICABLE TO DELIVERY SERVICE: (Contd.)

C9.8 Summary of Surcharges and Credits: Summary of surcharges and credits, pursuant to sub-rules C9.1, C9.2, C9.6, C9.7.9, C9.7.10, C9.7.11, C9.7.12 and C9.7.13. Cents per kilowatthour or percent of base bill, unless otherwise noted.

	<u>NS</u> ¢/kWh	<u>EWRS</u> ¢/kWh	<u>Total Delivery</u> <u>Surcharges</u> ¢/kWh	<u>LIEAF Factor</u> \$/Billing Meter
Residential				
D1 Residential	0.0765	0.4565	0.5330	\$0.93
D1.1 Int. Space Conditioning	0.0765	0.4565	0.5330	N/A
D1.2 Time of Day	0.0765	0.4565	0.5330	\$0.93
D1.6 Special Low Income Pilot	0.0765	0.4565	0.5330	\$0.93
D1.7 Geothermal Time-of-Day	0.0765	0.4565	0.5330	N/A
D1.8 Dynamic Peak Pricing	0.0765	0.4565	0.5330	\$0.93
D1.9 Electric Vehicle	0.0765	0.4565	0.5330	N/A
D2 Space Heating	0.0765	0.4565	0.5330	\$0.93
D5 Wtr Htg	0.0765	0.4565	0.5330	N/A
D9 Outdoor Lighting	0.0765	0.4565	0.5330	N/A
Commercial				
D1.1 Int. Space Conditioning	0.0765	See C9.6		\$0.93
D1.7 Geothermal Time -of- day	0.0765	See C9.6		\$0.93
D1.8 Dynamic Peak Pricing	0.0765	See C9.6		\$0.93
D1.9 Electric Vehicle	0.0765	See C9.6		\$0.93
D3 General Service	0.0765	See C9.6		\$0.93
D3.1 Unmetered	0.0765	See C9.6		N/A
D3.2 Educ. Inst.	0.0765	See C9.6		\$0.93
D3.3 Interruptible	0.0765	See C9.6		\$0.93
D4 Large General Service	0.0765	See C9.6		\$0.93
D5 Wtr Htg	0.0765	See C9.6		\$0.93
D9 Outdoor Lighting	0.0765	See C9.6		N/A
R3 Standby Secondary	0.0765	See C9.6		\$0.93
R7 Greenhouse Lighting	0.0765	See C9.6		\$0.93
R8 Space Conditioning	0.0765	See C9.6		\$0.93
Industrial				
D6.2 Educ. Inst.	0.0765	See C9.6		\$0.93
D8 Interruptible Primary	0.0765	See C9.6		\$0.93
D10 Schools	0.0765	See C9.6		\$0.93
D11 Primary Supply	0.0765	See C9.6		\$0.93
R1.1 Metal Melting	0.0765	See C9.6		\$0.93
R1.2 Electric Process Heating	0.0765	See C9.6		\$0.93
R3 Standby Primary	0.0765	See C9.6		\$0.93
R10 Interruptible Supply	0.0765	See C9.6		\$0.93

(Continued on Sheet No. C-71.00)

Issued _____, 2020

D. M. Stanczak
Vice President
Regulatory Affairs

Detroit, Michigan

Effective for bills rendered on
and after _____, 2020

Issued under authority of
the Michigan Public Service Commission
dated _____, 2019
in Case No. U-20366

M.P.S.C. No. 1 - Electric
DTE Electric Company
(Update EWR)

Forty-Seventh Revised Sheet No. C-70.00
Cancels Forty-Sixth Revised Sheet No. C-70.00

(Continued from Sheet No. C-70.00)

C9 SURCHARGES AND CREDITS APPLICABLE TO DELIVERY SERVICE: (Contd.)

C9.8 Summary of Surcharges and Credits (Contd.):

	NS ¢/kWh	EWRS ¢/kWh	LIEAF Factor \$/Billing Meter
Governmental			
E1 Streetlighting Option I	0.0765	See C9.6	N/A
E1 Streetlighting Option II & III	0.0765	See C9.6	N/A
E1.1 Energy Only	0.0765	See C9.6	\$0.93
E2 Traffic Lights	0.0765	See C9.6	N/A
Electric Choice			
EC2 Secondary			
EC2 D1.1 Int. Space Conditioning	0.0765	See C9.6	\$0.93
EC2 D1.7 Geothermal Time of Day	0.0765	See C9.6	\$0.93
EC2 D1.9 Electric Vehicle	0.0765	See C9.6	\$0.93
EC2 D3 General Service	0.0765	See C9.6	\$0.93
EC2 D3.2 Educ. Inst.	0.0765	See C9.6	\$0.93
EC2 D3.3 Interruptible	0.0765	See C9.6	\$0.93
EC2 D4 Large General Service	0.0765	See C9.6	\$0.93
EC2 D5 Wtr Htg	0.0765	See C9.6	\$0.93
EC2 R7 Greenhouse Ltg	0.0765	See C9.6	\$0.93
EC2 Space Conditioning	0.0765	See C9.6	\$0.93
EC2 Primary			
EC2 D6.2 Educ. Inst.	0.0765	See C9.6	\$0.93
EC2 D8 Interruptible Primary	0.0765	See C9.6	\$0.93
EC2 D10 Schools	0.0765	See C9.6	\$0.93
EC2 D11 Primary Supply	0.0765	See C9.6	\$0.93
EC2 R1.1 Metal Melting	0.0765	See C9.6	\$0.93
EC2 R1.2 Electric Process Htg	0.0765	See C9.6	\$0.93
EC2 R10 Interruptible Supply	0.0765	See C9.6	\$0.93
EC2 Residential	0.0765	0.4487	\$0.93

(Continued on Sheet No. C-72.00)

Issued _____, 2020
D. M. Stanczak
Vice President
Regulatory Affairs

Detroit, Michigan

Effective for bills rendered on
and after _____, 2020

Issued under authority of
the Michigan Public Service Commission
dated _____, 2019
in Case No. U-20366

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

QUALIFICATIONS

AND

DIRECT TESTIMONY

OF

REEMA A. BIEL

DTE ELECTRIC COMPANY
QUALIFICATIONS OF REEMA A. BIEL

Line
No.

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

2 A. My name is Reema A. Biel. My business address is DTE Energy, One Energy
3 Plaza, Detroit, Michigan 48226. I am employed by DTE Energy Corporate
4 Services, LLC.

5

6 **Q. On whose behalf are you testifying?**

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

8

9 **Q. What is your educational background?**

10 A. I earned a Bachelor of Accountancy from Walsh College in 1999 and earned my
11 Certified Public Accounting License in 2003.

12

13 **Q. What work experience do you have?**

14 A. In 1995, I joined Coopers & Lybrand ("C&L") individual tax practice primarily
15 working on income tax compliance. In 1998, C&L merged with Price Waterhouse,
16 forming PricewaterhouseCoopers ("PwC") in which I began working in their
17 Business Compliance Group. In 2005, I was promoted to Tax Manager responsible
18 for the preparation and review of federal, state, and foreign income tax returns for
19 multi-national corporations. In addition, I was responsible for the review of federal,
20 state, and foreign quarterly and annual tax provision for multi-national companies.
21 I joined DTE Energy Company's Tax Department in 2007 as a Tax Principal
22 responsible for the preparation and review of the Company's federal income tax
23 returns and forecasts. I was promoted to Regulatory Tax Manager in February 2016
24 responsible for federal, state, and local income tax accounting and tax forecasting
25 for all regulatory filings.

Line
No.

1 **Q. To what extent have you participated in prior rate cases and other regulatory**
2 **proceedings?**

3 A. I was the tax witness in DTE Electric Cases U-20364, the 2018 Transitional
4 Recovery Mechanism Reconciliation. I have been involved over the years in
5 various inputs and analyses in support of other tax witnesses in regulatory
6 proceedings.

DTE ELECTRIC COMPANY
DIRECT TESTIMONY OF REEMA A. BIEL

Line
No.

1 **Q. What is the purpose of your testimony?**

2 A. The purpose of my testimony is to discuss and support the calculation of deferred
3 taxes included in DTE Electric's 2018 Energy Waste Reduction (EWR)
4 Reconciliation.

5

6 **Q. Are you sponsoring any exhibits in this proceeding?**

7 A. Yes. I am supporting the following exhibit:

8	<u>Exhibit</u>	<u>Description</u>
9	A-29	Deferred Income Tax Liability

10

11 **Q. Was this exhibit prepared by you or under your direction?**

12 A. Yes, it was.

13

14 **Q. How is the net deferred tax liability balance on Exhibit A-29 calculated?**

15 A. The monthly net deferred tax liability (DTL) balance is calculated on lines 22
16 through 30 of Exhibit A-29. It is calculated by taking the beginning balance on line
17 22 and adding the change, which is based on deferred tax activity from line 20. It
18 also includes a true-up adjustment for the rate difference of \$0.07 million on lines
19 24 and 29 related to the 2017 Tax Cuts and Jobs Act (TCJA) regulatory liability.

20

21 **Q. How did you calculate deferred tax activity on Exhibit A-29?**

22 A. Deferred tax activity is calculated on lines 1 through 20. For each of the three
23 customer classes, the deferred tax represents the difference between the book and
24 tax treatment of Capitalized Program Costs multiplied by the composite tax rate of
25 25.9%. The monthly amounts calculated on lines 5, 10 and 15, are used by

Line
No.

1 Company Witness Lacey to adjust the monthly accumulated deferred tax balance
2 for the corresponding customer class on line 9 of Exhibit A-22, pages 1-3.

3

4 **Q. What is the difference between the book and tax treatment of Capitalized**
5 **Program Costs?**

6 A. Program Costs are capitalized for book purposes and amortized over five (5) years.
7 For tax purposes, these costs are “ordinary and necessary” business expenses that
8 are deducted in the year they are incurred. A deferred tax liability is created when
9 the costs are capitalized for book purposes and deducted for tax purposes. As the
10 costs are amortized in subsequent years for book purposes, the deferred tax liability
11 is reduced.

12

13 **Q. Does TCJA have an impact on DTE Electric’s 2018 EWR reconciliation?**

14 A. Yes. The 2017 Tax Cuts and Job Act (TCJA) enacted by Congress on December
15 22, 2017 reduced the federal corporate income tax rate from 35% to 21%. As
16 discussed in the Company’s response to the Commission Order in Case No. U-
17 18494, book accounting under ASC 740 requires that the impacts of a tax law
18 change be recorded in the period of enactment. Therefore, DTE Electric’s deferred
19 taxes were re-measured as of December 31, 2017 to reflect the reduction in the
20 federal corporate income tax rate. This resulted in a one-time reduction to the EWR
21 deferred tax liability of \$3.6 million, which is shown on Exhibit A- 29, line 26,
22 column (c). In accordance with the Commission Order in Case No. U-18494 dated
23 December 27, 2017, the reduction in EWR’s deferred tax liability was offset by a
24 new regulatory liability of \$3.6 million, which is shown on Exhibit A-29, line 30.

25

Line
No.

1 **Q. Does the re-measurement of the deferred tax liability balance impact the EWR**
2 **return on capitalized costs as of December 31, 2017?**

3 A. No. The reduction in the EWR deferred tax liability of \$3.6 million was offset by a
4 corresponding increase in a regulatory liability of \$3.6 million reflected on Exhibit
5 A-29, line 26. Since this regulatory liability is being classified as deferred taxes
6 within the EWR return on capitalized costs, it offsets the re-measurement of the
7 deferred tax liability resulting in no impact in the EWR return on capitalized costs.

8

9 **Q. When will the Company flowback the amortization of the tax reform**
10 **regulatory liability to customers?**

11 A. The Company will begin amortization once an order is received approving DTE
12 Electric's overall new tax regulatory liability methodology and with new rates
13 expected in May 2019. The amortization of the EWR's TCJA regulatory liability
14 will be reflected in the 2019 EWR reconciliation.

15

16 **Q. Does this complete your direct testimony?**

17 A. Yes, it does.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
DTE ELECTRIC COMPANY)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

Case No. U-20366
(Paperless e-file)

EXHIBIT

OF

REEMA A. BIEL

Line No.	(a) Description	(b) Source	(c) Jan-18	(d) Feb-18	(e) Mar-18	(f) Apr-18	(g) May-18	(h) Jun-18	(i) Jul-18	(j) Aug-18	(k) Sep-18	(l) Oct-18	(m) Nov-18	(n) Dec-18	(o) Total 2018
1	Total 2018 Program Costs Capitalized - Residential	A-16, Page 2, Line 12	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Book Amortization	A-16, Page 2, Line 13	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Difference	Line 1 - Line 2	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Tax Rate		<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>
5	Deferred Tax - Residential	Line 3 x Line 4	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Total 2018 Program Costs Capitalized - C & I Secondary	A-16, Page 3, Line 12	174,927	76,916	134,569	149,030	135,135	199,332	185,066	1,804,603	158,730	224,351	303,721	1,162,853	4,709,233
7	Book Amortization	A-16, Page 3, Line 13	<u>529,692</u>	<u>532,948</u>	<u>534,293</u>	<u>535,367</u>	<u>537,711</u>	<u>540,565</u>	<u>440,063</u>	<u>476,155</u>	<u>480,123</u>	<u>487,601</u>	<u>502,787</u>	<u>619,073</u>	<u>6,216,378</u>
8	Difference	Line 6 - Line 7	(354,766)	(456,032)	(399,724)	(386,337)	(402,576)	(341,233)	(254,997)	1,328,448	(321,393)	(263,250)	(199,066)	543,781	(1,507,145)
9	Tax Rate		<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>
10	Deferred Tax - Secondary C & I	Line 8 x Line 9	(91,884)	(118,112)	(103,529)	(100,061)	(104,267)	(88,379)	(66,044)	344,068	(83,241)	(68,182)	(51,558)	140,839	(390,350)
11	Total 2018 Program Costs Capitalized - C & I Primary	A-16, Page 4, Line 12	192,169	348,280	288,783	285,638	324,174	428,047	397,147	3,872,638	340,631	481,453	651,780	2,495,457	10,106,195
12	Book Amortization	A-16, Page 4, Line 13	<u>396,716</u>	<u>400,663</u>	<u>403,551</u>	<u>406,547</u>	<u>410,799</u>	<u>416,916</u>	<u>341,036</u>	<u>418,489</u>	<u>427,005</u>	<u>443,053</u>	<u>475,642</u>	<u>725,188</u>	<u>5,265,606</u>
13	Difference	Line 11 - Line 12	(204,547)	(52,384)	(114,768)	(120,909)	(86,626)	11,131	56,111	3,454,148	(86,374)	38,400	176,137	1,770,269	4,840,589
14	Tax Rate		<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>
15	Deferred Tax - C & I Primary	Line 13 x Line 14	(52,978)	(13,567)	(29,725)	(31,315)	(22,436)	2,883	14,533	894,624	(22,371)	9,946	45,620	458,500	1,253,713
16	Total 2018 Program Costs Capitalized - All Programs	Line 1 + Line 6 + Line 11	367,096	425,196	423,353	434,667	459,309	627,379	582,213	5,677,240	499,361	705,804	955,501	3,658,311	14,815,429
17	Total Book Amortization	Line 2 + Line 7 + Line 12	<u>926,408</u>	<u>933,611</u>	<u>937,845</u>	<u>941,913</u>	<u>948,511</u>	<u>957,481</u>	<u>781,099</u>	<u>894,644</u>	<u>907,128</u>	<u>930,655</u>	<u>978,430</u>	<u>1,344,261</u>	<u>11,481,984</u>
18	Difference	Line 16 - 17	(559,313)	(508,415)	(514,492)	(507,246)	(489,202)	(330,103)	(198,886)	4,782,597	(407,767)	(224,850)	(22,929)	2,314,050	3,333,445
19	Tax Rate		<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>	<u>25.90%</u>
20	Deferred Tax - All Programs Total	Line 18 x Line 19	(144,862)	(131,680)	(133,253)	(131,377)	(126,703)	(85,497)	(51,511)	1,238,693	(105,612)	(58,236)	(5,939)	599,339	863,362
21	Deferred Tax Asset/(Liability) DTA/(DTL)														
22	DTA/(DTL) Beginning Balance	A-22, pg 2 & pg 3, Col (c), Line 9	(7,108,395)	(6,893,879)	(6,762,199)	(6,628,946)	(6,497,569)	(6,370,866)	(6,285,369)	(6,233,857)	(7,472,550)	(7,366,938)	(7,308,702)	(7,302,764)	
23	Change in Balance	Line 20	144,862	131,680	133,253	131,377	126,703	85,497	51,511	(1,238,693)	105,612	58,236	5,939	(599,339)	
24	Rate Adjustment	Line 28	<u>69,655</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	
25	DTA/(DTL) Ending Balance	Line 21 + Line 22 + Line 23	(6,893,879)	(6,762,199)	(6,628,946)	(6,497,569)	(6,370,866)	(6,285,369)	(6,233,857)	(7,472,550)	(7,366,938)	(7,308,702)	(7,302,764)	(7,902,103)	-
25	Tax Reform Regulatory Asset/(Liability)														
26	Tax Reform Regulatory Asset/(Liability) Beginning Balance		(3,554,085)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	
27	Change in Balance														
28	Rate Adjustment	WP RB-1	<u>(69,655)</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	
29	Tax Reform Regulatory Asset/(Liability) Ending Balance	Line 25 + Line 26 + Line 27	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	(3,623,740)	
30	Net Deferred Taxes	Line 25 + Line 29	(10,517,618)	(10,385,938)	(10,252,685)	(10,121,308)	(9,994,605)	(9,909,108)	(9,857,597)	(11,096,290)	(10,990,678)	(10,932,442)	(10,926,503)	(11,525,842)	

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for) Case No. U-20366
DTE ELECTRIC COMPANY) (Paperless e-file)
to fully comply with Public Act 295 of 2008,)
as amended by Public Act 342 of 2016.)
_____)

PROOF OF SERVICE

STATE OF MICHIGAN)
) ss.
COUNTY OF WAYNE)

ESTELLA BRANSON, being duly sworn, deposes and says that on the 31st day of May, 2019, she served a copy of DTE Electric Company's Application for Approval of the Reconciliation of its Energy Waste Reduction Plan Expenses for the Plan Year 2018, and Testimony and Exhibits of Witnesses, Reema A. Biel, John R. Boladian, Debbie Brannan, James L. Chubb, Jason Kupser, and Thomas W. Lacey, via electronic mail upon the persons referred to in the attached service list.

ESTELLA BRANSON

Subscribed and sworn to before
me this 31st day of May, 2019.

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

U-20366
SERVICE LIST

MPSC STAFF

Steven D. Hughey
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